Welcome

Welcome to the DX7 II FD/D, the newest members of the growing family of FM digital synthesizers from Yamaha. Using the industry-standard DX7 as its starting point, the DX II offers a number of important new features, such as improved sound quality, two-layer voice programming, additional FM features, new performance options, an expanded front-panel LCD display, and on-board disk storage (on the DX7IIID).

Since there is so much material available on the DX7 family of synthesizers (and on the theory of FM digital synthesis), this manual will not be an FM tutorial. Instead, it has been designed to be a “users manual” in the truest sense — it's goal is to help you make music with your new DX7IIID as quickly as possible.

If you are already familiar with the operation of the original DX7, this manual will help you make the transition to the DX7IIID in short order. On the other hand, if this is your first FM digital instrument, this manual will guide you into the operation of your new synthesizer with easy-to-follow, step-by-step instructions and explanations.

After you are comfortable with the operation of your new synthesizer, you may want to explore the fascinating world of FM digital voicing. If so, consult the extensive list of reference works on FM synthesis listed in the bibliography at the back of this manual.
The DX7 II FD/D has been designed for years of trouble-free use. In order to ensure that it remains a healthy member of your family of musical instruments, please keep the following tips in mind:

Installation:

When setting up the DX in your home or studio, avoid exposure to direct sunlight or other sources of heat. Environments with excessive dust, cold, dampness, or vibration can also damage your instrument. Even though the DX is electronic, you should treat it with the same kind of care you would lavish on any other musical instrument.

Also, since the DX is electronic, you should make sure not to set it too close to equipment (such as a television set) that generates electromagnetic fields. Such proximity could cause both malfunctions in the synthesizer's digital circuitry and interference noise in the other unit.

Moving:

When you move your DX, make sure to insert the head protection sheet into the disk drive — the magnetic head of the drive is very sensitive to vibration, and needs this protection if it is to survive road work.

Handling:

The DX is sturdy, but it can do without rough handling. Don't subject it to sudden jolts (such as dropping it), as this can damage the internal circuitry. If you plan to travel with it, be sure to use a road case. Also, make sure not to apply excessive force to any of the keys, buttons, or other controls.

Cleaning:

To clean or dust your DX, use nothing more than a clean, slightly damp cloth. Using chemical solvents will damage the finish, and using too much water may do considerable damage to the internal circuitry.

AC Power & Other Equipment:

When you are using the DX with an amplifier or mixer that has unbalanced outputs, connect both units to the same AC outlet to avoid hum.

If you use a number of electronic instruments in your setup, you may want to consult an electrician, who can make sure that your system does not overtax the available power.
AC Power & Down Time:
Whenever the DX will not be used for an extended period of time, it is best to protect it from potential disaster. Electrical storms and other natural or man-made disasters can give rise to power surges, which may damage the digital circuitry of your DX — even if the power is turned off. Either unplug your instrument when not in use, or invest in power strips with surge protectors to safeguard all of your electronic equipment.

Service & Your Warranty:
The DX contains no user-serviceable parts. Opening it up or tampering with it in any way will void the warranty, and may also lead you to experience some nasty electrical shocks. If you have a problem with your instrument, please take it to an authorized Yamaha service center.

Modifications & Your Warranty:
Unless you are assured to the contrary in writing, you should assume that any modifications made to your DX will void the original product warranty. Therefore, you should make sure that you receive a warranty (or some other kind of guarantee) from the person or company that is responsible for the modification.
Section 1

Playing the DX7 II FD/D
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Getting Started

You can begin to enjoy your new DX immediately, without poring through a lot of complicated electronic theory. All you have to do is take the instrument out of its box and proceed as follows:

Making Audio Connections

There are three different ways to connect the DX to sound reinforcement equipment. The one you choose will depend on your situation:

1. If you have a monophonic (single input) amplifier such as a guitar amp, connect the DX’s A/Mix output to the amp’s input (using a standard 1/4” cable).

2. If you are using a multi-channel mixer, connect the DX’s two back-panel audio outputs (A/Mix and B) to two of your mixer’s inputs (using two 1/4” cables).

3. If you are using a set of standard stereo headphones, plug them into the DX’s Phones output.

Connecting the DX to a single input amplifier.

Using stereo headphones with the DX.
Turning On the DX

After you have made the audio connection of your choice, turn the DX on by pressing the Power switch located on the right side of the back panel. This is the first display you will see on the main panel:

The DX's "welcome" display.

After a few seconds, this "welcome" display will be replaced by the last Play Mode display selected before the DX was turned off:

The DX's next initial display.
Setting the Volume Slider

Since the volumes of the various voices differ, start with a setting in the middle of the slider’s range; adjust later to suit your taste, depending on the voice or voices being played.

Setting the Pan and Poly/Mono Buttons

Before you begin to play your new DX, make sure that the settings of the Pan and Poly/Mono buttons are correct for your situation:

To ensure that you are listening to the voices just as they were created, make sure that this light is OFF. If it is ON, press the POLY/MONO button to turn the light OFF. (The reasons for this will be explained later in this manual.)

If you are using stereo outputs or headphones, make sure that this light is lit.
If it is not, press the PAN button to turn the light ON.

If you are using a single (mono) output, make sure that this light is not lit.
If it is, press the PAN button to turn the light OFF.
Exploring The New Performance Library

The Performance Mode is a completely new feature for the DX7. It allows you to play two different voices at once, and offers a number of other useful performance-oriented features. These features will be explained in detail in Sections 2 and 3 of this manual. For now, though, just follow the steps below, and explore the richness of the Performance Mode by playing through all of the new sounds available in the Internal and ROM Cartridge memories.

Selecting the Internal Performance Memories

1. Press the Performance button.
2. Press the Internal button.
3. Use the number buttons to select the desired Internal Performance combination.

The first LED displays “Pi”, indicating Performance Internal memory.

The second LED displays the number of the selected Performance memory.

This portion of the LCD displays the name and number of the selected Performance memory.

This portion of the LCD displays the location and number of the voice or voices used to create the selected Performance memory.
### The Internal Performance Memories

<table>
<thead>
<tr>
<th>Performance Name</th>
<th>Voice A</th>
<th>Voice B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Warm String Section</td>
<td>INT 1 Warm Stg A</td>
<td>INT 49 Warm Stg B</td>
</tr>
<tr>
<td>2 Mallet Brass</td>
<td>INT 63 XyloBrass</td>
<td>INT 25 MalletHorn</td>
</tr>
<tr>
<td>3 String Bass-Guitar</td>
<td>INT 27 StringBass</td>
<td>INT 57 GuitarBox</td>
</tr>
<tr>
<td>4 Dual Clavinette</td>
<td>INT 22 ClaviStuff</td>
<td>INT 48 Clavinette</td>
</tr>
<tr>
<td>5 Rich Grand Piano</td>
<td>INT 9 EbonyIvory</td>
<td>INT 35 ClariSolo</td>
</tr>
<tr>
<td>6 Stereo EletricPiano</td>
<td>INT 50 KnockRoad</td>
<td>INT 62 HardRoads</td>
</tr>
<tr>
<td>7 TubularBellWah</td>
<td>INT 43 BellWahh A</td>
<td>INT 56 BellWahh B</td>
</tr>
<tr>
<td>8 Electric Rock Organ</td>
<td>INT 32 Shorgan</td>
<td>INT 41 TapOrgan</td>
</tr>
<tr>
<td>9 Jamaica Mallet Band</td>
<td>INT 28 SteelCans</td>
<td>INT 21 EchoMallet</td>
</tr>
<tr>
<td>10 Mono Poly Synth</td>
<td>INT 7 FMilters</td>
<td>INT 35 ClariSolo</td>
</tr>
<tr>
<td>11 Dual Octave Trumpets</td>
<td>INT 14 Trumpet A</td>
<td>INT 24 Trumpet B</td>
</tr>
<tr>
<td>12 Angels</td>
<td>INT 10 Whisper A</td>
<td>INT 53 Whisper B</td>
</tr>
<tr>
<td>13 Acoustic PickGuitar</td>
<td>INT 3 PickGuitar</td>
<td>INT 40 Titeguitar</td>
</tr>
<tr>
<td>14 Multi Brass Ensemble</td>
<td>INT 46 SilvaTrmp</td>
<td>INT 54 SilvaBrass</td>
</tr>
<tr>
<td>15 St. Elmos StringBell</td>
<td>INT 1 Warm Stg A</td>
<td>INT 20 ST.Elmo's</td>
</tr>
<tr>
<td>16 Phasar Whasars</td>
<td>INT 7 FMilters</td>
<td>INT 17 Phasers</td>
</tr>
<tr>
<td>17 Bass Piano Split</td>
<td>INT 39 SkweekBass</td>
<td>INT 62 HardRoads</td>
</tr>
<tr>
<td>18 Grand Harpsichord</td>
<td>INT 64 Harpsiwire</td>
<td>INT 52 HarpsiBox</td>
</tr>
<tr>
<td>19 Sea Songs</td>
<td>INT 34 ElectoComb</td>
<td>INT 51 LateDown</td>
</tr>
<tr>
<td>20 FM WireStrung Piano</td>
<td>INT 31 WireStrung</td>
<td>INT 5 FullTines</td>
</tr>
<tr>
<td>21 Cello Quartet</td>
<td>INT 44 EleCello A</td>
<td>INT 60 EleCello B</td>
</tr>
<tr>
<td>22 Touch Jazz Organ</td>
<td>INT 12 TouchOrgan</td>
<td>INT 24 PitzpaD</td>
</tr>
<tr>
<td>23 DoubleHarp-SongFlute</td>
<td>INT 11 HarpStrum</td>
<td>INT 16 SongFlute</td>
</tr>
<tr>
<td>24 SynthBrass Ensemble</td>
<td>INT 4 Analog-X</td>
<td>INT 42 PitzpaD</td>
</tr>
<tr>
<td>25 Orchestral Violins</td>
<td>INT 61 HallOrch B</td>
<td>INT 58 HallOrch A</td>
</tr>
<tr>
<td>26 Stereo TinePiano</td>
<td>INT 5 FullTines</td>
<td>INT 35 ClariSolo</td>
</tr>
<tr>
<td>27 PianoBell Ensemble</td>
<td>INT 19 Ensemble</td>
<td>INT 15 PianoBells</td>
</tr>
<tr>
<td>28 MultiPercussionSplit</td>
<td>INT 23 MultiPerc</td>
<td>INT 23 MultiPerc</td>
</tr>
<tr>
<td>29 Temple Gong - Shami</td>
<td>INT 38 TempleGong</td>
<td>INT 29 Koto</td>
</tr>
<tr>
<td>30 Dual Piano</td>
<td>INT 36 PianoBrite</td>
<td>INT 45 PianoForte</td>
</tr>
<tr>
<td>31 Stereo Vibraphone</td>
<td>INT 18 Vibraphone</td>
<td>INT 18 Vibraphone</td>
</tr>
<tr>
<td>32 Orchestral Whallop</td>
<td>INT 47 Wallop A</td>
<td>INT 55 Wallop B</td>
</tr>
</tbody>
</table>
Selecting the Cartridge Performance Memories

1. Press the Performance button.
2. Press the Edit button.
3. Press button 15.
4. Press the \#1/ON button.
5. Press the Performance button.
6. Press the Cartridge button.
7. Use the number buttons to select the desired Cartridge Performance combination.

Cartridge >Bank >Format
Voice & Perf. 1 DX7-2

The LCD should show this display, with the cursor blinking on the arrow next to the word BANK. If not, press button 15 until this display appears.
# The Cartridge Performance Memories

<table>
<thead>
<tr>
<th>Performance Name</th>
<th>Voice A</th>
<th>Voice B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double French Horns</td>
<td>INT 2</td>
<td>Mellow Horn</td>
</tr>
<tr>
<td>Pipe Organ</td>
<td>CRT 3</td>
<td>Pipe Organ</td>
</tr>
<tr>
<td>Full Electric Piano</td>
<td>INT 5</td>
<td>Full Tines</td>
</tr>
<tr>
<td>PickGuitar-SpitFlute</td>
<td>INT 3</td>
<td>Pick Guitar</td>
</tr>
<tr>
<td>Rotary Electro Organ</td>
<td>INT 12</td>
<td>Touch Organ</td>
</tr>
<tr>
<td>SuperBass-BrightClav</td>
<td>INT 6</td>
<td>Super Bass</td>
</tr>
<tr>
<td>MariBUMba</td>
<td>INT 13</td>
<td>Maribuinba</td>
</tr>
<tr>
<td>CS 80 Brass</td>
<td>CRT 15</td>
<td>Hard Bones</td>
</tr>
<tr>
<td>Organ Choir</td>
<td>CRT 3</td>
<td>Pipe Organ</td>
</tr>
<tr>
<td>Church Choir</td>
<td>CRT 10</td>
<td>Lady Vox</td>
</tr>
<tr>
<td>Celeste and Strings</td>
<td>INT 58</td>
<td>Hall Orch A</td>
</tr>
<tr>
<td>FatBass-HeavyMetal</td>
<td>CRT 43</td>
<td>Owl Bass</td>
</tr>
<tr>
<td>Old School Harmonium</td>
<td>INT 59</td>
<td>Harmonium A</td>
</tr>
<tr>
<td>Octave MultiDowns</td>
<td>INT 51</td>
<td>Late Down</td>
</tr>
<tr>
<td>Classical Strings</td>
<td>CRT 8</td>
<td>Violins</td>
</tr>
<tr>
<td>Thunder Storm</td>
<td>CRT 23</td>
<td>Thunderon</td>
</tr>
<tr>
<td>Unison Bass</td>
<td>INT 6</td>
<td>Super Bass</td>
</tr>
<tr>
<td>Piano with BC Brass</td>
<td>INT 9</td>
<td>Ebony Ivory</td>
</tr>
<tr>
<td>Funky FingaPicka</td>
<td>INT 33</td>
<td>Finga Picka</td>
</tr>
<tr>
<td>-In the Laboratory-</td>
<td>CRT 60</td>
<td>Science</td>
</tr>
<tr>
<td>PluckSyn-UniSynth</td>
<td>INT 8</td>
<td>Pluk</td>
</tr>
<tr>
<td>Good Licks</td>
<td>CRT 49</td>
<td>Warm Voice</td>
</tr>
<tr>
<td>Dingle Bongs</td>
<td>CRT 9</td>
<td>Ting Voice</td>
</tr>
<tr>
<td>StringPad-Englishhorn</td>
<td>INT 49</td>
<td>Warm Sig B</td>
</tr>
<tr>
<td>SnareDrum-Piccolos</td>
<td>CRT 20</td>
<td>Swissnare</td>
</tr>
<tr>
<td>Inside the VLSI</td>
<td>CRT 14</td>
<td>Glastine A</td>
</tr>
<tr>
<td>Rubber ElectricPiano</td>
<td>CRT 44</td>
<td>RubbaRoad</td>
</tr>
<tr>
<td>Old Upright Piano</td>
<td>INT 45</td>
<td>Piano forte</td>
</tr>
<tr>
<td>Tap Electronic Organ</td>
<td>INT 41</td>
<td>Tap Organ</td>
</tr>
<tr>
<td>PizziString Section</td>
<td>CRT 45</td>
<td>Pizz Reverb</td>
</tr>
<tr>
<td>Yamaha MotorCycle</td>
<td>CRT 32</td>
<td>Koike Cycle</td>
</tr>
<tr>
<td>Initialized Memory</td>
<td>CRT 64</td>
<td>INIT VOICE</td>
</tr>
</tbody>
</table>

-9-
The Voices in the new DX were created using techniques like those used on the original DX7. The new Performance Mode opens up a number of exciting possibilities—many of the Voices in the new DX were created specifically to be used in combinations of two. In addition, there are a number of new features available in Voice mode (most of them extensions of the Function mode in the original DX7). All of these features will be discussed in detail in Sections 2 and 4 of this manual. For now, though, just follow the steps below, and play through all of the Voices available in the Internal and ROM Cartridge memories.

Selecting the Internal Voice Memories

1. Press the Single button.
2. Press the Internal button.
3. Use the number buttons to select the desired Internal voice.*

*The 1 ~32/33~64 light will be off, indicating that voices 1 ~32 are currently selectable. To select voices 33~64, press the 1 ~32/33~64 button. The light will go on, indicating that voices 33-64 are currently selectable.
These are the Voice Memories loaded into the DX when it is shipped from the factory. Since these memories can be adjusted, your DX’s Internal Memory may contain different data. If so, reload the Internal Voice & Performance data from Bank 1 of the supplied ROM cartridge.

### The Internal Voice Memories

<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th></th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Warm Stg A</td>
<td>33</td>
<td>FingaPicka</td>
</tr>
<tr>
<td>2</td>
<td>MellowHorn</td>
<td>34</td>
<td>ElectoComb</td>
</tr>
<tr>
<td>3</td>
<td>PickGuitar</td>
<td>35</td>
<td>ClariSolo</td>
</tr>
<tr>
<td>4</td>
<td>Analog-X</td>
<td>36</td>
<td>PianoBrite</td>
</tr>
<tr>
<td>5</td>
<td>FullTines</td>
<td>37</td>
<td>Choir</td>
</tr>
<tr>
<td>6</td>
<td>SuperBass</td>
<td>38</td>
<td>TempleGong</td>
</tr>
<tr>
<td>7</td>
<td>FMilters</td>
<td>39</td>
<td>SkweekBass</td>
</tr>
<tr>
<td>8</td>
<td>Pluk</td>
<td>40</td>
<td>Titeguitar</td>
</tr>
<tr>
<td>9</td>
<td>EbonyIvory</td>
<td>41</td>
<td>TapOrgan</td>
</tr>
<tr>
<td>10</td>
<td>Whisper A</td>
<td>42</td>
<td>PitchaPad</td>
</tr>
<tr>
<td>11</td>
<td>HarpStrum</td>
<td>43</td>
<td>BellWahh A</td>
</tr>
<tr>
<td>12</td>
<td>TouchOrgan</td>
<td>44</td>
<td>EleCello A</td>
</tr>
<tr>
<td>13</td>
<td>Maribumba</td>
<td>45</td>
<td>PianoForte</td>
</tr>
<tr>
<td>14</td>
<td>Trumpet A</td>
<td>46</td>
<td>SilvaTrmpt</td>
</tr>
<tr>
<td>15</td>
<td>PianoBells</td>
<td>47</td>
<td>Wallop A</td>
</tr>
<tr>
<td>16</td>
<td>SongFlute</td>
<td>48</td>
<td>Clavinette</td>
</tr>
<tr>
<td>17</td>
<td>Phasers</td>
<td>49</td>
<td>Warm Stg B</td>
</tr>
<tr>
<td>18</td>
<td>Vibraphone</td>
<td>50</td>
<td>KnockRoad</td>
</tr>
<tr>
<td>19</td>
<td>Ensemble</td>
<td>51</td>
<td>LateDown</td>
</tr>
<tr>
<td>20</td>
<td>St.Elmo’ s</td>
<td>52</td>
<td>HarpsiBox</td>
</tr>
<tr>
<td>21</td>
<td>EchoMallet</td>
<td>53</td>
<td>Whisper B</td>
</tr>
<tr>
<td>22</td>
<td>ClaviStuff</td>
<td>54</td>
<td>SilvaBrass</td>
</tr>
<tr>
<td>23</td>
<td>MultiPerc</td>
<td>55</td>
<td>Wallop B</td>
</tr>
<tr>
<td>24</td>
<td>Trumpet B</td>
<td>56</td>
<td>BellWahh B</td>
</tr>
<tr>
<td>25</td>
<td>MalletHorn</td>
<td>57</td>
<td>GuitarBox</td>
</tr>
<tr>
<td>26</td>
<td>CongaDrum</td>
<td>58</td>
<td>HallOrch A</td>
</tr>
<tr>
<td>27</td>
<td>StringBass</td>
<td>59</td>
<td>HarmoniumA</td>
</tr>
<tr>
<td>28</td>
<td>SteelCans</td>
<td>60</td>
<td>EleCello B</td>
</tr>
<tr>
<td>29</td>
<td>Koto</td>
<td>61</td>
<td>HallOrch B</td>
</tr>
<tr>
<td>30</td>
<td>FM-Growth</td>
<td>62</td>
<td>HardRoads</td>
</tr>
<tr>
<td>31</td>
<td>Wire Strung</td>
<td>63</td>
<td>Xylo-Brass</td>
</tr>
<tr>
<td>32</td>
<td>Shorgan</td>
<td>64</td>
<td>HarpsiWire</td>
</tr>
</tbody>
</table>
Selecting the Cartridge Voice Memories

1. Press the Single button.
2. Press the Edit button.
3. Press button 15.

The LCD should show this display, with the cursor blinking on the arrow next to the word BANK. If not, press button 15 until this display appears.

Cartridge >Bank >Format
Voice & Perf. 1 DX7-2

The 1~32/33~64 light will be off, indicating that voices 1-32 are currently selectable. To select voices 33-64, press the 1~32/33~64 button. The light will go on, indicating that voices 33-64 are currently selectable.

4. Press the +1/ON button once; in the LCD, the number displayed under the word BANK will change from 1 to 2. Bank 2 of the ROM cartridge is now selected.
5. Press the Single button.
6. Press the Cartridge button.
7. Use the number buttons to select the desired Cartridge voice.

*The 1~32/33~64 light will be off, indicating that voices 1-32 are currently selectable. To select voices 33-64, press the 1~32/33~64 button. The light will go on, indicating that voices 33-64 are currently selectable.
Bank 1 of the supplied ROM cartridge contains the Voice & Performance Memory loaded into the DX's Internal Memory when it is shipped from the factory. Bank 2 contains an entirely different set of Voice & Performance data.

### The Cartridge Voice Memories

<table>
<thead>
<tr>
<th>Bank 1</th>
<th>Bank 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Warm Stg A</td>
<td>1 Clavecin</td>
</tr>
<tr>
<td>2 MellowHorn</td>
<td>2 SmoothBass</td>
</tr>
<tr>
<td>3 PickGuitar</td>
<td>3 PipeOrgan</td>
</tr>
<tr>
<td>4 Analog-X</td>
<td>4 ClaviPluck</td>
</tr>
<tr>
<td>5 FullTines</td>
<td>5 RaspySax</td>
</tr>
<tr>
<td>6 SuperBass</td>
<td>6 MilkyWays</td>
</tr>
<tr>
<td>7 FMilters</td>
<td>7 HarpTunes</td>
</tr>
<tr>
<td>8 Pluk</td>
<td>8 Violins</td>
</tr>
<tr>
<td>9 EbonyIvory</td>
<td>9 TingVoice</td>
</tr>
<tr>
<td>10 Whisper A</td>
<td>10 LadyVox</td>
</tr>
<tr>
<td>11 HarpStrum</td>
<td>11 Harmonica</td>
</tr>
<tr>
<td>12 TouchOrgan</td>
<td>12 SpitFlute</td>
</tr>
<tr>
<td>13 Maribumba</td>
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-13-
The Play Modes

Now that you have an idea of some of the sound combinations available on the new DX, it is time to take a closer look at how the various Play Modes operate. Read on:

Voice Modes and Performance Mode

As you have heard from playing through the Performance Memories, it is possible to play two different voices at the same time on the new DX. However, you do not need to be in Performance Mode to try out various combinations of voices. In addition to Performance Play Mode, there are three different Voice Play Modes: Single, Dual, and Split.

Single Mode calls up one voice at a time from the DX's library of voices, as you learned on page 10 of this manual.

Both Dual and Split involve two voices, A and B. In Dual Mode, both voices are played together, over the entire range of the keyboard. In Split Mode, Voice A is played from the left side of the keyboard, while Voice B is played from the right side of the keyboard. When you are in the Voice Split Mode (rather than the Performance Split Mode), the Split Point is always set at C3.

To enter Dual or Split Mode, simply press the appropriate Voice Mode button; the light above the selected Voice Mode button will go on. Only one of these Voice Mode lights can be lit at a time. (These lights also show which Voice Mode is Selected when you are in the Performance Mode.)

Once you choose the Voice Mode you want to work with, use the 1~32/33~64, A/B, and number buttons to select specific voices.

Using the 1~32/33~64 Button

The light above the 1~32/33~64 button tells you which set of voices can be selected: If the light is off, voices 1~32 can be selected using the number buttons; if the light is lit, voices 33~64 can be selected using the number buttons. This holds true for all three Voice Play Modes.

Using the A/B Button

The light above the A/B button tells you which voice location (A or B) is active for voice selection in Dual and Split modes: If the light is off, Voice A is active, and the voice chosen with the number buttons will be shown as Voice A in the LCD display; if the light is on, Voice B is active, and the voice chosen with the number buttons will be shown as Voice B in the LCD display.

Using the Poly/Mono Button

The light above the Poly/Mono tells you (indirectly) which Key Mode is currently active in Play Mode: If the light is off, the Key Mode remains as programmed; if the light is lit, the opposite Key Mode will be active. Key Modes will be explained further in Section 4.
The DX is designed to operate with many controllers, each of which can be set to perform one of a number of different effects. The settings for these controllers can be different for each Voice Memory or Performance Memory. To begin your exploration of the expanded musical possibilities available with controllers on the DX, try the examples listed below. Many of you may already be familiar with the operation of the these controllers; for those who are not, each section below begins with instructions on how to locate or attach the controller in question.

**Pitch Bend Wheel**

The Pitch Bend Wheel is located to the far left of the keyboard. To get an idea of some of the effects possible with the Pitch Bend Wheel, use it with Internal Voice #1 or Internal Voice #11. Move the Wheel both quickly and slowly as you play.

**Modulation Wheel**

The Modulation Wheel is located to the near left of the keyboard (to the right of the Pitch Bend Wheel). For a taste of the possibilities of the Modulation Wheel, try it with Internal Voice #2 or Internal Voice #28.

**Aftertouch**

Aftertouch is a keyboard feature that gives you extra control over a voice. It is engaged by pushing down on the keys after they have already been depressed. To try some of the effects available with Aftertouch, call up Internal Voice #3 or Internal Voice #19. After you have played a group of keys, press them down into the key bed and listen to the result.

**Breath Controller**

The Breath Controller plugs into the mini-jack to the left of the Phones plug on the front of the DX. It allows you a great deal of expressive control over the shape of the sounds you play on the keyboard. Try using the Breath Controller in conjunction with Cartridge Voice #18 or Cartridge Voice #27 (from Bank 2 of the ROM). With both of these sounds, you will notice that playing on the keyboard by itself produces no sound: In order to hear the voices, you must hold down keys and blow into the Breath Controller.
Foot Controllers 1 and 2
The Foot Controllers plug into the two Foot Controller plugs on the back panel of the DX. They can give you continuous control over a number of aspects of the sounds. Try using Foot Controller 1 with Cartridge Voice #47 or Cartridge Voice #52 (from Bank 2 of the ROM). Foot Controller 2 is most often used as a volume pedal, but other effects are possible. Play Internal Voice #4 or Internal Voice #6 while experimenting with Foot Controller 2.

Footswitches 1 and 2
The Footswitches plug into the two Footswitch plugs on the back panel of the DX. Footswitch 1 acts much like a sustain pedal on a piano. Try it with Internal Performance #18 or Internal Performance #21 to get an idea of the different effects that are possible. Footswitch 2 can be used to engage a number of effects, including that of the soft pedal on a piano. Try it in conjunction with Cartridge Performance #27 or Cartridge Performance #28 (from Bank 2 of the ROM).

Continuous Sliders 1 and 2
The Continuous Sliders are located to the right of the Volume Slider on the left side of the DX’s front panel. They can be programmed to give you control over many aspects of the timbre of the sounds, and can even be used to alter parameters of a voice in real time. Try using Continuous Slider 1 with Internal Performance #1 or Internal Performance #4. Then listen to the effect that Continuous Slider 2 has on Internal Performance #2 or Internal Performance #5.
Section 2
Creating and Storing New Sounds
Contents

19 Creating New Sounds
19 Editing and Edit Mode
20 Entering Performance Edit Mode
20 Entering Voice Edit Mode
21 Editing Performance and Voice Data
21 Using the Cursor Buttons and the Data Entry Buttons/Slider
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24 Saving New Sounds
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25 Storing Performance Data to Internal or Cartridge Memory
25 Voice Memory
25 Storing Voice Data to Internal or Cartridge Memory
The Voices and Performance setups in the DX are stored as digital information in a computer-like memory. And, like computer memory, the memory of the DX can be altered for different uses. In other words, voices do not exist as unchangeable presets (as they do in electronic organs), but rather as streams of data. This data can be changed (edited) to create new sounds and Performance setups. To find out how this works, read on.

**Editing and Edit Mode**

Editing is the process of changing various settings of a Voice or Performance memory. In the DX, this is accomplished in Edit Mode. Usually, you will use Edit Mode to create a new sound or Performance setup, but you can also use it to find out the parameter values for the factory preset Voices and Performance setups.

Most of the buttons on the DX’s front panel have multiple functions. You can see this by looking at the way the buttons are labeled on the front panel. For example, the +1 button also functions as YES and ON. On most cases, the buttons will have different functions in different operating modes.

The 32 number buttons are no exception: In the Play Modes, they are used to call up various Voice and Performance memories; but, in the Edit Modes, they are used to access the various parameter values that make up a sound.
Entering Performance Edit Mode

1. Press the Performance button.
2. Press the Edit button.
3. Use number buttons 27 ~ 30 to access the various Performance parameters.

Press the Performance button again to return to Play Mode.

Entering Voice Edit Mode

1. Press one of the Voice Mode buttons.
2. Press the Edit button.
3. Use number buttons 7 ~ 13 and 23 ~ 26 to access the various Voice parameters.

Press the same button you pressed in step #1 above to return to Play Mode.

In both of the above procedures, you enter the Edit Mode after the Edit Button is pressed in step #2. At that time, you can push any or all of the buttons indicated (in step #3) as many times as necessary to make the desired edits.

It is possible - even easy - to edit Voice data in the Performance Edit Mode (or Performance data in the Voice Edit Mode). This, however, is NOT a recommended practice, since only Voice data is stored in the Voice Edit Mode, and only Performance data is stored in the Performance Edit Mode.
Editing Performance and Voice Data

After entering one of the Edit Modes, use the number buttons to access the parameter whose value you wish to change. Each number button calls up a variety of parameters, often through the use of multiple LCD screen displays. A complete set of these screen displays will be given at the beginning of Section 3 (for Performance Edit Mode) and Section 4 (for Voice Edit Mode). In most cases, each LCD display gives you access to a number of parameters.

Using the Cursor Buttons and the Data Entry Buttons/Slider

Use these buttons to position the LCD cursor next to the parameter you wish to edit. Parameters are listed along the top row of the LCD display, and the cursor should be positioned over the > character pointing to the parameter you wish to edit.

Once you have selected the parameter to edit (using the cursor buttons), use the data entry slider or the +1/-1 buttons to change the value of the selected parameter. The new values will appear in the bottom row of the LCD, and you will hear the effect of these new values when you play the keyboard.

Edit/Compare

Once you have started to edit a voice, you can compare your new sound to the original by pressing the Edit/Compare button:

Edit/Compare only operates in Voice Edit Mode, not in Performance Edit Mode (with the exception of Micro Tuning Edit Mode, which will be discussed in Section 3 of this manual).
Voice parameters are discussed in more detail in Section 4.

### Edit Button Quick Reference Guide

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Voice Edit parameters are discussed in more detail in Section 4.
Performance parameters are discussed in more detail in Section 3.

Utility parameters are discussed in more detail in Section 5.

MIDI parameters are discussed in more detail in Section 6.
Saving New Sounds

Once you have altered a particular Voice or Performance memory to your liking, you will want to save your new data in one of the DX’s memory locations. Single Voice memories and single Performance setups can be saved either to the Internal Memory or to a RAM Cartridge Memory. To do so, proceed as follows:

Memory Protection

Each time the DX is turned on, it automatically powers up with both the Internal and the Cartridge Memory Protect feature turned on. Before you can save data, you must turn off this automatic memory protection.

Turning Memory Protect Off

1. Press the Edit button.
2. Press the Tune button (#14) to access the Master tuning/Memory protect display.
3. Press the right cursor button to select INT Memory Protect.
4. Press the YES/NO button to turn the INT Memory Protect off.
5. Press the right cursor button again to select CRT Memory Protect.
6. Press the YES/NO button to turn the CRT Memory Protect off.

Performance Memory

Do not try to edit Performance data while in Voice Edit Mode. If you do, you will hear and see the Performance edits, but they will not be stored as part of memory when you store the Voice data.
### Storing Performance Data to Internal or Cartridge Memory

1. Press the Performance button.  
2. Press the Internal button or the Cartridge button to select the storage area for your edited Performance data. NOTE: If you wish to save the Performance data to a RAM cartridge, make sure that a properly formatted Cartridge (DX7-2) is inserted in the cartridge port.  
3. Press and hold the Store button.  
4. While holding the Store button, use the number buttons to select the memory location for your edited Performance data. The LCD will echo your choice.  
5. While still holding the Store button, press the +1/YES button.

### Voice Memory

Do not try to edit Voice data while in Performance Edit Mode. If you do, you will hear and see the Voice edits, but they will not be stored as part of memory when you store the Performance Data.

### Storing Voice Data to Internal or Cartridge Memory

1. Press one of the Voice Mode buttons.  
2. Press the Internal button or the Cartridge button to select the storage area for your edited Voice data. NOTE: If you wish to save the Voice data to a RAM cartridge, make sure that a properly formatted Cartridge (DX7-2) is inserted in the cartridge port.  
3. Press and hold the Store button.  
4. While holding the Store button, use the number buttons (and the 1-32/33-64 button if necessary) to select the memory location for your edited Voice data. The LCD will echo your choice.  
5. While still holding the Store button, press the +1/YES button.
Section 3

Using the New Performance Features
Contents

29 Performance Edit Buttons
29 Button 27 LCD Displays
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31 Button 29 LCD Displays
31 Button 30 LCD Displays

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Performance Edit Buttons

All of the Performance Mode parameters are adjusted via the LCD displays called up using buttons 27 ~ 30. All of these buttons call up multiple LCD displays. The charts below show all of the displays called up by each button, and provide a complete list of parameters and value ranges. In some cases, the first LCD display in a chart may not be the first one you see. You may need to cycle through the displays (by pressing the button repeatedly) until you reach the desired LCD display.

Button 27 LCD Displays
Button 28 LCD Displays

**Voice Mode** (single, dual, split)

**Total Volume** (0-99)

**Balance** (-50 to +50)

**Dual Detune** (0-7)

**Split Point** (C-2 to G8 by half steps)
Button 29 LCD Displays

- Press [Button 29] again to select:
  - Micro tuning
  - Table select
  - Preset 1 Equal temperament

- Press [Button 29] again to select:
  - EG forced damp

- Note shift
  - +0

- Press [Button 29] again to select:
  - Performance name

- Table Select
  - Tuning Table (Preset 1-11, User 1-2, Cart 1-63)
  - A: Table Bank Switch (off, on)
  - B: Table Bank Switch (off, on)
  - EG forced damp
  - EG Forced Damping (off, on)

- Note shift
  - +0

- Performance name
  - Performance Name (20 character name)

Button 30 LCD Displays

- Press [Button 30] again to select:
  - Pan Mode
  - Pan Mode (0 - 3)

- Range
  - Pan Range (0 - 99)

- Select
  - Pan Select (LFO, Velocity, Note number)

- Pan EG
  - R1 > R2 > R3 > R4 > L1 > L2 > L3 > L4
  - 99 99 99 99 50 50 50 50
Basic Performance Parameters

Accessed using buttons 28 and 29, these parameters determine the basic voice relationships in Performance Mode.

**Total Volume**

This parameter allows you to set an overall volume for each Performance memory. If you desire, you can use this setting to balance the levels of your Performance memories, so that constant Volume Slider or mixer adjustments are not necessary.

**Balance**

This parameter adjusts the relative volume of the two voices in Dual and Split Modes:

**Dual Detune**

This parameter shifts the pitch of both voices in Dual and Split Modes. Each voice is shifted an equal amount. Voice A is shifted up, and Voice B is shifted down:

_Dual Detune settings and their effect on Voice A and Voice B._
Split Point

In Performance Mode, the Split Point is adjustable, and is memorized as part of the Performance Memory. The Split Point can be selected using the Data Entry Slider/Buttons or the keyboard: The first note played on the keyboard after accessing the Split Point parameter will be entered as the Split Point in the LCD display.

Note Shift

This parameter allows you to adjust the transposition of each voice in Dual and Split Modes. Each voice may be adjusted up or down as much as two octaves (in halfsteps). The original transposition of each voice is retained as part of the Voice memory, and the Note Shift value is added to or subtracted from that Voice setting when you are in Performance Mode.
**EG Forced Damp**

Even though the DX is a 16-voice synthesizer, these voices can be used up quickly when you are in Dual Mode (or when you use a Sustain Footswitch pedal). When you do exceed the DX's note capacity, the first notes played will stop sounding to make way for the new notes being played.

Under normal operating conditions, the DX considers these new notes to be continuations of the first notes; therefore, the initial portions of the attack envelope will not be retrigged:

If you wish to avoid this effect, turn the Forced Damping function on. It will force the envelope to retrigger for each new note played:

* 17th note in the case of single play mode.
Since you have a total of twenty characters to define your Performance Memory, make sure that your Performance Name conveys the basic approach of the specific Performance Memory immediately.

Performance Name

You can enter a Performance Name of up to 20 characters. To do so, follow the instructions below.

1. Press the Performance button.
2. Press the Edit button.
3. Press the Micro Tune button (#29) to access the Performance Name display.
4. Press and hold the Edit/Character button.

While holding the Edit/Character button down, type in the desired Performance name using the alphanumeric characters under the buttons.

- Pressing the Cartridge button selects UPPER CASE (capital) letters.
- Pressing the Internal button selects lower case letters.

Using the left and right cursor buttons while holding the Edit/Character button lets you to place the cursor over a specific character position. This allows you to easily edit any character within a name.
Pan Modes are operative only if you are using both of the DX’s audio output jacks.

The Pan features represent an entirely new class of Performance controls for the DX. Accessed using button 30, these parameters provide control over the stereo image of the instrument’s output.

Basic Pan Functions

In order for Pan effects to operate, you must connect both of the audio outputs on the DX’s back panel. In addition, the light over the Pan button must be lit — if it is not, the Pan function is turned off. Pan can be turned on and off only in one of the Play Modes. (In Edit Mode, the Pan button becomes one of the cursor buttons.)

There are four basic Pan Modes. Mode 0 can be used with all Voice Modes, while Modes 1 ~ 3 operate only in Dual and Split Modes.

<table>
<thead>
<tr>
<th>Mode</th>
<th>A</th>
<th>B</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>ON</td>
<td>MIX</td>
<td>Pan</td>
</tr>
<tr>
<td>1</td>
<td>ON</td>
<td>ON</td>
<td>Level</td>
</tr>
<tr>
<td>2</td>
<td>ON</td>
<td>OFF</td>
<td>Level</td>
</tr>
<tr>
<td>3</td>
<td>OFF</td>
<td>ON</td>
<td>Level</td>
</tr>
</tbody>
</table>

If you select Pan Mode 0, the output of the two voices in Dual or Split Modes is combined, and the location of the sound in the stereo panorama is determined by the Pan effect selected. If you select Pan Modes 1 ~ 3, the two voice outputs remain separated, and the relative level of the two voices is determined by the Pan/Level effect selected.

There are three basic types of Pan/Level effects: LFO, Velocity, and Note Number. Each one opens up a number of possibilities:

If LFO is selected, the Pan/Level effect will be controlled by the Voice LFO (the LFO of Voice A in Dual or Split Modes). If you are operating in Pan Mode 0, the LFO controls the position of the audio output in the stereo mix; if you are operating in Pan Modes 1 ~ 3, the LFO controls the level of the selected voices (both, A, or B).

If Velocity is selected, the Pan/Level effect will be controlled by the force of your keyboard touch. If you are operating in Pan Mode 0, Velocity controls the position of the audio output in the stereo mix: Softer touches (slower velocities) will position the sound more in output jack A, while stronger touches (faster velocities) will position the sound more in output jack B. If you are operating in Pan Modes 1 ~ 3, Velocity controls the output volume of the selected voices (both, A, or B).
If Key Number is selected, the Pan/Level effect will be controlled by the right/left position of keys played on the keyboard. If you are operating in Pan Mode 0, Key Number controls the position of the audio output in the stereo mix: Notes played to the left of C3 will position the sound more in output jack A, while notes played to the right of C3 will position the sound more in output jack B. If you are operating in Pan Modes 1 ~ 3, Key Number controls the output volume of the selected voices (both, A, or B).

The overall depth (intensity) of these Pan/Level effects is controlled by the Range parameter.

Please note that all of these Pan/Level effects are global, rather than note by note: Each new Velocity input or Key Number input will reposition the audio (or readjust the output) of all notes currently sounding.

**Pan EG**

The Pan EG allows you to create an envelope for automatic control of Pan (Pan Mode 0) or Level (Pan Modes 1 ~ 3):
The DX features a greatly expanded set of controller options. The settings for Footswitches 1 and 2 and Continuous Sliders 1 and 2 are adjusted in Performance Edit Mode, using button 27. (The other controller settings are accessed in Voice Edit Mode.)

**Sustain Footswitch (FS 1)**

Footswitch 1 is set to operate as a Sustain pedal. In Dual and Split Modes, FS 1 can be selected to affect Voice A, Voice B, or both.

**Footswitch 2 (FS 2)**

Footswitch 2 is a multi-purpose pedal with four selectable functions: Sustain, Portamento, Key Hold, or Soft.

If Sustain is selected, FS 2 operates as a Sustain pedal (just like FS 1).

If Portamento is selected, Voice Portamento effects will operate only when the pedal is depressed.

If Key Hold is selected, only notes that are being held when the pedal is engaged will sustain. This effect is similar to a piano's sostenuto pedal.

If Soft is engaged, the pedal will soften the timbre and volume of the sound, to a degree determined by the Range parameter.

In Dual and Split Modes, FS 2 can be selected to affect Voice A, Voice B, or both.
Continuous Sliders

The two Continuous Sliders give you access to real-time control of FM Voice parameters. There are a total of 105 different possibilities:

**FM Parameters Assignable to CS 1 and CS2**

**DATA ENTRY slider**

- OP 6 Total level
- OP1
- OP 6 AMP. MOD. SENS
- OP1
- OP 6 Key velocity
- OP1
- OP6 EG Level 4 (L4)
- OP1
- OP 6 EG Level 3 (L3)
- OP1
- OP 6 EG Level 2 (L2)
- OP1
- OP6 EG Level 1 (L1)
- OP1
- OP 6 EG Rate 4 (R4)
- OP1
- OP6 EG Rate 3 (R3)
- OP1
- OP6 EGRate2(R2)
- OP1
- OP6 EGRate1(R1)
- OP1
- OP 6 OSC. detune
- OP1
- OP 6 Frequency fine
- OP1
- OP 6 Frequency coarse
- OP1
- OP 6 Portamento time
- OP1
- Pitch EG Level 4
- OP1
- Pitch EG Rate 4
- OP1
- LFO AMD
- PMD
- PMS
- Delay
- Speed
- Wave
- Feedback level
- Algorithm
- Dual detune
- PAN select
- Output balance (A/B)
- Total volume
- No effect

In Dual and Split Modes, CS 1 and CS 2 can be selected to affect Voice A, Voice B, or both.
Micro Tuning

The new DX contains eleven preset Intonations, which should provide you with a good introduction to possibilities of alternate intonation schemes.

Micro Tuning is another new feature for the DX. It offers the possibility of performing music using tuning and intonation systems other than Equal Temperament (which is the current standard tuning for both pianos and synthesizers). Micro Tuning data is accessed using button 29. New Micro Tunings are created in Micro Tuning Edit Mode, which is accessed using button 14 in conjunction with button 29.

Selecting a Micro Tuning

The DX is equipped with eleven preset Micro Tunings as part of its permanent memory. In order to hear the sound of these presets, it is necessary to turn Micro Tuning on for Voice A, Voice B, or both (using the A and B parameters in the Micro Tuning LCD display). When Micro Tuning is not on, the DX automatically operates in Equal Temperament.

The Micro Tuning Presets

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equal Temperament</td>
</tr>
<tr>
<td>2</td>
<td>Pure (Major)</td>
</tr>
<tr>
<td>3</td>
<td>Pure (Minor)</td>
</tr>
<tr>
<td>4</td>
<td>Mean tone</td>
</tr>
<tr>
<td>5</td>
<td>Pythagorean</td>
</tr>
<tr>
<td>6</td>
<td>Werckmeister</td>
</tr>
<tr>
<td>7</td>
<td>Kirnberger</td>
</tr>
<tr>
<td>8</td>
<td>Vallotti &amp; Young</td>
</tr>
<tr>
<td>9</td>
<td>1/4 Shifted equal</td>
</tr>
<tr>
<td>10</td>
<td>1/4 Tone</td>
</tr>
<tr>
<td>11</td>
<td>1/8 Tone</td>
</tr>
</tbody>
</table>

In presets 2 ~ 5, the tuning can be adjusted according to the key of the music being played.

Micro Tuning Editing and Storage

If you are interested in alternate tunings and intonations, you may want to create your own sets of Micro Tuning data. The DX provides two memory locations for this purpose: User 1 and User 2. These two sets of data are stored as part of the Internal Memory, and will be stored along with all other Internal data when the Internal Voice & Performance Memory is saved to another storage medium (such as RAM cartridge or disk). In addition, up to 63 Micro Tunings can be saved to RAM cartridge that has been properly formatted for that purpose.
Entering the Micro Tuning Edit Mode

1. Press the Performance button.

2. Press the Edit button.

3. Press the Micro Tune button (#29) to access the Micro Tuning LCD display.

4. Use the +1/-1 buttons to select the Micro Tuning Preset you wish to use as your starting point.

5. Press the Tune button (#14) to select the Micro Tuning edit LCD display.

Editing Micro Tuning Data

1. Press and hold the key of the note you wish to edit.

   While holding the key, press either the Internal or the Cartridge button. The note you have chosen will be displayed in the >>><<<<< section of the LCD display.

2. Use the Internal and Cartridge buttons as left and right cursors to change the LCD display until the note you wish to edit is in the >>><<<<< section of the LCD display.

3. Use the cursor buttons to select the Coarse or Fine tuning parameter.

4. Use the data entry slider or the +1/-1 buttons to adjust Coarse or Fine tuning parameters to the desired values.

Storing Micro Tuning Data

1. Press and hold the Store button.

2. Use the Internal or Cartridge button to select the desired memory location. The LCD will echo your choice. NOTE: If you wish to save the Micro Tuning data to a RAM cartridge, make sure that a properly formatted Cartridge (MTT-Y) is inserted in the cartridge port.

3. Use the number buttons (and the 1~32/33~64 button if necessary) to choose the desired location for your Micro Tuning data: 1~2 in Internal memory or 1~63 in Cartridge memory.

4. While still holding the Store button, press the +1/YES button.
Section 4

Using the New Voice Features
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45 Voice Edit Buttons
45 Button 7 LCD Display
45 Button 8 LCD Display
45 Button 9 LCD Display
46 Button 10 LCD Displays
46 Button 11 LCD Display
47 Button 12 LCD Display
47 Button 13 LCD Display
47 Button 23 LCD Displays
48 Button 24 LCD Displays
48 Button 25 LCD Displays
49 Button 26 LCD Displays

50 Basic Voice Editing Functions
50 Operator Select
50 Operator On/Off
50 EG Copy

51 New Voice Parameters
51 Pitch Envelope
51 LFO
52 Key Modes

53 Controllers
53 Function Data and Voice Effect Data
53 Pitch Bend Modes
53 Foot Controller 1

54 Fractional Scaling
54 Fractional Scaling and Level Scaling
54 Fractional Scaling Editing and Storage
All of the Voice Mode parameters are adjusted via the LCD displays called up using buttons 7 – 13 and 23 – 26. Many of these buttons call up multiple LCD displays. The charts below show all of the displays called up by each button, and provide a complete list of parameters and value ranges. In some cases, the first LCD display in a chart may not be the first one you see. You may need to cycle through the displays (by pressing the button repeatedly) until you reach the desired LCD display.

### Button 7 LCD Display

<table>
<thead>
<tr>
<th>ALGORITHM</th>
<th>7</th>
<th>39</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;R1g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algorithm (1 - 32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Fb1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feedback Level (0 - 7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Osc. sync</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oscillator Sync (off, on)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Transpose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transpose (mid C = C1 to C5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Voice name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voice Name (10 character name)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Button 8 LCD Display

<table>
<thead>
<tr>
<th>OSCILLATOR</th>
<th>8</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP1 Osc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oscillator Mode (ratio, fixed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Coarse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse Frequency (varies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Fine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine Frequency (varies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Detune</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oscillator Detune (-7 to +7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Button 9 LCD Display

<table>
<thead>
<tr>
<th>EG</th>
<th>9</th>
<th>41</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP1 EG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate Scaling (0 - 7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;R1 &gt;R2 &gt;R3 &gt;R4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator Envelope Rates 1 - 4 (0 - 99)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;L1 &gt;L2 &gt;L3 &gt;L4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator Envelope Levels 1 - 4 (0 - 99)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Button 10 LCD Displays

>Scaling mode
Scaling Mode (normal, fractional)
>Level
Operator Output Level (0 - 99)
>Ld
Left Scaling Depth (0 - 99)
>Lc
Left Scaling Curve (-lin, -exp, +exp, +lin)
>Bp
Break Point (A-1 to C6 by half steps)
>Rc
Right Scaling Curve (-lin, -exp, +exp, +lin)
>Rd
Right Scaling Depth (0 - 99)

>Scaling mode
Scaling Mode (normal, fractional)
>Ofst
Fractional Scaling Offset (-127 to +127)
>C-2->
Scaling Level for key range (0 - 255)

Button 11 LCD Display

>Velocity
Velocity Sensitivity (0 - 7)
>Rms
Amplitude Modulation Sensitivity (0 - 7)
Pns(all OP)
Pitch Modulation Sensitivity (0 - 7)
Button 12 LCD Display

- Wave
  LFO Waveshape
  (triangle, saw down, saw up, square, sine, s/hold)
- Speed
  LFO Speed (0 - 99)
- Delay
  Delay before LFO begins (0 - 99)
- Mode
  LFO Mode (single, multi)
- Pnd
  Pitch Modulation Depth (0 - 99)
- And
  Amplitude Modulation Depth (0 - 99)
- Sunc
  LFO Sync (off, on)

Button 13 LCD Display

- Rn9
  Octave Range (1/2, 1, 2, 6)
- Vel
  Velocity (off, on)
- Rs
  Rate Scaling (0 - 7)
- R1 > R2 > R3 > R4
  Pitch Envelope Rates 1-4 (0 - 99)
- L1 > L2 > L3 > L4
  Pitch Envelope Levels 1-4 (0 - 99)

Button 23 LCD Displays

- Key mode
  Polyphonic
- Key mode
  Key Mode
  (polyphonic, monophonic, unison poly, unison mono)
- Unison detune
  Unison detune (0 - 7)
  (appears only when Key mode = unison poly or unison mono)
Button 24 LCD Displays

**Pitch bend**
- Range: (0 - 12)
- Step: Pitch Bend Step Range (0 - 12)
- Mode: Pitch Bend Mode (normal, low, high, key on)

**Portamento**
- Mode: Portamento Mode (sus-key p retain, sus-key p follow)
- Step: Portamento Step Range (0 - 12)
- Time: Portamento Time (0 - 12)
- Depth: Random Pitch Depth (0 - 7)

Button 25 LCD Displays

**Breath control**
- Pmod: Pitch Modulation (0 - 99)
- Amod: Amplitude Modulation (0 - 99)
- Egbias: Envelope Generator Bias (0 - 99)
- Pbias: Pitch Bias (-50 to +50)

**After touch**
- Pmod: Pitch Modulation (0 - 99)
- Amod: Amplitude Modulation (0 - 99)
- Egbias: Envelope Generator Bias (0 - 99)
- Pbias: Pitch Bias (-50 to +50)

**Modulation wheel**
- Pmod: Pitch Modulation (0 - 99)
- Amod: Amplitude Modulation (0 - 99)
- Egbias: Envelope Generator Bias (0 - 99)
**Button 26 LCD Displays**

>CS1
Control Slider 1 (off, on)

>Pmod
Pitch Modulation (0 - 99)

>Anmod
Amplitude Modulation (0 - 99)

>Ebias
Envelope Generator Bias (0 - 99)

>Vol
Volume (0 - 99)

Foot control 1

>CS1>Pmod>Anmod> Ebias> Vol

(4) off 0 0 99 0

press 26 39 again

Foot control 2

>Pmod >Anmod >Ebias > Vol

(7) 0 0 90 0

press 26 39 again

MIDI IN control

>Pmod >Anmod >Ebias > Vol

[11] 0 0 0 0

>Pmod
Pitch Modulation (0 - 99)

>Anmod
Amplitude Modulation (0 - 99)

>Ebias
Envelope Generator Bias (0 - 99)

>Vol
Volume (0 - 99)
Basic Voice Editing Functions

The new DX offers an expanded LCD display, which makes Voice editing much easier than it was with the original DX7. A number of other basic Edit operations have also been simplified, as follows:

Operator Select

The parameters accessed using buttons 8 ~ 11 are adjustable for each of the six operators. In Voice Edit Mode, buttons 1 ~ 6 provide a quick way to move from one operator to another.

Operator On/Off

In order to adjust the settings for the six operators accurately, it is useful to focus on the sound of certain operators by turning off the output of ones not being edited. In Voice Edit Mode, buttons 17~22 provide a quick way to turn the six operators on and off.

EG Copy

The EG Copy function from the original DX7 is retained in the new DX, and is made easier through the use of buttons 1 ~ 6. Once you have Envelope data you want to copy displayed in the LCD, simply press and hold the Store/EG Copy button. You can then choose the copy destination using buttons 1 ~ 6.
The basic Voice of the new DX is almost exactly the same as that of the original DX7, assuring complete compatibility between the old and new instruments. To discover the additional Voice parameters of the new DX, read on.

Pitch Envelope

The Pitch Envelope operates as it did in the original DX7, but some new features have been added. The potential depth of the Pitch Envelope effect can now be adjusted using the Range parameter:

<table>
<thead>
<tr>
<th>RNG</th>
<th>Maximum Pitch Change Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>6 semitones</td>
</tr>
<tr>
<td>1</td>
<td>1 octave</td>
</tr>
<tr>
<td>2</td>
<td>2 octaves</td>
</tr>
<tr>
<td>8</td>
<td>8 octaves</td>
</tr>
</tbody>
</table>

In addition, the Velocity parameter allows you to control the intensity of the Pitch Envelope with keyboard touch.

LFO

There was only one LFO in the original DX7, so all voices were affected in exactly the same way by the LFO settings. In the new DX, there are sixteen LFOs, one for each voice. Even though all sixteen LFOs must have the same settings, they can now operate independently of each other if the LFO Mode parameter is set to Multi. If Mode is set to Single, the LFO will operate as it did in the original DX7.
Key Modes

The new DX offers two Unison Key Modes, which create “fatter” sounds. Since these new Modes use more than one note of the DX’s sixteen-note capacity, they will affect the total number of notes available at any one time:

<table>
<thead>
<tr>
<th>Key Mode</th>
<th>Voice Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single</td>
</tr>
<tr>
<td>Polyphonic</td>
<td>16</td>
</tr>
<tr>
<td>Monophonic</td>
<td>1</td>
</tr>
<tr>
<td>Unison poly</td>
<td>4</td>
</tr>
<tr>
<td>Unison mono</td>
<td>1</td>
</tr>
</tbody>
</table>

In Split Mode, the actual number of voices available will depend on the settings for the two voices involved. For example, if Voice A is set to Polyphonic and Voice B is set for Unison poly, a total of 10 notes can be played simultaneously (8 for Voice A and 2 for Voice B).
Controllers

The new DX features an expanded set of controller options. The settings for Pitch Bend Wheel, Modulation Wheel, Aftertouch, Breath Controller, and Foot Controllers 1 and 2 are adjusted in Voice Edit Mode, using buttons 24 ~ 26. (The other controller settings are accessed in Performance Edit Mode.)

**Function Data and Voice Effect Data**

The original DX7 separated its operational parameters into two groups: Voice data and Function data. Voice data encompassed all parameters used to create a Voice, and Function data involved settings for the various performance Controllers. The DX7 only had memory to store one set of Function settings, so all Controllers operated in the same way for all Voices.

In the new DX, Function data has been replaced by Voice Effect data (adjusted using buttons 23 ~ 26). This Voice Effect data can be adjusted as part of each Voice Memory — this means that each Voice can have its own Controller settings.

Most of the Voice Effect parameters are exactly the same as the Function parameters of the original DX7. The new parameters are outlined below.

**Pitch Bend Modes**

The Pitch Bend Wheel in the new DX functions in one of four basic Modes, which operate as follows:

<table>
<thead>
<tr>
<th>Pitch Bend Mode</th>
<th>Chord notes affected</th>
<th>Applied to sound sustained by foot switch?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>all notes</td>
<td>yes</td>
</tr>
<tr>
<td>Low</td>
<td>lowest note only</td>
<td>yes</td>
</tr>
<tr>
<td>High</td>
<td>highest note only</td>
<td>yes</td>
</tr>
<tr>
<td>Key on</td>
<td>all notes</td>
<td>no</td>
</tr>
</tbody>
</table>

**Foot Controller 1**

The new DX provides memory space to set the operation of two Foot Controllers. Foot Controller 1 also has a new parameter possibility: It can be set to control the same Voice parameter as that of Continuous Slider 1. (For more on the available settings for CS 1, see Section 3 of this manual.) Since CS 1 operates in Performance Mode, this use of Foot Controller 1 is also confined to Performance Mode.
Fractional Scaling

One of the most important aspects of DX7 voicing is Level Scaling, which allows adjustment of each operator's output over the range of the keyboard. The new DX offers the possibility of even more subtle control over operator outputs, through Fractional Scaling.

Fractional Scaling and Level Scaling

Although the DX7's Level Scaling offers a great deal of interaction between timbre and frequency, Fractional Scaling offers even greater precision: The level can be set independently in groups of three notes, over the entire range of the keyboard. To provide even more control, the resolution of the level settings has been expanded from 0 ~ 99 to 0~255:

Fractional Scaling Editing and Storage

1. Press one of the Voice Mode buttons.
2. Press the Edit button.
3. Press the Output Level button (#10) to access the Scaling mode LCD display.
4. Press the +1/YES button to select Fractional Scaling Mode.
5. Press the Output Level button (#10) again to access the Fractional Scaling Edit LCD display.

Fractional Scaling allows you to adjust the output level of each operator for three-note groups.
Editing Fractional Scaling Data

1. Press the right cursor button to select the Note Group Edit parameter.

2. Use the Operator Select buttons (#1-6) to choose the operator whose scaling you wish to edit.

3. Press and hold a key in the note group you wish to edit.
   - Press the Internal or Cartridge button. The note group you have selected will be shown next to the > indicator on the LCD.

4. Use the Internal and Cartridge buttons as left and right cursors to move the desired note group into position next to the > indicator on the LCD.

5. Use the data entry slider or the +/- buttons to edit the value for the selected note group.

Storing Fractional Scaling Data

1. Make sure that a properly formatted Cartridge (FKS-Y) is inserted in the cartridge port.
2. Press one of the Voice Mode buttons.
3. Press and hold the Store button.
4. Use the number buttons to select the desired memory location. NOTE: The Fractional Scaling data will be linked to the internal Performance memory with the same location number.
5. While still holding the Store button, press the +1/YES button.
Section 5
Memory Functions
Contents

59 Utility Buttons
59 Button 14 LCD Displays
60 Button 15 LCD Displays
61 Button 16 LCD Displays

62 Memory Layout

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63 System Setup Memory
63 Micro Tuning Memory
63 Fractional Scaling Memory
63 Initialized Memory
64 Current Play/Edit Memory
64 Compare/Recall Memory

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67 Recall Edit
67 Initialize

68 Cartridge Memory Functions
68 Using Cartridge Data
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70 Loading Voice & Performance Data from a RAM Cartridge

71 Disk Memory Functions (FD Only)
71 Using and Handling Disks
72 Basic Disk Drive Operations
74 Disk MDR
Utility Buttons

All of the Memory functions (and related utility functions) are adjusted via the LCD displays called up using buttons 14 ~ 16. All of these buttons call up multiple LCD displays. The charts below show all of the displays called up by each button, and provide a complete list of parameters and value ranges. In some cases, the first LCD display in a chart may not be the first one you see. You may need to cycle through the displays (by pressing the button repeatedly) until you reach the desired LCD display.

Button 14 LCD Displays

- Master tuning
  - Master Tuning (-64 to +63)

- INT
  - Internal Memory Protect (off, on)

- CRT
  - Cartridge Memory Protect (off, on)

- Coarse
  - Coarse Frequency (C#-2 to G8 by half steps)

- Fine
  - Fine Frequency (-42 to +42)

- Voice
  - Recall Voice Edit

- Perf.
  - Recall Performance Edit

- Micro tuning
  - Recall Micro Tuning Edit

- Initialize
  - Initialize Voice Bank A

- VoiceB
  - Initialize Voice Bank B

- Performance
  - Initialize Performance
Button 15 LCD Displays

- Save
  Save to Cartridge
- Load
  Load from Cartridge

Bank 1

- Format
  Format (DX7-2, FKS-Y, MTT-Y)

Voice & Perf.

- Format
  Format (DX7-2, FKS-Y, MTT-Y)

Fractional SC.

- Format
  Format (DX7-2, FKS-Y, MTT-Y)

Micro tuning

- Format
  Format (DX7-2, FKS-Y, MTT-Y)
Button 16 LCD Displays

Press 16 # again 

- Disk > Format > Back up > Free bytes 
** Set disk and push [yes] 

- Disk INT > Dir > Save > Load > Del > Rename 
** Set disk and push [yes] 

- Disk CRT > Dir > Save > Load > Del > Rename > Bank 
** Set disk and push [yes] 
1

- Disk MDR > Dir > In > Out > Del > Rename 
** Set disk and push [yes] 

> Dir 
Internal Files Directory 
> Save 
Save Internal File 
> Load 
Load Internal File 
> Del 
Delete Internal File 
> Rename 
Rename Internal File 

> Dir 
Cartridge Files Directory 
> Save 
Save Cartridge File 
> Load 
Load Cartridge File 
> Del 
Delete Cartridge File 
> Rename 
Rename Cartridge File 

> Bank 
Cartridge Bank (1-4) 

> Dir 
MDR Files Directory 
> In 
MDR File in 
> Out 
MDR File Out 
> Del 
Delete MDR File 
> Rename 
Rename MDR File
Memory Layout
As you can see from the diagram on the facing page, there are many facets to the Memory layout of the new DX. To understand all of these types of memory, study the diagram and read the explanation below:

**Voice & Performance Memory**

This Memory block includes data for 64 Voice Memories and 32 Performance Memories, plus one System Setup Memory and two User-defined Micro Tunings.

**System Setup Memory**

System Setup Memory contains a number of basic MIDI settings, plus Master Tuning and Cartridge Bank number settings. System Setup is always retained in Internal Memory, along with the Voice & Performance Memory and the two User-defined Micro Tunings. For more information on System Setup Memory, see Section 6 of this manual.

**Micro Tuning Memory**

The DX contains eleven Micro Tunings as part of its permanent memory. In addition, two User-defined Micro Tunings are stored as part of Voice & Performance Memory. Using a RAM cartridge, it is also possible to store up to 63 Micro Tuning Memories.

**Fractional Scaling Memory**

Fractional Scaling data cannot be stored in the DX’s Internal Memory. In order to use Fractional Scaling data with Internal Voice Memories, the data must reside in a RAM (or ROM) cartridge installed in the DX’s cartridge port.

**Initialized Memory**

For those who wish to create Voice Memories or Performance Memories from scratch, the DX provides both Voice and Performance “blank Page” data as part of its permanent memory. If you want to start from ground zero (instead of working from an already-existing Voice or Performance Memory), call up the DX’s Init Voice or Init Performance data (using button 14 in Edit Mode).
Current Play/Edit Memory

Whenever you call up a Voice Memory or Performance Memory in Play Mode, you are actually sending it to a special location in the DX — the current Play/Edit Memory. As the name indicates, this is also the location where Voice or Performance data is edited. In computer terminology, this memory location is often called the Edit Buffer.

Compare/Recall Memory

When you are editing a Voice and use the Edit/Compare feature, the original Voice data is loaded into the Play/Edit Memory (so you can hear it). The edited Voice data is moved temporarily into another memory location, the Compare/Recall Memory. In computer terms, this memory location might be called the Compare Buffer. When you engage the Recall Edit function for the various Internal Memory types, you are actually recalling the last data moved to the Compare/Recall Memory.
Memory Storage Types

In addition to having a number of distinct types of memory, the new DX offers a number of ways to store these various memories. To understand how the various memory storage possibilities interact, read on.

Internal Memory

The DX's Internal Memory holds a standard Voice & Performance Memory block, which consists of the following: 64 Voice Memories, 32 Performance Memories, 1 System Setup Memory, and 2 User-defined Micro Tuning Memories. Voice & Performance Memory can also be stored in Cartridge Memory or in Disk Memory.

Cartridge Memory

A DX RAM4 cartridge can store three different types of data: Voice & Performance, Fractional Scaling, and Micro Tuning.

The RAM Voice & Performance Memory is equivalent to the Internal Voice & Performance Memory.

The RAM Fractional Scaling Memory holds up to 64 Fractional Scalings, which are tied to the 64 Voices in the DX's Internal Memory.

The RAM Micro Tuning Memory holds up to 63 Micro Tunings.

Possible RAM4 Contents

Voice & Performance Memory
- 64 Voice Memories
- 32 PERFORMANCE Memories
- 2 micro tunings
- 1 system setup

Fractional Scaling Memory

Micro Tuning Memory

Each of these kinds of Memory can be stored from cartridge to disk (FD only).
The supplied ROM cartridge holds a number of different kinds of DX memory.

ROM Cartridge

The supplied ROM cartridge contains 4 banks, which can be accessed using button 15 in Edit Mode:

### Contents of Supplied ROM Cartridge

<table>
<thead>
<tr>
<th>Bank</th>
<th>Memory Type</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Voice &amp; Performance Memory</td>
<td>64 Voice Memories&lt;br&gt;32 PERFORMANCE Memories&lt;br&gt;2 micro tunings&lt;br&gt;1 system setup</td>
</tr>
<tr>
<td>2</td>
<td>Voice &amp; Performance Memory</td>
<td>64 Voice Memories&lt;br&gt;32 PERFORMANCE Memories&lt;br&gt;2 micro tunings&lt;br&gt;1 system setup</td>
</tr>
<tr>
<td>3</td>
<td>Fractional Scaling Memory</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Micro Tuning Memory*</td>
<td>* may all be equal tempered data</td>
</tr>
</tbody>
</table>

Disk Memory (FD Only)

Disk memory can be used to store the following: Voice & Performance Memories from the DX's Internal Memory; Voice & Performance, Fractional Scaling, or Micro Tuning Memories from Cartridge Memory; and MIDI data from an external unit via the DX's MIDI ports.
Most of the basic Internal Memory Utility functions are accessed using button 14 in Edit Mode, as follows:

**Master Tune**
This sets the tuning of the DX relative to its internal A-440 reference. This setting is stored as part of the DX's System Setup Memory.

**Recall Edit**
These functions can be used to recall Voice, Performance, or Micro Tuning data from the DX's Compare/Recall Memory.

**Initialize**
These functions can be used to call up the DX's Initialized Voice or Performance Memories, if you wish to create Voice or Performance data from scratch.
Cartridge Memory Functions

RAM cartridges are useful storage centers for Voice & Performance data. In addition, they are the only storage source from which Fractional Scaling data and Micro Tuning data can be accessed for immediate use with DX Internal Voice & Performance data. To understand the basic Cartridge Utility functions, read on.

Using Cartridge Data

Except for the two User-defined Micro Tunings that are part of the DX’s Internal Voice & Performance Memory, Cartridge Memory is the only location from which Fractional Scaling and Micro Tuning data may be recalled for immediate use. Fractional Scaling data and Micro Tuning data can be stored on disk, but cannot be used directly with Internal Memory from disk: In order to interact with Internal Voice & Performance data, Fractional Scaling and Micro Tuning data must reside in a cartridge plugged into the DX’s Cartridge port. If you create Voice or Performance data that involves Cartridge Memory (for either Fractional Scaling or Micro Tuning), the DX will remind you as follows:

This symbol signifies that the indicated Voice Memory was created with Fractional Scaling, but the RAM cartridge with the necessary Fractional Scaling data is not inserted in the instrument’s cartridge port.

This symbol signifies that the indicated Performance memory was created to include Micro Tuning from a RAM cartridge, but the RAM cartridge with the necessary Micro Tuning data is not inserted in the instrument’s cartridge port.

---

LCD display indicating that required Fractional Scaling or Micro Tuning data is not available. When the needed data is supplied via a RAM cartridge, these displays disappear.
Formatting a RAM Cartridge

1. Insert an unformatted RAM cartridge in the cartridge port.

2. Press the Edit button.

3. **CARTRIDGE**
   - Press the Cartridge button (#15) until you get the LCD display for the type of formatting you desire:
     - To create a Voice & Performance cartridge, press button #15 until the "Voice & Perf." display appears.
     - To create a Fractional Scaling cartridge, press button #15 until the "Fractional SC." display appears.
     - To create a Micro tuning cartridge, press button #15 until the "Micro tuning" display appears.

4. **PLAY**
   - Once you reach the display you want, press the right cursor button.

5. **YES**
   - Now press the +1/YES button. The LCD display will ask ***Are you sure***?

6. **YES**
   - Press the +1/YES button once more.
Loading Voice & Performance Data from a RAM Cartridge

1. Insert a Voice & Performance RAM cartridge into the cartridge port.

2. Press the Edit button.

3. Press the Cartridge button (#15) to access the Cartridge Save/Load LCD display.

4. Press the right cursor.

5. Press the +1/YES button. The display will ask "Load without system?"

6. Answer by pressing either the +1/YES or the -1/NO button. The display will ask "Are you sure?"

7. Press the +1/YES button once more.

*If you answer NO, you are telling the DX to load the RAM Cartridge data with System Setup data. If you answer YES, you are telling the DX to load the RAM Cartridge without System Setup data.
Disk Memory Functions (FD Only)

The FD's disk drive is capable of storing any information that resides in the DX's Internal Memory or Cartridge Memory. In order to access this data for performance, it must be loaded into the DX's Internal or Cartridge Memory — the disk drive only operates as a storage medium.

Using and Handling Disks

The DX7 II FD uses 3.5" micro floppy disks. These disks have a Memory Protect function that is similar to that of the RAM4 cartridge:

Even though 3.5" disks are relatively sturdy, you should handle them with care when inserting them into or removing them from the DX's disk drive:
### Formatting a Disk

1. **COMPUTE** Press the Edit button.

2. **DISK** Press the Disk button (#16) to access the Disk format LCD display.

3. Insert a 3.5" disk into the disk drive slot on the left side of the instrument.

4. **YES** Press the +1/YES button. The LCD display will ask "**Are you sure?**"

5. **YES** Press the +1/YES button again. The formatting process will take about 70 seconds.

### Saving Internal Memory to Disk

1. **COMPUTE** Press the Edit button.

2. **DISK** Press the Disk button (#16) to access the Disk INT LCD display.

3. **YES** Press the +1/YES button. Then use the +1/-1 buttons to move to a blank file location.*

4. **YES** Press the right cursor button once.

5. **COMPUTE** Press and hold the Edit/Character button, and type in a name for the file you wish to save to disk.

6. **YES** Press the +1/YES button again. The display will ask "**Are you sure?**"

7. **YES** Press the +1/YES button once again.

*It is possible to store files on top of files already loaded (which will erase the original data). Make sure to select a blank file location before moving to the Save function.
**Saving Cartridge Memory to Disk**

1. **EDIT** Press the Edit button.

2. **16** Press the Disk button (16) to access the Disk CRT LCD display.

3. **+1/YES** Press the +1/YES button. Then use the +1/-1 buttons to move to a blank file location.

4. **→** Press the right cursor button once.

5. **EDIT CHARACTER** Press and hold the Edit/Character button, and type in a name for the file you wish to save to disk.

6. **+1/YES** Press the +1/YES button again. The display will ask "**Are you sure?**"

7. **+1/YES** Press the +1/YES button once again.

---

**Loading Internal Memory from Disk**

1. **EDIT** Press the Edit button.

2. **16** Press the Disk button (16) to access the Disk INT LCD display.

3. **→** Insert the disk that contains the file you wish to load.

4. **+1/YES** Press the +1/YES button.

5. **DATA ENTRY** Use the +1/-1 buttons to select the file you wish to load.

6. **→** Press the right cursor button twice. The display will ask "**Load without system?**"

7. **+1/YES** Answer by pressing either the +1/YES or the -1/NO button. The display will ask "**Are you sure?**"

8. **+1/YES** Press the +1/YES button again.

*If you answer NO, you are telling the DX to load the Internal data with System Setup data. If you answer YES, you are telling the DX to load the Internal data without System Setup data.*
Loading Cartridge Memory
from Disk

1. Press the Edit button.
2. Press the Disk button (#16) to access the Disk CRT LCD display.
3. Insert the disk that contains the file you wish to load.
4. Press the +1/YES button.
5. Use the +1/-1 buttons to select the file you wish to load.
6. Press the right cursor button twice.
7. Press the +1/YES button. The display will show the format of the RAM cartridge currently in the cartridge port, and will ask "OK?"
8. Press the +1/YES button again. The display will ask "**Are you sure?""
9. Press the +1/YES button once again.

Disk MDR

The DX7 II FD's disk drive can also be used as a MIDI Data Recorder, to record MIDI information from external instruments via the DX's MIDI ports. The DX's disk can record external MIDI data into files of up to 20K bytes. To use this MIDI record function, make the proper MIDI connections and follow the prompts in the DX's LCD display.
Section 6

MIDI Functions
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   77 Button 31 LCD Displays
   78 Button 32 LCD Displays

79 System Setup
   79 Channel Messages
   79 Note On/Off
   79 Program Change Transmission
   79 Local On/Off
   80 Immediate MIDI Program Change Out
   80 Control Number
   81 Other System Setup Parameters

81 MIDI Data Communications
   81 MIDI Device Number
   81 Receive Block
   81 MIDI Out
MIDI Buttons

All of the MIDI functions and parameters are adjusted via the LCD displays called up using buttons 31 ~ 32. All of the these buttons call up multiple LCD displays. The charts below show all of the displays called up by each button, and provide a complete list of parameters and value ranges. In some cases, the first LCD display in a chart may not be the first one you see. You may need to cycle through the displays (by pressing the button repeatedly) until you reach the desired LCD display.

Button 31 LCD Displays

<table>
<thead>
<tr>
<th>MIDI</th>
<th>&gt;Note on/off</th>
<th>&gt;PC trns mode</th>
<th>&gt;Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Note Selection (all, odd, even)</td>
<td>Program Change Transmit Mode (off, normal, programmable)</td>
<td>Local Mode (off, on)</td>
</tr>
<tr>
<td></td>
<td>Program sw: [-] [-] [+ 1] [ 2] [ 3]</td>
<td>Program Number to Send (001 - 128)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>change trns #: --- ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Channel &gt;Trns ch Rcv ch &gt;A &gt;B &gt;Omni</td>
<td>Transmit Channel (1 - 16, off)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>messages 1 1 1 1 1</td>
<td>Receive Channel A (1 - 16, off)</td>
<td>Receive Channel B (1 - 16, off)</td>
</tr>
<tr>
<td></td>
<td>Control MIDI IN control &gt;A &gt;B CS &gt;1 &gt;2</td>
<td>Omni Mode (off, on)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>number 11 12 8 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See more details about each display in the chart above.
Button 32 LCD Displays

- Device number
  - Device Number (1 - 16, off)
- Receive block
  - Receive Block (1 - 32, 33 - 64)
- Edit buf
  - Transmit Voice Edit Buffer
- 1-32
  - Transmit Voice Data 1-32
- 33-64
  - Transmit Voice Data 33-64
- Edit buf
  - Transmit Performance Edit Buffer
- INT
  - Transmit Internal Performance Memory
- Edit buf
  - Transmit Micro Tuning Edit Buffer
- INT
  - Transmit Internal Micro Tuning Memory
- CRT
  - Transmit Cartridge Micro Tuning Memory
- System setup
  - Transmit System Setup
Since the use of many basic MIDI functions might depend on the contents of a specific set of Voice & Performance data, the new DX provides a special memory location, System Setup Memory, to store basic MIDI parameters and other data in conjunction with a Voice & Performance Memory block. This System Setup Memory contains settings for the following parameters:

**Channel Messages**

This LCD display allows you to set the DX’s MIDI transmission channel, MIDI receive channels (for Voice A and Voice B in Performance Mode), and MIDI Omni Mode reception (on or off — if on, the receive channel settings are inactive).

**Note On/Off**

This parameter is usually set to off, meaning that all keys played produce a note. Other settings (Odd, Even) can be used in conjunction with other MIDI instruments to produce a variety of interesting effects.

**Program Change Transmission**

If the new DX is connected to another MIDI instrument, various levels of MIDI communication are possible. The MIDI Program Change Mode determines how the DX will relate to an external MIDI instrument: If Mode is set to Off, program changes on the DX will have no effect on the external unit; if Mode is set to Normal, a program change on the DX will send the same Program number to the external unit; if Mode is set to Programmable, the program changes sent will be those programmed in the Program Change Trans LCD display.

**Local On/Off**

This parameter allows you to turn the DX’s internal synthesizer on and off (as part of a MIDI system). If Local is set to Off, notes played on the DX keyboard will not engage the DX’s internal sound mechanism.
Immediate MIDI Program Change Out

If you wish to send a quick MIDI Program Change Message to an external MIDI unit, use the following procedure:

In any of the Play Modes (Single, Dual, Split, or Performance), press and hold the button of the current Play Mode (the one with the lit LED). You will see this LCD display:

Now, while still holding the Play Mode button, type in the program change number you desire (1~128) using the 1~10 number buttons (1 through 0 character buttons). All three positions in the LCD must be filled: for example, to send program #1, type in 001.

Once you have typed in the third number, the program change you have typed in will be sent over MIDI to the instrument connected to your DX7 II.

Control Number

These parameters set the MIDI Controller numbers for external MIDI Controllers that may interact with the DX. The function of these Controllers is set via button 26 in Edit Mode.

In addition, these parameters set the MIDI function of CS 1 and CS 2 (as Controllers of external MIDI instruments), and also set the Controller number of an external MIDI Controller that can be used to control the Voice parameters connected to CS 1 and CS 2 in Performance Mode. If Controller values of 5 ~ 8 are selected, only MIDI transmission is possible.
Other System Setup Parameters

In addition to all of these MIDI settings, the System Setup Memory stores the Master Tune setting (button 14) and the Cartridge Bank setting (button 15). Whenever you load Voice & Performance data from Cartridge Memory or Disk Memory to Internal Memory, you have the option of loading with or without the System Setup stored with the Voice & Performance data.

<table>
<thead>
<tr>
<th>System Setup Data</th>
<th>Button</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Tuning</td>
<td>14</td>
</tr>
<tr>
<td>Cartridge Bank Number</td>
<td>15</td>
</tr>
<tr>
<td>MIDI Trns ch, Rcv ch, Omni Mode</td>
<td>31</td>
</tr>
<tr>
<td>Local</td>
<td>31</td>
</tr>
<tr>
<td>Control Number</td>
<td>31</td>
</tr>
<tr>
<td>Note on/off</td>
<td>31</td>
</tr>
<tr>
<td>PC trans mode</td>
<td>31</td>
</tr>
<tr>
<td>Program change out</td>
<td>31</td>
</tr>
</tbody>
</table>

If you use the new DX as part of a MIDI system, there are a number of advanced MIDI functions available for your use:

MIDI Device Number

If the DX is connected to another Yamaha product, this parameter must be used to set a Yamaha System Exclusive Device Number for MIDI System Exclusive data reception or transmission. This parameter is also used when the FD’s disk drive is used as a MIDI data recorder.

Receive Block

This parameter allows you to set the Memory Reception block as either Internal Voices 1 ~ 32 or Internal Voices 33 ~ 64.

MIDI Out

These LCD displays allow you to transmit various kinds of MIDI System Exclusive data from the DX’s Internal Memory to an external instrument. Obviously, these functions are useful only if you are transmitting data to another instrument (such as another DX7 II) that is capable of understanding and using it.
Appendix 1: Supplemental Information

As mentioned at the outset, this manual has not attempted to cover all of the functions of the new DX in exhaustive detail. To do so would have required a manual of large scale and density, one in which it would have been very difficult to locate specific information needed to begin using the DX.

For continuing information concerning the DX7 II FD/D, consult AfterTouch, the official publication of the Yamaha Users Group. Many advanced functions will be discussed in its pages in the coming months. There will also be information concerning the availability of other material concerning more advanced applications. Some areas that will be covered in AfterTouch or in supplemental booklets include the following:

- Quick Reference Guide
- Memory Management
- Fractional Scaling
- Micro Tuning (Basic)
- Micro Tuning (Advanced)
- FM Voice Programming (Basic)
- FM Voice Programming (Advanced)
- Real-Time Parameter Changes
- Advanced Controller Usage
- Advanced MIDI Applications
- MIDI Technical Data & Charts

To receive a free copy of AfterTouch every month, send your request to Aftertouch, P.O. Box 2338, Northridge, CA 91323-2338. On your letter or postcard, be sure to indicate that you are the owner of a DX7 II FD/D.
Many of the basic functions of the DX7 II FD/D are the same as those of the original DX7. Since there is a wealth of material available on the operation of the original DX7, this manual has focused on the new functions and features. For more information on the parameters and features that the new DX shares with the original DX7, consult the following:


FM Theory and Application, by Dr. John Chowning and David Bristow; published by Yamaha Music Foundation; 1986.

How to Understand and Program the Yamaha DX7, by Lorenz M. Rychner; published by Alexander Publishing; 1985.


## Appendix 3: MIDI Implementation Chart

[ Digital Programmable Algorithm Synthesizer ]

**Model DX7-2**  
**MIDI Implementation Chart**  
**Version:** 1.0  
**Date:** 11/21, 1986

<table>
<thead>
<tr>
<th>Function ...</th>
<th>Transmitted</th>
<th>Recognized</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Default Channel Changed</td>
<td>1 - 16</td>
<td>1 - 16</td>
<td>memorized</td>
</tr>
<tr>
<td>Mode Default Messages Altered</td>
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**Notes:**  
*1 = transmit if transmit channel is not off.  
*2 = receive if receive channel is not off.  
*3 = transmit/receive if device number is not off.

**Mode 1:** OMNI ON, POLY  
**Mode 2:** OMNI ON, MONO  
**Mode 3:** OMNI OFF, POLY  
**Mode 4:** OMNI OFF, MONO

o : Yes  
x : No
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