

DDO-5

DYNAMIC DIGITAL DRUMS **OWNER'S MANUAL**

KORG[®]

DDD-5 DYNAMIC DIGITAL DRUMS

Thank you and congratulations on your choice of the KORG DDD-5 Dynamic Digital Drums. To obtain optimum performance from this advanced device, please read this manual carefully.

MAIN FEATURES OF THE DDD-5

1. PATTERNS AND SONGS

The DDD-5 creates drum parts in two ways: Patterns (short rhythmic sequences which are played repeatedly) or Songs (sequences of Patterns connected in a selected order).

- Preset patterns are permanently stored in the DDD-5's internal ROM (Read Only Memory). These patterns are for immediate use, and enable you to play a variety of useful drum rhythms, even if you have never before used a drum machine. In addition, up to 100 of your own patterns can be created and stored in the DDD-5's internal RAM (Random Access Memory). Patterns can be up to 99 bars in length, with a time signature from 1/32 to 8/4. Patterns can be recorded in two ways: (1) Real Time recording lets you record patterns by playing the instrument keys while listening to a metronome. This enables you to hear exactly how the pattern builds up while you play. You can add automatic flams and rolls and even record in real time from an external MIDI keyboard. (2) Step record lets you record a pattern one note at a time, at a pre-selected beat length from a quarter-note up to a 1/96th note. This enables you to record patterns with absolutely perfect timing, or patterns that are too complex or fast to record in Real Time. Whichever recording mode you use, you can easily erase mistakes or modify the pattern to exactly suit your music.

- Songs are sequences for patterns connected in a selected order. When used in a song, a pattern is called a "part." Parts can also contain tempo changes and repeats. You can even assign a whole song to a part (this lets you create a sequence of songs for an entire performance). A song can contain up to 99 parts. The DDD-5 also features "Preset songs": songs that you can create "live"; these are described in the next paragraph.

2. TWO OPERATING MODES

The DDD-5 has two operating modes. When you change modes, you actually change the DDD-5's detachable front panel, which indicates key functions in the mode you have selected.

- In the PROGRAMMABLE MODE, you can create your own patterns and songs. You can also alter instrument voices and set MIDI functions.
- In the PRESET MODE, which is ideal for live performance, you can actually create songs in real time (i.e., while you play) by selecting a basic rhythm then adding an intro, fill-ins and an ending, at the touch of a button (or even using a foot switch, if you're playing another instrument at the same time). The PRESET MODE features 24 different preset songs, plus eight COMBINATIONS (similar to preset songs, but with two rhythm patterns and two fill-in patterns).

3. NATURAL DRUM SOUNDS

The DDD-5's contains 29 authentic drum, percussion and bass voices, digitally recorded and stored in its internal ROM (Read Only Memory). KORG ROM Voice cards can be used, to add up to 16 more voices. Sounds are freely assigned to the seven instrument keys, which can be switched to two different instrument groups (UPPER and LOWER), providing an "instrument set" of 14 instrument voices.

The DDD-5 can store six different instrument sets. Each voice in an instrument set can have its tuning, level and decay adjusted to create new voices. The instrument keys are touch sensitive, allowing you to control the volume of each note by the strength of instrument key touch. The DDD-5's output is stereo, and each voice can be panned to one of seven stereo positions.

4. MIDI COMPATIBILITY

The DDD-5 is of course fully compatible with MIDI (Musical Instrument Digital interface) which enables it to control or be controlled by other MIDI drum machines, sequencers, or keyboards.

5. SAVING DATA

You can save the DDD-5's entire memory data (patterns, songs, preset songs, combinations and instru-

ment sets) in a single operation. Three types of storage are possible: normal cassette tape, KORG RAM card, or MIDI storage device (such as the KORG SQD-1 MIDI Recorder, which utilizes a Quick Disk for data storage). In this way you can build an expanding library of drum data which can quickly be loaded into the DDD-5 at any time.

6. CARD OPERATIONS

Four types of cards can be used to expand the power of the DDD-5. ROM (Read Only Memory) Voice cards let you add a wide range of drum and percussion sounds. ROM Pattern cards provide more pattern data, in a variety of styles. ROM Pattern/Voice cards contain pattern data, plus voice data to create just the right instrument voices for each pattern. RAM (Random Access Memory) cards allow you to store your own pattern, song and instrument sets data.

7. DISPLAYS

With the DDD-5, you always know what's happening. A clear LCD (Liquid Crystal Display) keeps you informed as to the current status of the DDD-5. A number of red LED's (Light Emitting Diodes) indicate which instrument group is selected, whether the DDD-5 is recording or playing, the current tempo and the current time signature.

IMPORTANT PRECAUTIONS

LOCATION

Do not use your DDD-5 for extended periods of time in environments where it is exposed to:

- Direct sunlight
- Extremes of temperature or humidity
- Sand or dust

POWER SUPPLY

Use only with rated AC voltage. If you will be using your DDD-5 in an area with a different voltage, be sure to use the appropriate voltage convertor.

To avoid noise or degraded sound quality, do not use the same AC outlet as other equipment, or extension cords shared by other equipment.

INTERFERENCE

The DDD-5 uses microcomputer circuitry, and is therefore subject to interference from nearby electrical devices such as fluorescent lamps, electric motors, etc. if operation becomes erratic or unpredictable, or if there is no response when you press a button on the DDD-5, then interference may be the cause. Try turning off the DDD-5, then turn it on again. This will reset (initialize) the microcomputer circuits.

HANDLE GENTLY

Don't drop the DDD-5 or use more force than is necessary to operate switches and keys. Always change the front panel with care, and keep the panel your are not using in a safe place.

CLEANING EXTERIOR SURFACES

Wipe the exterior lightly using a clean, dry soft cloth to remove dust or dirt. Never use strong solvents like benzene, paint thinner, rubbing compound or flammable polishing agents.

KEEP THIS MANUAL

Once you've mastered operation of the DDD-5, you'll still want to refer to this manual from time to time. Keep this manual in a safe place for future reference.

MEMORY BACKUP BATTERY

The DDD-5 is equipped with a backup battery so that even when power is turned off, patterns, songs and instrument sets will be retained in its internal memory. The battery has a life of about 5 years, after which time it should be replaced. Do not attempt to replace the battery yourself. Consult your KORG dealer for battery replacement.

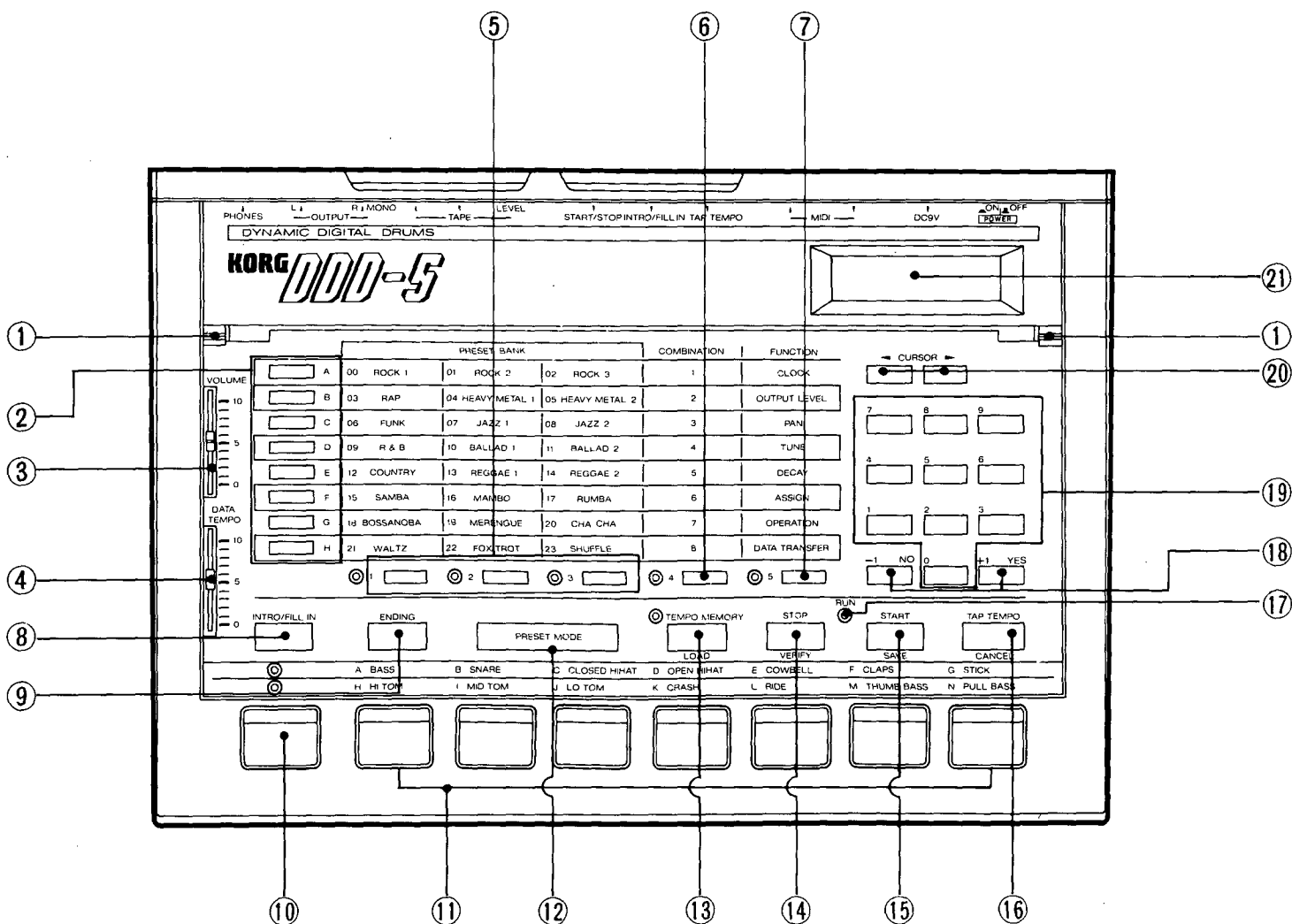
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FEATURES AND FUNCTIONS

NOTE: The DDD-5 has two detachable front panels. Panel changing is described in section 3 of the GETTING STARTED chapter.

1. FRONT PANEL: PRESET MODE



1. PANEL CLIPS.

For securing the detachable PRESET MODE front panel.

2. RESET/COMBINATION/FUNCTION MODE KEYS, A — H.

These keys have three functions:

- Selection of preset songs (after pressing one of PRESET KEYS 1 — 3).
- Selection of combinations (after pressing key 4: the COMBINATION key).
- Selection of functions in the FUNCTION mode (selected by pressing key 5: the FUNCTION mode key). Key H is multi-purpose (pressing it more than once calls other functions).

3. VOLUME SLIDER.

Adjusts the overall output level.

4. DATA/TEMPO SLIDER.

This slider has two functions:

- Adjusting the play tempo.
- Setting function values.

5. PRESET KEYS 1 — 3.

For selection of preset songs (in conjunction with PRESET keys A — H).

- A red LED to the left of each PRESET key lights when the key is pressed, and flashes to indicate the current tempo of the DDD-5.

NOTE: During play of a preset song or combination, these LED's (as well as the LED's next to keys 4 and 5) flash in sequence to indicate each beat in a bar.

6. COMBINATION KEY (key 4).

For selection of combinations (in conjunction with PRESET keys A — H).

- A red LED to the left of this key lights when this key is pressed, and flashes to indicate the current tempo of the DDD-5.

7. FUNCTION MODE KEY (key 5).

For selection of the FUNCTION mode.

- A red LED to the left of this key lights when this key is pressed, and flashes to indicate quarter-notes at the current tempo of the DDD-5.

8. INTRO/FILL-IN KEY.

This key has two functions:

- After selecting a preset song or combination, press this key to start play with the INTRO pattern. When play starts, the RUN LED will light.
- During play, press this key to add a FILL-IN pattern.

9. ENDING KEY.

During play of a preset song or combination, press this key to add an ENDING pattern then stop play. When play stops, the RUN LED will go out.

10. INSTRUMENT GROUP KEY.

Switches the INSTRUMENT keys between UPPER and LOWER INSTRUMENT GROUP, enabling selection of two different sets of seven instrument voices.

- Two red LED's indicate which INSTRUMENT GROUP has been selected.

11. INSTRUMENT KEYS.

The instrument keys let you play the DDD-5's instruments, and respond to the strength of touch. In the UPPER INSTRUMENT GROUP, these keys are referred to as keys A thru G. In the LOWER INSTRUMENT GROUP, these keys are referred to as keys H thru N. The instrument names written above the keys refer to instruments in the "default" instrument set. Other instruments may be assigned to these keys.

12. MODE NAME (PRESET MODE).

13. TEMPO MEMORY/LOAD KEY.

This key has two functions:

- TEMPO MEMORY: When turned ON, preset songs or combinations will be played at their pre-programmed tempo setting. When turned OFF, the play tempo is set by the DATA/TEMPO slider. A red LED to the left of this key lights when the tempo memory function is turned ON.
- LOAD: When the DATA TRANSFER function is selected, this key lets you select the LOAD function.

14. STOP/VERIFY KEY.

This key has two functions:

- STOP: When pressed during play of a preset song or combination, play is instantly stopped.
- VERIFY: When the DATA TRANSFER function is selected, this key lets you select the VERIFY function.

15. START/SAVE KEY.

This key has two functions:

- START: After selection of a preset song or combination, pressing this key starts play. When play starts, the RUN LED will light.
- SAVE: When the DATA TRANSFER function is selected, this key lets you select the SAVE function.

16. TAP TEMPO/CANCEL KEY.

This key has two functions:

- TAP TEMPO: When you press this key twice, the DDD-5 recognizes the time interval between taps as the length of a quarter-note, and sets the tempo accordingly.
- CANCEL: During a LOAD, SAVE or VERIFY operation, pressing this key instantly cancels the operation.

17. RUN LED.

This red LED will light during play of a preset song or combination.

18. — 1/NO, + 1/yes keys.

For entry of numeric data, or NO/YES operations. Usually, pressing one of these keys once will cause a single unit change; holding one of these keys down will cause a continuous data change.

19. NUMERIC KEY PAD.

- For entry of numeric data, refer to the number printed on the left above each numeric keys.

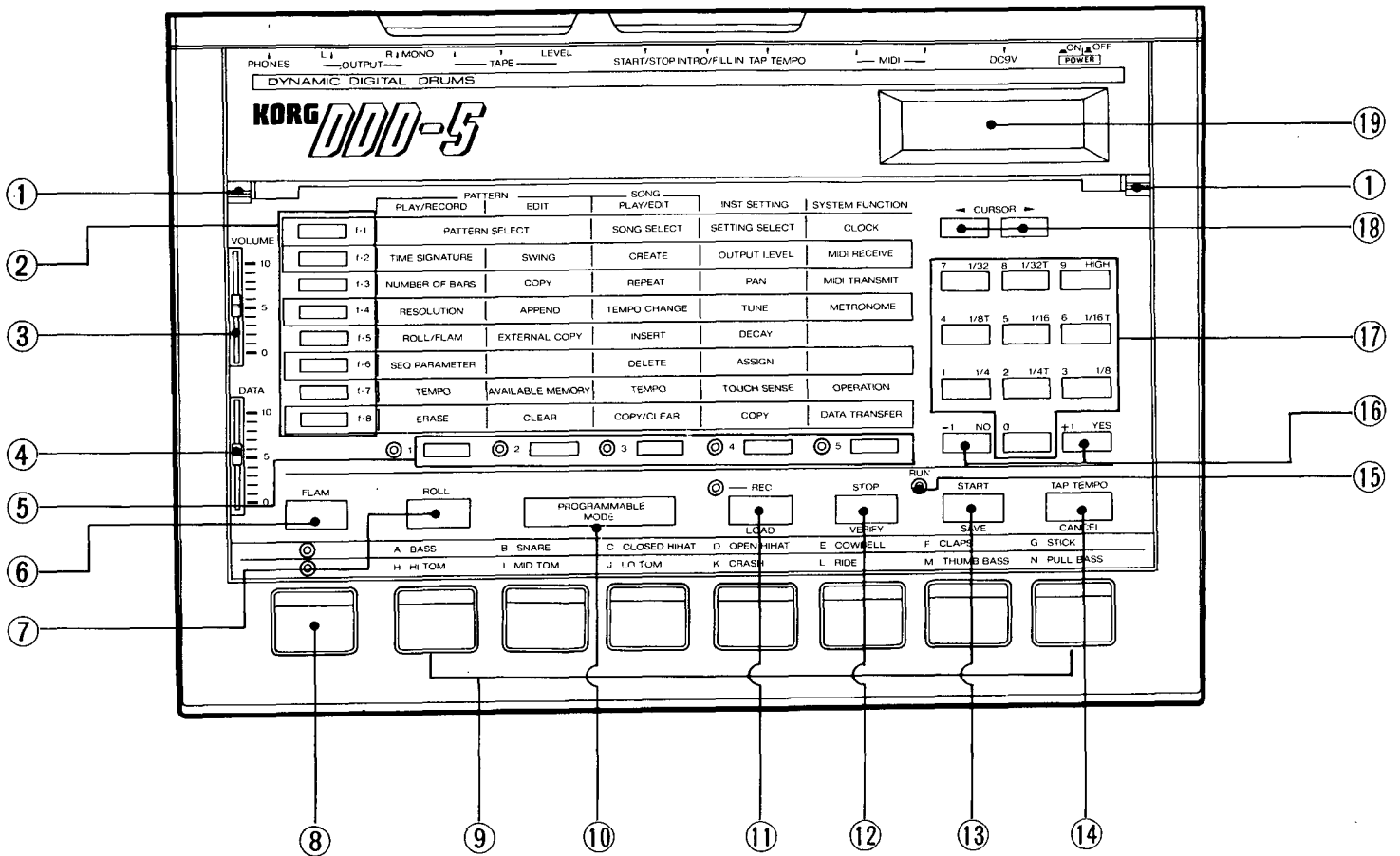
20. CURSOR KEYS.

Moves the cursor on the LCD to the left or right, according to the direction of the arrow above the key.

21. LCD (LIQUID CRYSTAL DISPLAY) PANEL.

Shows the current status of the DDD-5: function, preset song name, tempo, etc.

2. FRONT PANEL: PROGRAMMABLE MODE



1. PANEL CLIPS.

For securing the detachable PROGRAMMABLE MODE front panel.

2. FUNCTION KEYS.

For selection of functions within a selected mode (after pressing one of the MODE keys). Some function keys are multi-purpose (pressing them more than once calls other functions).

3. VOLUME SLIDER.

Adjusts the overall output level.

4. DATA SLIDER.

This slider has two functions:

- Setting function values.
- During Real Time pattern record, setting the metronome level.

5. MODE KEYS 1 — 5.

For selection of modes, as follows:

MODE KEY 1: Selects PATTERN PLAY/RECORD mode.

MODE KEY 2: Selects PATTERN EDIT mode.

MODE KEY 3: Selects SONG PLAY/EDIT mode.

MODE KEY 4: Selects INSTRUMENT SETTING mode.

MODE KEY 5: Selects SYSTEM FUNCTION mode.

- A red LED to the left of each key lights when the key is pressed, and flashes to indicate the current tempo of the DDD-5. During play of a pattern or song, these LED's flash in sequence to indicate each beat in a bar.

6. FLAM KEY.

Holding down this key while playing an instrument key causes a flam (double hit) to sound.

7. ROLL KEY.

Holding down this key while playing an instrument key causes a roll (continuous hits) to sound.

8. INSTRUMENT GROUP KEY.

Switches the instrument keys between UPPER and LOWER INSTRUMENT GROUP, enabling selection of two different sets of seven instrument voices.

- Two red LED's indicate which INSTRUMENT GROUP has been selected.

9. INSTRUMENT KEYS.

The instrument keys let you play the DDD-5's instruments, and respond to the strength of touch. In the UPPER INSTRUMENT GROUP, these keys are referred to as keys A thru G. In the LOWER INSTRUMENT GROUP, these keys are referred to as keys H thru N. The instrument names written above the keys refer to instruments in the "default" instrument set. Other instruments may be assigned to these keys.

10. MODE NAME (PROGRAMMABLE MODE).

11. RECORD/LOAD KEY.

This key has three functions:

- REAL TIME RECORD: To record a pattern in real time record, hold down this key and press the START key.
- STEP RECORD: To record a pattern in step record, hold down this key and press the STOP key.

- LOAD: When the DATA TRANSFER function is selected, this key lets you select the LOAD function.
- A red LED to the left of this key lights when the RECORD function is turned ON.

12. STOP/VERIFY KEY.

This key has two functions:

- STOP: When pressed during play of a pattern or song, play is instantly stopped.
- VERIFY: When the DATA TRANSFER function is selected, this key lets you select the VERIFY function.

13. START/SAVE KEY.

This key has two functions:

- START: After selection of a pattern or song, pressing this key starts play. When play starts, the RUN LED will light.
- SAVE: When the DATA TRANSFER function is selected, this key lets you select the SAVE function.

14. TAP TEMPO/CANCEL KEY.

This key has two functions:

- TAP TEMPO: When you press this key twice, the DDD-5 recognizes the time interval between taps as the length of a quarter-note, and sets the tempo accordingly.
- CANCEL: During a LOAD, SAVE or VERIFY operation, pressing this key instantly cancels the operation.

15. RUN LED.

This red LED will light during play of a pattern or song.

- If the STOP key is pressed once during play, this LED will flash. Play can continue from the point at which it was stopped, by pressing the START key.
- If the STOP key is pressed twice during play, this LED will go out. Play will start from the beginning of the pattern or song, the next time START is pressed.

16. - 1/NO, + 1/YES keys.

For entry of numeric data, or NO/YES operations.

17. NUMERIC KEY PAD.

This key pad has two types of function:

- For entry of numeric data, refer to the number printed on the left above each numeric key.
- For setting of BEAT LENGTH, RESOLUTION and METRONOME functions, refer to the fractions printed on the right above each numeric key.

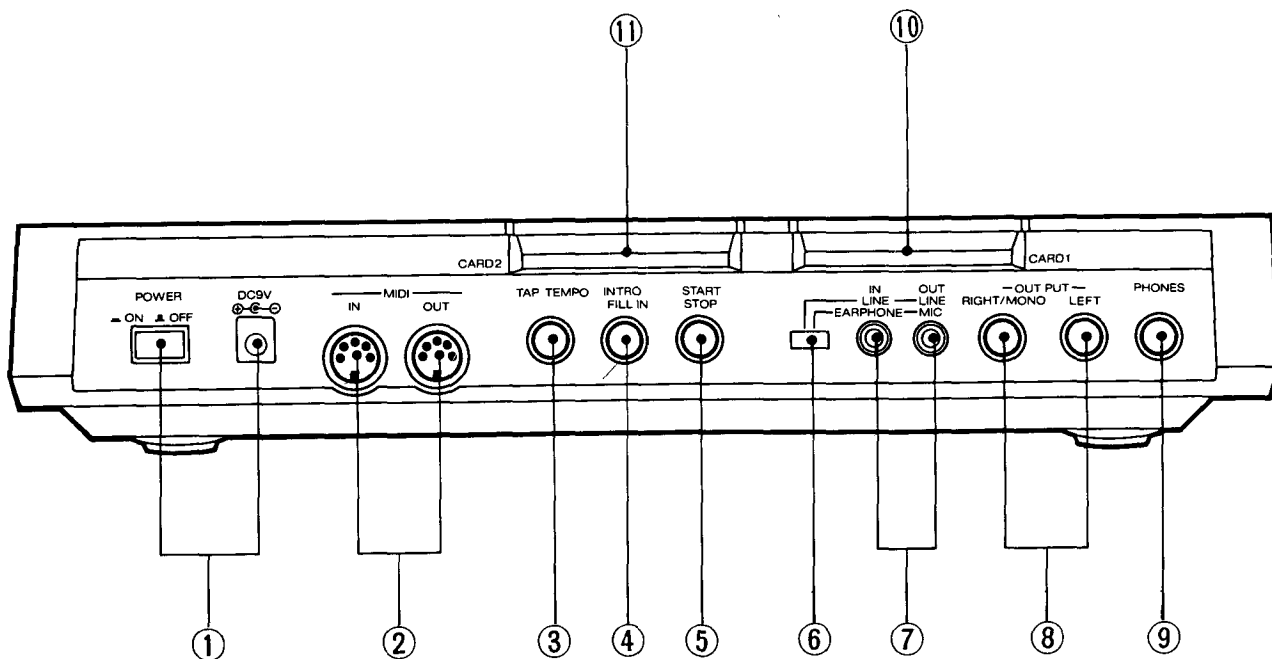
18. CURSOR KEYS.

Moves the cursor on the LCD to the left or right, according to the direction of the arrow above the key.

19. LCD (LIQUID CRYSTAL DISPLAY) PANEL.

Shows the current status of the DDD-5: function, pattern, song, tempo, etc.

3. REAR PANEL/CONNECTIONS



1. POWER SWITCH.

2. MIDI IN/OUT TERMINALS.

For connection to other drum machines, or MIDI sequencers computers, synthesizers or drum pads.

3. TAP TEMPO.

For connection of a footswitch such as the KORG PS-1, to operate the TAP TEMPO function.

4. INTRO/FILL-IN.

For connection of a footswitch such as the KORG PS-1, to operate the INTRO/FILL-IN function in the PRESET mode.

- The KORG PS-2 double footswitch is ideal as it enables you to control both START/STOP and INTRO/FILL-IN in the PRESET mode.

5. START/STOP.

For connection of a footswitch such as the KORG PS-1, to operate the START/STOP function in play or record.

6. TAPE LEVEL SWITCH.

Sets the DDD-5's TAPE IN/OUT channels to LINE IN/OUT or EARPHONE/MIC, when saving data to cassette tape, or synchronizing the DDD-5 to a multitrack recorder.

7. TAPE IN/OUT JACKS.

For connecting the DDD-5 to a cassette tape recorder when saving data to cassette tape, or to a multitrack recorder when synchronizing the DDD-5 to a multitrack recording.

8. OUTPUT JACKS.

For monitoring the DDD-5's output. For stereo output connect both the L and R/MONO outputs to an amplifier or mixer. For mono output, connect the R/MONO output to an amplifier.

9. PHONES JACK.

For monitoring via stereo headphones.

10. CARD SLOT 1.

For insertion of KORG ROM or RAM card. ROM cards contain pre-programmed pattern data, pattern data plus voice data, or voice data only. RAM cards let you save (store) your own pattern and song data.

11. CARD SLOT 2.

For insertion of KORG ROM Voice cards ONLY.

GETTING STARTED

NOTE: In this chapter, and all following chapters, if any key has two functions, only the function relevant to the operation that is being described will be mentioned. For example, the START/SAVE key will be referred to simply as START when it is being used to start play, and as SAVE when it is being used to select the SAVE DATA operation. Of course, the name of each key also depends on the current mode of the DDD-5 (PRESET or PROGRAMMABLE mode).

1. POWER ON

After connecting the DDD-5 as shown in the REAR PANEL/CONNECTIONS section, turn on the power. (It's better to turn on the DDD-5's power first, then the power of your mixer — if you're using one — and finally the power of your amplifier. This will avoid any "power bumps" which could damage your speakers).

When shipped, the DDD-5 is set to the PROGRAMMABLE mode, so when you turn on the power, you'll see the following LCD display:

```
K O R G   D D D - 5
P R O G R A M M A B L E
```

After a few seconds, the LCD will display pattern 00. We'll explain this display later in this manual.

```
P T N   S E L E C T   I : 0
P 0 0 - 0 1   : * P T N - 0 0 *
```

You can now play the DDD-5's instruments.

NOTE: If you want to hear your DDD-5 play a pattern immediately, skip to section 2 of the next chapter (PLAY OPERATIONS).

2. MANUAL PLAY

Play the instruments by tapping the instrument keys. Adjust the volume by using the VOLUME slider. You'll notice that the volume of each key also responds to the way you play. The harder you hit a key, the louder the sound level becomes.

FLAMS AND ROLLS

Hold down the FLAM key, then play the instrument keys. Each time you press a key, you'll hear two hits very close together. Drummers create flams (especially on the Snare Drum or Tom Toms) by hitting the drum with both sticks. The time gap between hits (FLAM time) adds real power to the sound.

Next, hold down the ROLL key, then play the instrument keys. You'll hear a continuous "rapid-fire" series of hits, as long as you hold down both the ROLL key and an instrument key. Drummers usually play rolls on a Snare Drum, though they can create interesting effects when played on other instruments.

On the DDD-5, you can adjust the FLAM time and the ROLL resolution (see f-5 ROLL/FLAM in section 2 of the PATTERN RECORD chapter).

CHANGING INSTRUMENT GROUPS

Press the INSTRUMENT GROUP key at the left of the instrument keys. This switches the instrument keys between two instrument groups, UPPER and LOWER.

NOTE: The two instrument groups on the DDD-5, when shipped, contain the "default" set of instruments. Later, we'll explain how you can select other instrument sets, and how you can assign other instrument voices to the instrument keys.

UPPER INSTRUMENT GROUP

In the UPPER INSTRUMENT GROUP (indicated by the upper of the two LED's above the INSTRUMENT GROUP key) the instrument keys will produce the voices named in the upper of the two rows of names above the instrument keys. These are:

BASS	Bass Drum
SNARE	Snare Drum
CLOSED HIHAT	Closed HiHat (pedal down)
OPEN HIHAT	Open HiHat (pedal up)
COWBELL	Cowbell
CLAPS	Handclaps
STICK	Drumsticks tapped together

LOWER INSTRUMENT GROUP

In the LOWER INSTRUMENT GROUP (indicated by the lower of the two LED's above the INSTRUMENT GROUP key) the instrument keys will produce the voices named in the lower of the two rows of names above the instrument keys. These are:

HI TOM	Tom Tom (high tuning)
MID TOM	Tom Tom (middle tuning)
LO TOM	Tom Tom (low tuning)
CRASH	Crash cymbal
RIDE	Ride cymbal
THUMB BASS	Bass guitar (thumb hit note "A")
PULL BASS	Bass guitar (pulled note "A")

NOTE: The two bass guitar voices may be tuned to pitches other than A (see f-4 TUNE in section 2 of the INSTRUMENT SETTING chapter). In general, the tuning, decay length and level of all instrument voices can be altered in the INSTRUMENT SETTING mode.

3. CHANGING MODES

The DDD-5 functions in two modes, the PRESET and PROGRAMMABLE modes. These are described in the MAIN FEATURES OF THE DDD-5 section at the beginning of this manual.

The mode that the DDD-5 is set to affects its entire operation, so before describing any other operations, we'll show you how to change modes. This operation can be executed from either the PRESET mode or the PROGRAMMABLE mode. The same keys are used for this operation, but they will have different key names according to the current mode of the DDD-5.

- (1) Select the OPERATION function by pressing MODE key 5, then f-7 (if the current mode is PROGRAMMABLE mode) or the FUNCTION MODE key then PRESET key G (if the current mode is PRESET mode).

The LCD will show

```
CHANGE OPERATION
      Sure ( Y / N ) ?
```

- (2) Press YES to execute the CHANGE OPERATION function. (You can cancel this operation by pressing NO, if you do not wish to change mode). The DDD-5 will now be in the other of its two operating modes. The LCD will show preset song 00 (in the PRESET mode) or pattern 00 (in the PROGRAMMABLE mode). We'll illustrate these displays later in this manual.

- (3) Once you've changed the mode, you MUST remember to change the detachable front panel, because when a new mode is selected, almost all the DDD-5's controls will have new functions. The appropriate front panel will indicate what these new functions are.

Remove the currently installed panel by pushing up the panel clips (which are holding the upper corners of the panel) and lifting out the panel by its upper edge.

Insert the new panel by sliding its lower edge into place and firmly pressing the upper corners so that the panel clips click into position, holding the panel securely in place.

NOTE: The DDD-5's operating mode may also be changed using the SYSTEM RESET operation (see the SYSTEM RESET chapter). This operation, however, resets the entire memory contents of the DDD-5, and should be used with caution. All patterns, songs, preset songs, combinations and instrument sets will be returned to their preset conditions.

PLAY OPERATIONS

1. OVERVIEW

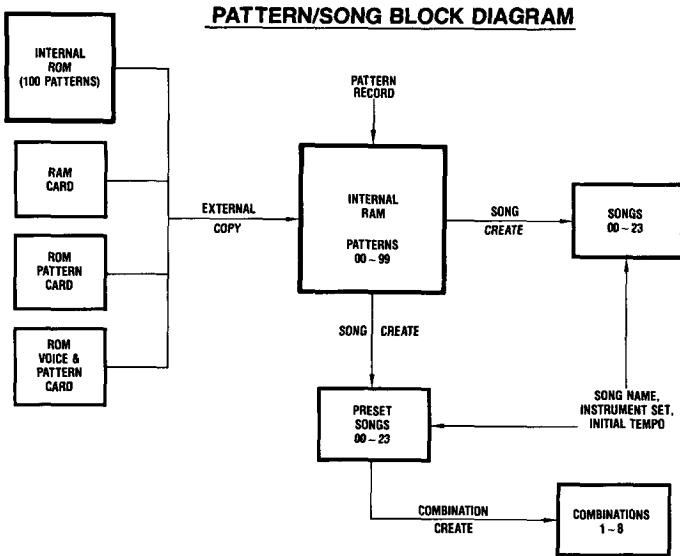
On the DDD-5, four types of drum parts may be played: PATTERNS, SONGS, PRESET SONGS and COMBINATIONS. Before or during play of all four types of drum part you can alter the playback tempo. Tempo can also be memorized for each SONG (see f-7 TEMPO in section 2 of the SONG CREATE/EDIT chapter) and for each PRESET SONG and COMBINATION (see section 2 of the PRESET MODE OPERATIONS chapter). Also during play, you can select another drum part of the same type (i.e., if you are playing a pattern, you can select another pattern). The new drum part will start playing at the next bar.

- A PATTERN is a group of beats which form a single rhythm. Pattern playback is executed in the PROGRAMMABLE mode. When you play a pattern, it is played repeatedly until you stop play. You can then play the pattern again from the beginning, or continue play from where you stopped. Pattern play can also begin from a selected bar.
- A SONG is a group of patterns connected to form a rhythm accompaniment for a complete song. You can decide exactly how the patterns are to be allocated to different parts of the song (intro, verse, chorus, solo, etc.) and how many times they are played. A song can contain tempo changes and repeats, and you can even insert one song into another song. Song playback is executed in the PROGRAMMABLE mode. The entire song is played (once only) by pressing START. You can also stop playback of the song at any time, then play again from the beginning, or continue play from where you stopped. Song play can also begin from a selected bar.

- A PRESET SONG is created by selecting four patterns: an INTRO pattern, a RHYTHM pattern, a FILL-IN pattern and an ENDING pattern. Preset song playback is executed in the PRESET mode. When you press START, the RHYTHM pattern will play continuously (like pattern play in the PROGRAMMABLE mode). Play can also start with the INTRO pattern, then switch automatically to the RHYTHM pattern. At any time, you can add the FILL-IN pattern, which will play once, then return to the RHYTHM pattern. You can stop play instantly, or stop play with the ENDING pattern. During play, you can select another preset song. The new preset song's RHYTHM pattern will start playing at the next bar. Further options include repeat play of the FILL-IN or ENDING pattern.
- A COMBINATION is similar to a preset song, but with more options. Two RHYTHM patterns (A and B) and two FILL-IN patterns (A and B) are provided. When you select a FILL-IN pattern, you have the option of returning to the current RHYTHM pattern or starting play of the second RHYTHM pattern. For example, you might use RHYTHM pattern A as the basic pattern for a verse, and RHYTHM pattern B as the basic pattern for a chorus. COMBINATION playback is executed in the PRESET mode.

NOTE: All patterns, songs, preset songs and combinations can be returned to their preset conditions using the SYSTEM RESET operation and selecting the PRESET mode (see the SYSTEM RESET chapter). This operation should be used with caution, as it erases all data that you have programmed into the DDD-5.

The following block diagram shows the relationship between PATTERNS, SONGS, PRESET SONGS and COMBINATIONS on the DDD-5.



For play, patterns must be stored in the DDD-5's internal RAM (Random Access Memory) which can contain up to 100 patterns (numbered 00 — 99). Patterns may be created directly in the RAM using PATTERN RECORD. Patterns may be loaded into the RAM from the DDD-5's internal ROM (which contains 100 pre-programmed patterns) or from a KORG RAM card (see EXTERNAL COPY in section 2 of the PATTERN EDIT chapter). Once in the RAM, patterns may be given a name.

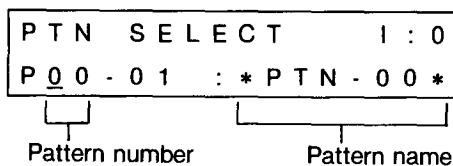
Songs and preset songs are created by selecting patterns stored in the RAM. Songs and preset songs can be given a name, and will share the same name (i.e., song 1 will have the same name as preset song 1) although they may contain different patterns. The DDD-5's memory can contain up to 24 songs and 24 preset songs.

Combinations are created from patterns that have been assigned to the preset songs. The DDD-5's memory can contain up to 8 combinations.

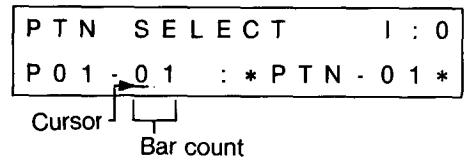
2. PATTERN SELECTION AND PLAY

Pattern select and play is executed in the PROGRAMMABLE mode.

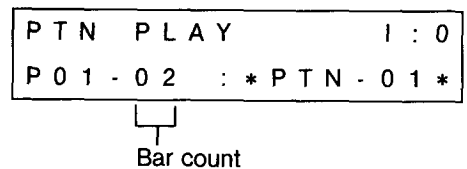
- (1) Turn on the DDD-5's power. If the DDD-5 is already turned on one of the other MODE keys has been selected, press MODE key 1 to select the PATTERN SELECT function. The LED next to MODE key 1 will flash at the current tempo, with a beat length corresponding to the current METRONOME setting. The LCD will show the currently selected pattern (pattern 00 if the power has just been turned ON). If the pattern has not been given a name, a number will appear in the pattern name section of the LCD.



- (2) Use the numeric key pad or the -1, +1 keys to select the number of the pattern you wish to play (00 — 99). The new pattern number and name will appear on the LCD.
- (3) If the pattern contains more than one bar, you can select the bar from which play will start. (This step may be omitted in the case of patterns containing one bar, or if you wish to start play from bar 1). Press CURSOR > to move the cursor to the bar count, and use the numeric keys or -1, +1 keys to select the bar number.



- (4) Press START to play the selected pattern. The RUN LED will light, and the LCD will show the current bar being played.



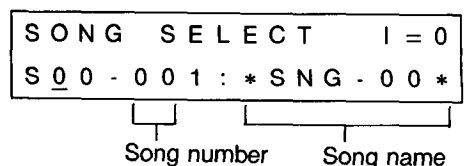
- During play, you can select another pattern using the procedure described in step 2 above. The new pattern number will appear immediately. At the end of the current bar, the new pattern name will appear, and the new pattern will start to play.
- During play, the LED's next to the five MODE keys will flash on each beat in sequence from left to right, starting at MODE key 1 to indicate beat 1. If there are more than four beats to a bar, the MODE key 2 LED will flash to indicate the fifth beat, and the flashing sequence will continue from left to right starting at the MODE key 2 LED, until the end of the bar. At the next bar, flashing will start again at MODE key 1 LED.

- (5) Press STOP to temporarily stop play. The RUN LED will flash, and the LCD will return to the PATTERN SELECT display, showing the bar at which play was stopped.
- (6) You can now continue play from the point at which play was stopped by pressing START, or press STOP again to reset the pattern to bar 1 (in this case the RUN LED will go out, and play may be started from bar 1 again by pressing START).

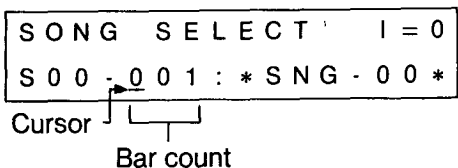
3. SONG SELECTION AND PLAY

Song select and play is executed in the PROGRAMMABLE mode.

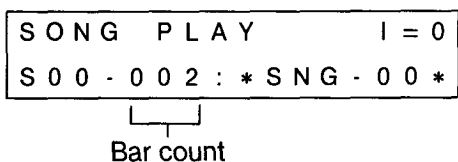
- (1) Press MODE key 3 to select the SONG SELECT function. The LED next to MODE key 3 will flash at the current tempo, with a beat length corresponding to the current METRONOME setting. The LCD will show the currently selected song (song 00 if the power has just been turned on). If the song has not been given a name, the song name section of the LCD will be as shown below.



- (2) Use the numeric key pad or the -1, +1 keys to select the number of the song you wish to play (00 — 23). The new song number and name will appear on the LCD.
- (3) You can now select the bar from which play will start. (This step may be omitted if you wish to start play from bar 1). Press CURSOR > to move the cursor to the bar count, and use the numeric keys or -1, +1 keys to select the bar number.



- (4) Press START to play the selected song. The RUN LED will light, and the LCD will show the current bar being played.



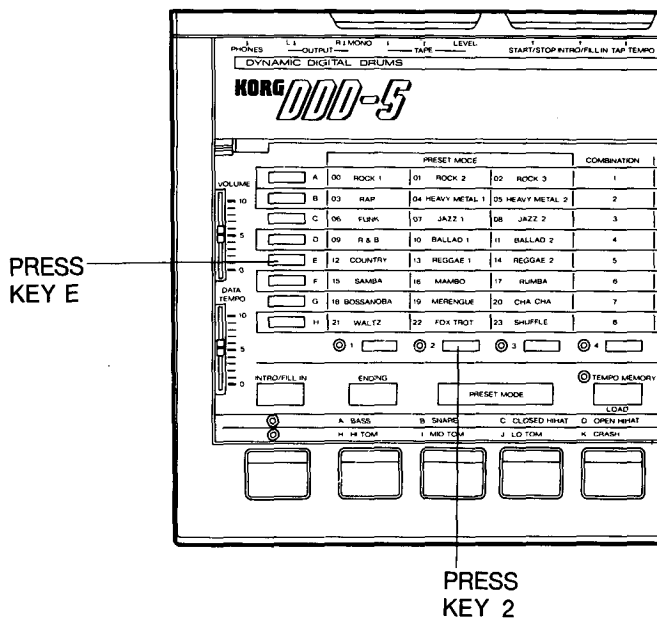
- During play, you can select another song using the procedure described in step 2 above. The new song number will appear immediately. At the end of the current bar, the new song name will appear, and the new song will start to play.
 - During play, the LED's next to the five MODE keys will flash on each beat in sequence from left to right, as described in section 2 of this chapter.
- (5) Press STOP to temporarily stop play. The RUN LED will flash, and the LCD will return to the SONG SELECT display, showing the bar at which play was stopped.
 - (6) You can now continue play from the point at which play was stopped by pressing START, or press STOP again to reset the song to bar 1 (in this case the RUN LED will go out, and play may be started from bar 1 again by pressing START).

FILL-IN pattern. Usually a more complex pattern, to add variety to the basic rhythm of the preset song. Often uses instruments that are not used in the RHYTHM pattern.

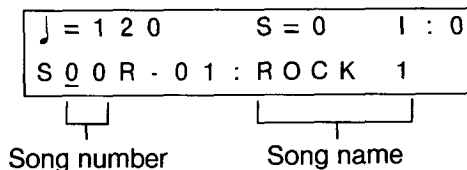
ENDING pattern. Ends the song with a flourish, or by continuing in a similar style to the RHYTHM pattern, and accentuating a final beat.

PRESET SONG: SELECT AND PLAY

- (1) Select a preset song (numbered 00 — 23) by pressing one of PRESET keys A — H, and one of PRESET keys 1 — 3. For example, to select preset song 13 (REGGAE) press PRESET key E and PRESET key 2 (the order of pressing these keys can be reversed). The LED next to PRESET key 2 will flash at the current tempo, with a beat length corresponding to the current METRONOME setting.



The LCD will show the selected preset song.



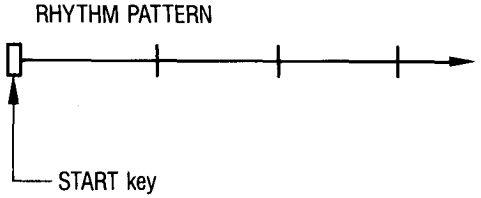
4. PRESET SONG SELECTION AND PLAY

Preset song select and play is executed in the PRESET mode. Preset songs contain four types of patterns. (The following descriptions may be used as guides when creating your own preset song patterns.)

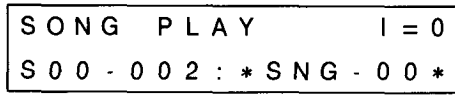
INTRO pattern. This is an introduction pattern to set the mode of the song. INTRO patterns often start with a count-in played by a short sound such as STICK.

RHYTHM pattern. The basic rhythm of the song. Usually a fairly simple pattern (complex patterns are easy to create on the DDD-5, but can be tiresome to listen to repeatedly).

(2A) Press START to play the RHYTHM pattern.

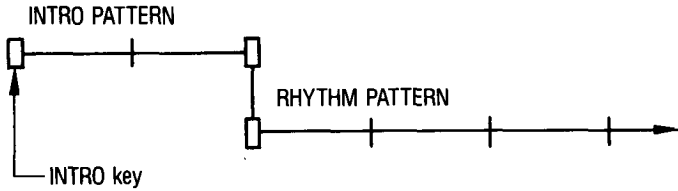


The RUN LED will light, and the LCD will indicate that a RHYTHM pattern is playing, and show the current bar (all preset song patterns can contain up to 99 bars).

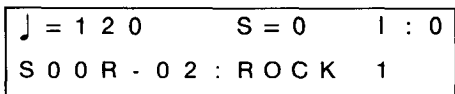


Indicates RHYTHM pattern Bar count

(2B) Alternatively, press INTRO to start play with the INTRO pattern, followed automatically by the RHYTHM pattern.



The RUN LED will light, and while the INTRO plays the LCD will indicate that an INTRO pattern is playing, and show the current bar.

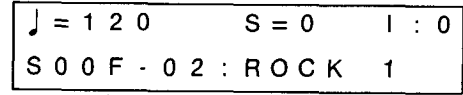


Indicates INTRO pattern Bar count

After playing the INTRO pattern once, play will continue automatically with the RHYTHM pattern.

(3) Press FILL-IN at any time during play, to play the FILL-IN pattern.

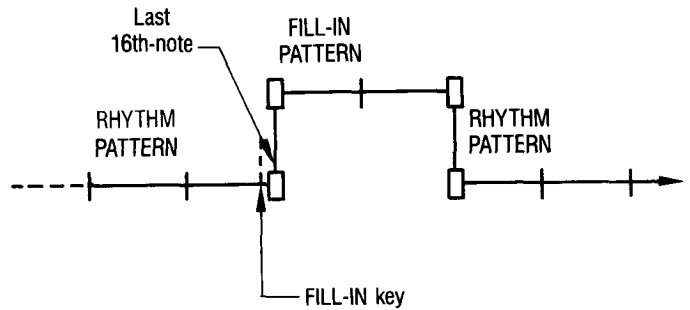
The LCD will indicate that a FILL-IN pattern is playing, and show the current bar.



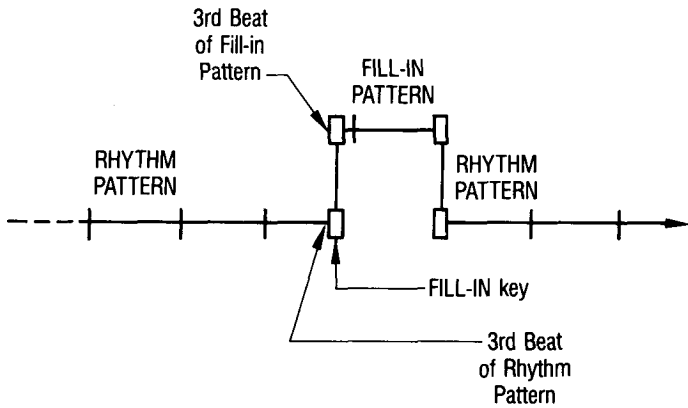
Indicates FILL-IN pattern Bar count

After playing the FILL-IN pattern once, play will continue automatically with the RHYTHM pattern (except when FILL-IN is selected during an ENDING pattern; in this case, play will stop after the FILL-IN has played).

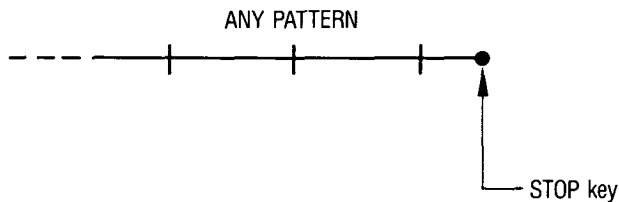
NOTE: To play the complete FILL-IN pattern, press FILL-IN during the last 16th beat of the current bar (in practice, this means press FILL-IN just before the first beat of the next bar). At the next bar, the complete FILL-IN pattern will play.



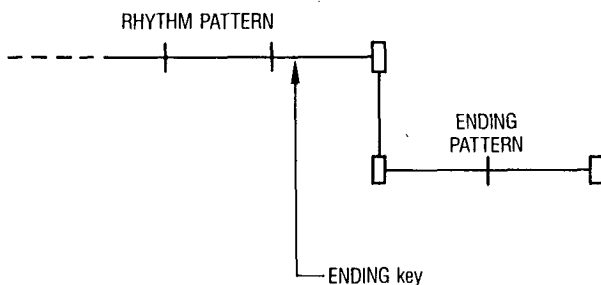
If you press FILL-IN earlier, the FILL-IN pattern will start play immediately, from the same point in the first bar of the FILL-IN pattern. For example, if you press FILL-IN on beat 3 of the RHYTHM pattern, the FILL-IN pattern will start play from beat three of its first bar.



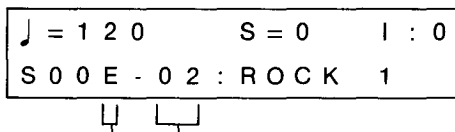
(4A) Press STOP to instantly stop play. The RUN LED will go out.



(4B) Alternatively, press ENDING at any time during play, to play the ENDING pattern. At the end of the current bar, the ENDING pattern will play.



The LCD will indicate that an ENDING pattern is playing, and show the current bar.



Indicates ENDING pattern Bar count

After playing the ENDING pattern once, play will stop. The RUN LED will go out.

- During play of a preset song, you can select another preset song using the procedure described in step 2 above. The new preset song number will appear immediately. At the end of the current bar, the new preset song name will appear, and the new preset song's RHYTHM pattern will start to play. You can also select a combination, by pressing PRESET key 4 and one of PRESET keys A — H.
- During play, the LED's next to the five MODE keys will flash on each beat in sequence from left to right, as described in section 2 of this chapter.

PRESET SONG: FOOT SWITCH PLAY

Preset songs can be played using foot switches for START/STOP AND INTRO/FILL-IN functions. This is ideal for the player who is playing another instrument at the same time as playing his DDD-5. An ideal foot switch for this purpose is the KORG PS-2, a dual foot switch.

Connect foot switches to the START/STOP and INTRO/FILL-IN jacks on the rear of the DDD-5. Preset song play is executed as follows:

- (1A) Press the START/STOP foot switch once to start play of the RHYTHM pattern.
- (1B) Alternatively, press the INTRO/FILL-IN foot switch to start play of the INTRO pattern. After the INTRO pattern has played once, play of the RHYTHM pattern will start automatically.
- (2) During play, press the INTRO/FILL-IN foot switch to play a FILL-IN.
- (3A) Press the START/STOP foot switch to play the ENDING pattern, starting at the next bar.
- (3B) Alternatively, press the START/STOP foot switch twice to instantly stop play. Play will stop on the second pressing of the START/STOP foot switch.

PRESET SONG: LOOP PLAY

Any pattern in a preset song can be played repeatedly, using the loop play function, as follows:

- (1) During play, press either the - 1 or + 1 key, to select another pattern (which will be indicated on the LCD in the usual manner). These keys let you step through the patterns in the following order, if starting from a RHYTHM pattern:
 - 1 KEY: INTRO, FILL-IN, ENDING, RHYTHM.
 - + 1 KEY: ENDING, FILL-IN, INTRO, RHYTHM.
 At the next bar, play of the selected pattern will start, and loop play will continue until you press STOP or ENDING.
- (2) During loop play, pressing - 1 or + 1 will select another pattern for loop play, according to the sequence described in the step 1. The new pattern will start play immediately.

- During loop play you can select another preset song using the normal selection procedure. The new preset song number will appear immediately. At the end of the current bar, the new preset song name will appear, and the new preset song's RHYTHM pattern will start to play. You can also select a combination, by pressing PRESET key 4 and one of PRESET keys A — H.

5. COMBINATION SELECTION AND PLAY

Combination select and play is executed in the PRESET mode. Combinations contain six types of patterns. (The following descriptions may be used as guides when creating your own combination patterns.)

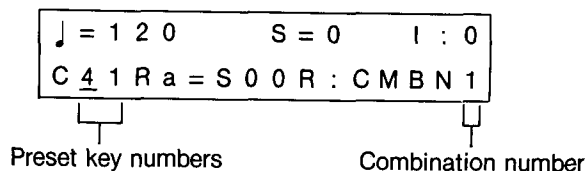
INTRO pattern. Same function as in preset song play.

RHYTHM patterns A and B. Two patterns, providing the basic rhythm of the combination. Usually these are fairly simple patterns (complex patterns are easy to create on the DDD-5, but can be tiresome to listen to repeatedly). Typically, RHYTHM pattern A would be used for verses, and RHYTHM pattern B for choruses.

FILL-IN patterns A and B. Usually these are more complex patterns, to add variety to the basic rhythms of the combination. They often use instruments that are not used in the RHYTHM pattern. FILL-IN pattern A would be constructed so as to add variety to RHYTHM pattern A, and provide a suitable transition from RHYTHM pattern A to RHYTHM pattern B, FILL-IN pattern B would be constructed so as to add variety to RHYTHM pattern B, and provide a suitable transition from RHYTHM pattern B to RHYTHM pattern A.

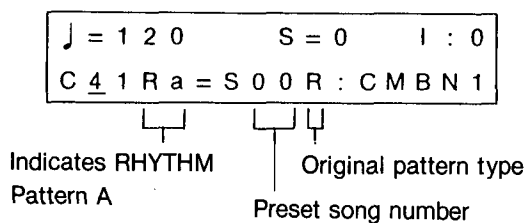
ENDING pattern. Same function as in preset song play.

The LCD will show the selected combination.



Combination play is identical to preset song play, with the following exceptions:

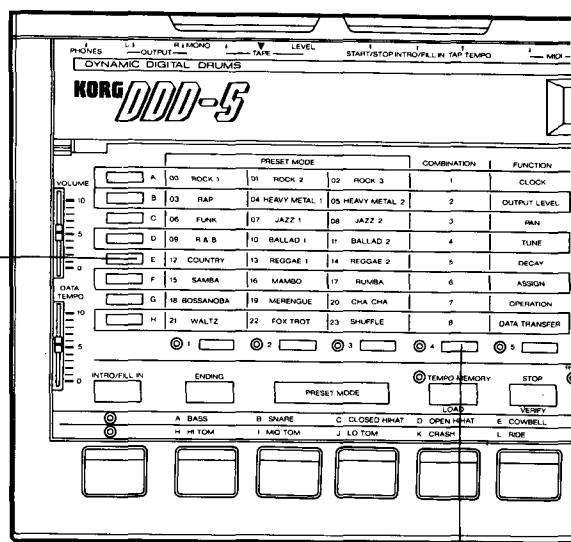
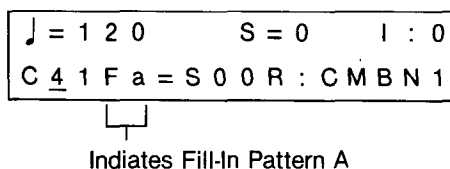
- When play of the RHYTHM pattern starts (either with or without the INTRO PATTERN) RHYTHM pattern A will be the first to play. The LCD will indicate RHYTHM pattern A. Also, as with all patterns in a combination, the LCD will show the preset song from which this pattern has been extracted, and which type of pattern it was designated as (INTRO, RHYTHM, FILL-IN or ENDING) when used in the original preset song.



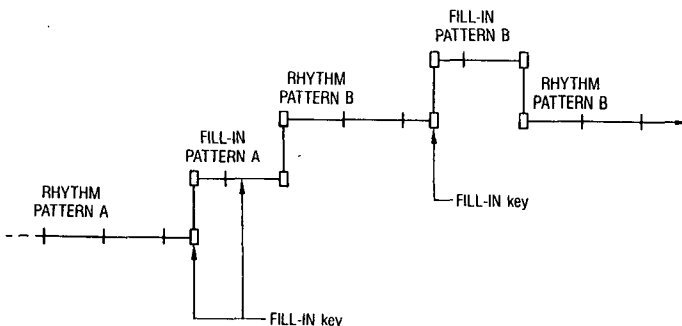
COMBINATION: SELECT AND PLAY

- Select a combination (numbered 1 — 8) by pressing one of PRESET keys A — H, and PRESET key 4. For example, to select combination 5 press PRESET key E and PRESET key 4 (the order of pressing these keys can be reversed). The LED next to PRESET key 4 will flash at the current tempo, with a beat length corresponding to the current METRONOME setting.

- When FILL-IN is pressed while RHYTHM pattern A is playing, FILL-IN pattern A will play, then return to RHYTHM pattern A. When FILL-IN is pressed while RHYTHM pattern B is playing, FILL-IN pattern B will play, then return to RHYTHM pattern B.



- Switching play from RHYTHM pattern A to RHYTHM pattern B is done by pressing FILL-IN a second time during play of a FILL-IN pattern. For example, if RHYTHM pattern A is now playing, pressing FILL-IN twice cause FILL-IN pattern A to play; play of RHYTHM pattern B will then start automatically. The next time a FILL-IN is selected, FILL-IN pattern B will play.



COMBINATION: FOOT SWITCH PLAY

Combination play using foot switches is identical to preset song play using footswitches, with the following exception:

FILL-IN patterns are played in the same way as FILL-IN pattern play using front panel keys. For example, when RHYTHM pattern A is playing, a single press of the FILL-IN foot switch causes FILL-IN pattern A to play, followed by RHYTHM pattern A. A double press of the FILL-IN foot switch causes FILL-IN pattern A to play, followed by RHYTHM pattern B.

COMBINATION: LOOP PLAY

Loop play of combination patterns is identical to loop play of preset song patterns, with the following exception:

Pressing either the -1 or +1 key to select a pattern for loop play lets you step through the patterns in the following order, if starting from RHYTHM pattern A:

- 1 KEY: FILL-IN A, RHYTHM B, FILL-IN B, INTRO, ENDING, RHYTHM A.
- +1 KEY: ENDING, INTRO, FILL-IN B, RHYTHM B, FILL-IN A, RHYTHM A.

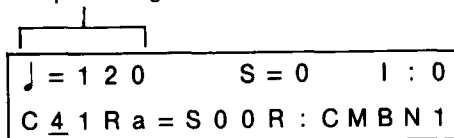
6. TEMPO

The DDD-5 can operate at a tempo range of 40 — 250 quarter-notes/minute. The operation for tempo setting depends on whether the DDD-5 is in the PRESET or PROGRAMMABLE mode.

PRESET MODE

- (1) Each preset song and combination can have a tempo memorized using the TEMPO MEMORY function described in section 2 of the PRESET MODE OPERATIONS chapter. When the LED next to the TEMPO MEMORY key is lit, (as it is whenever you enter the PRESET mode) play will start at the memorized tempo, even if the tempo setting has been altered before playing. During playback, you can adjust the tempo using the TEMPO slider. The tempo will be indicated on the LCD.

Tempo setting



- (2) To start play at a non-memorized tempo setting, press TEMPO MEMORY so that its LED goes out, then set the tempo using the TEMPO slider or the -1, +1 keys. Tempo can also be set before play by moving the cursor to the tempo position on the LCD. Press the CURSOR LEFT key twice to do this. You can then set the tempo using the TEMPO slider, the -1, +1 keys or the numeric key pad.

Play will start at the new tempo setting. The memorized tempo can be instantly selected during play by pressing TEMPO MEMORY so that its LED lights.

- (3) Tempo can also be set before or during play using the TAP TEMPO key. When you tap this key twice, the time interval between taps is recognized as the length of a quarter-note, and the tempo is set accordingly. If the tap time is outside the tempo limits, tempo will be set at these limits. The same conditions regarding the use of TEMPO MEMORY apply when using TAP TEMPO.

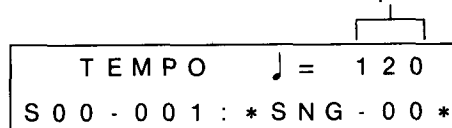
- The tap tempo function can also be executed by a foot switch (such as the KORG PS-1) connected to the TAP TEMPO jack on the rear of the DDD-5.

PROGRAMMABLE MODE

- (1) Tempo can be set before or during pattern play/record, or song play. Press f-7 to select the TEMPO function, and use the DATA slider, the numeric key pad, or the -1, +1 keys to set the tempo. The LCD will display the tempo setting.

NOTE: If tempo is set before song play (i.e., in the SONG SELECT mode) this tempo will be memorized for the selected song; whenever you play this song, it will play at the memorized tempo.

Tempo setting



- (2) The TAP TEMPO function may be used (with or without first pressing f-7) in the same way as for the PRESET mode.

INSTRUMENT SETTING

1. OVERVIEW

- The INSTRUMENT SETTING mode lets you assign 14 voices to the instrument keys (2 to each key) to make up an instrument set = like creating your own drum kit. Voices may be selected from the internal ROM (29 voices) or from up to 2 KORG ROM Voice cards (up to 16 voices). When assigned to an instrument key, each voice can have its touch sense, output level, tuning, decay and pan setting modified.

Six instrument sets can be created, and selected for pattern play (using f-1 SETTING SELECT) or song play (in the SONG SELECT mode).

NOTE: Instrument sets can be memorized for each song. When this is done, the instrument set is also memorized for the corresponding preset song. Instrument sets are created in the following manner:

- Select an instrument set (function f-1).
- Assign voices to keys (function f-6).
- Modify voice sounds (functions f-2 thru f-5, and f-7).

The following block diagram illustrates the functioning of instrument sets.

NOTE: The seven instrument keys can be switched between two instrument groups using the INSTRUMENT GROUP key. This means that each key can play two voices. Also, each voice can have its OUTPUT LEVEL, PAN, TOTAL TUNE, TOTAL DECAY and TOUCH SENSE set. See functions f-2 thru f-7 in this mode.

Functions in the INSTRUMENT SETTING mode are as follows:

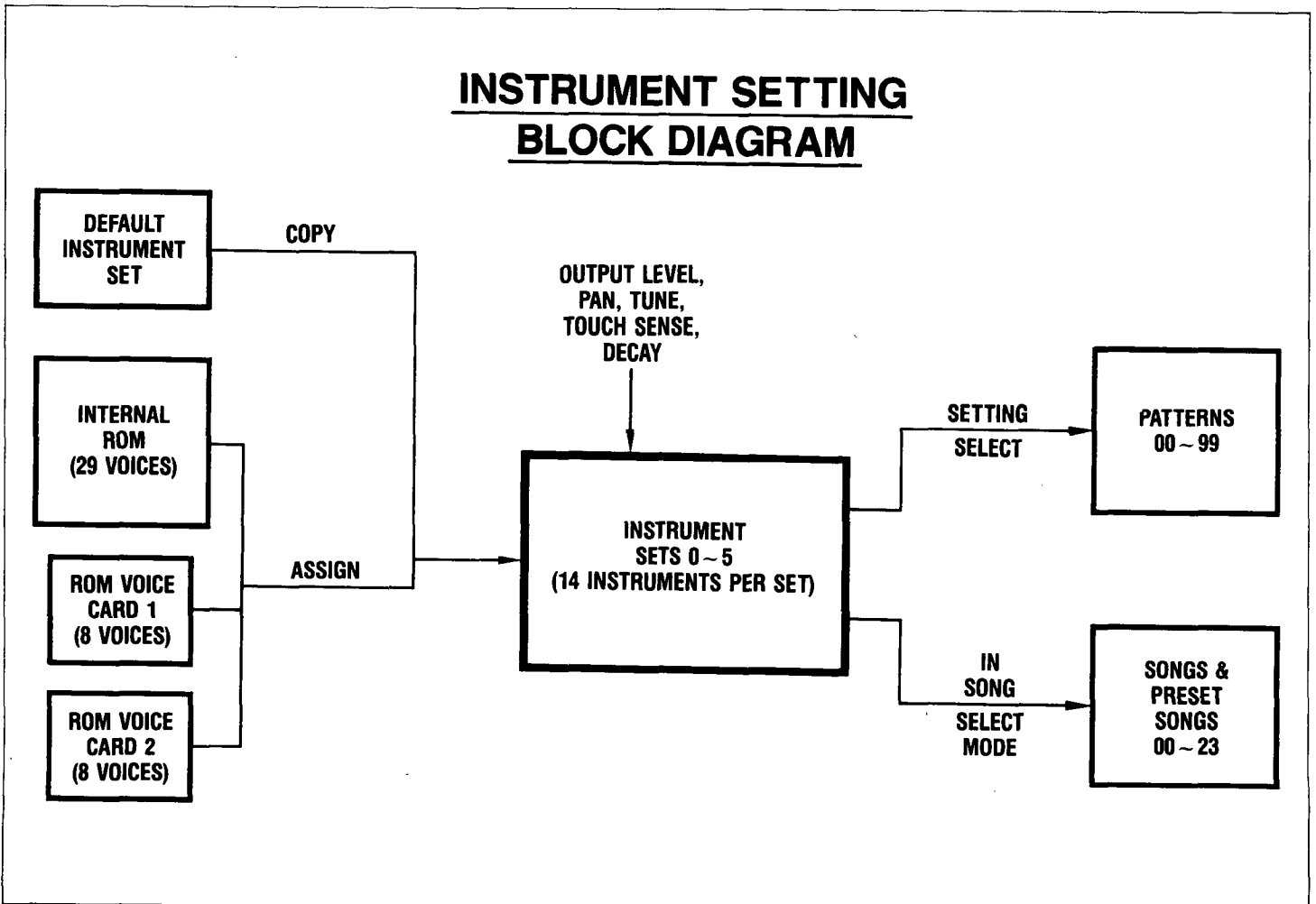
f-1: SETTING SELECT

Lets you select one of the six instrument sets, prior to creating an instrument set, or playing or recording a pattern. (Selection of instrument sets for songs is executed in the SONG SELECT mode, and described in section 3 of the SONG CREATE/EDIT mode chapter.)

NOTE: When the SYSTEM RESET operation is executed (see the SYSTEM RESET chapter for details) and the DDD-5 is reset to the PRESET mode, the six instrument sets will be reset to contain six groups of instruments for use in the preset songs and patterns.

f-2: OUTPUT LEVEL

Lets you set the maximum level of each instrument, when the instrument key is tapped at full strength. RANGE: 00 — 15. At the zero setting, the instrument is silent.



- Output level is also affected by SEQUENCE DYNAMICS recorded in the SEQUENCE PARAMETERS FUNCTION (see section 5 of the PATTERN RECORD chapter for details).

f-3: PAN

Lets you set the stereo position of each instrument, in seven positions: L3 (far left), L2, L1, C (center), R1, R2, R3 (far right).

f-4: TUNE

Lets you tune the pitch of each instrument, over a range of approximately one octave. RANGE: 000 — 127 (standard tuning is at a setting of 064: this setting tunes the THUMB BASS and PULL BASS sounds to A = 440). Each step is equal to about 9.45 cents (a cent is 1/100th of a semitone). With this function, you can create new drum voices (such as a set of tuned TOM TOMS) or tune pitched voices (for example, THUMB BASS or COWBELL).

- Tuning is also affected by SEQUENCE TUNE recorded in the SEQUENCE PARAMETERS MODE (see section 5 of the PATTERN RECORD chapter for details). The SEQUENCE TUNE function can be used to tune individual notes on pitched sounds (for example, PULL BASS) to create melodies or riffs in a pattern.
- In contrast to SEQUENCE TUNE, the INSTRUMENT SETTING mode's TUNE function affects every note played by an instrument. Therefore, it is shown on the LCD as TOTAL TUNE.

f-5: DECAY

Lets you alter the length of each voice (decay means the rate at which the voice dies away to silence). RANGE: 00 — 15 (standard length is at a setting of 15).

- Decay is also affected by SEQUENCE DECAY recorded in the SEQUENCE PARAMETERS MODE (see section 5 of the PATTERN RECORD chapter for details).
- In contrast to SEQUENCE DECAY, the INSTRUMENT SETTING mode's DECAY function affects every note played by an instrument. Therefore, it is shown on the LCD as TOTAL DECAY.

f-6: ASSIGN

Lets you assign voices to the instrument keys. The seven instrument keys can be switched between two instrument groups, using the INSTRUMENT GROUP key. The voices may be chosen from two sources:

- (1) ROM. The internal ROM (Read Only Memory) of the DDD-5 contains 29 voices, as follows:

I 01 BASS 1	Bass drum (hard)
I 02 BASS 2	Bass drum (soft)
I 03 BASS 3	Bass drum (gate reverb)
I 04 SNARE 1	Snare drum
I 05 SNARE 2	Snare drum (low)
I 06 SNARE 3	Snare drum (gate reverb)
I 07 RIMSHOT	Rim of snare drum
I 08 CL HIHAT	Closed hihat
I 09 OP HIHAT	Open hihat
I 10 RIDE	Ride cymbal
I 11 CRASH	Crash cymbal
I 12 STICK	Two drumsticks hit together
I 13 HI TOM	High tom tom
I 14 MID TOM	Medium tom tom

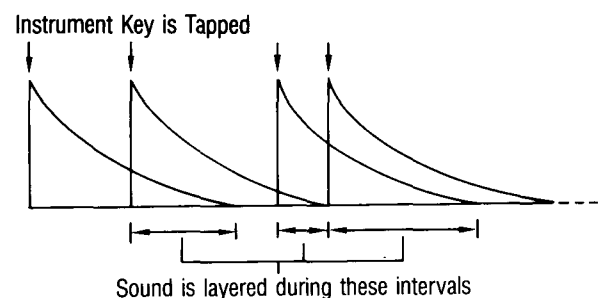
I 15 LO TOM	Low tom tom
I 16 HI CONGA	High conga
I 17 LO CONGA	Low conga
I 18 MU CONGA	Muted conga
I 19 TIMBALES	Timbales
I 20 CLAPS	Handclaps
I 21 HI BONGO	High bongo
I 22 LO BONGO	Low bongo
I 23 COWBELL	Cowbell
I 24 CLAVES	Claves
I 25 TAMBRNE	Tambourine
I 26 CABASA	Cabasa
I 27 AGOGO	Agogo
I 28 THM BASS	Bass guitar (thumb hit, low octave)
I 29 PUL BASS	Bass guitar (finger pull, high octave)

- (2) KORG ROM Voice cards. These cards can contain up to 8 drum and percussion voices. Two cards may be inserted into the card slots on the rear of the DDD-5, for a total of 16 extra voices.

- You can also assign a voice to more than one instrument key, then use the OUTPUT LEVEL, PAN, TUNE, DECAY and TOUCH SENSE functions in the INSTRUMENT SETTING mode to alter the voices. This could be used, for example, to create a set of pitched tom toms, or a selection of bass guitar voices tuned to different notes of a riff or scale.
- The DDD-5 is capable of outputting up to 12 sounds simultaneously. The ASSIGN function lets you decide how these 12 sounds will be used. Three "playing modes" are possible for each instrument key: POLY, MONO and EXCLUSIVE.

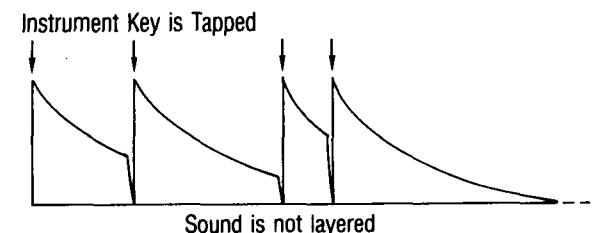
POLY (Polyphonic). Lets you "layer" sounds played by the same instrument, up to 12 layers. For example, if you play the CRASH cymbal sounds several times in quick succession, each sound will play to its full length, overlapping succeeding sounds, for a natural effect. This mode also works well with SNARE rolls.

(POLY MODE)



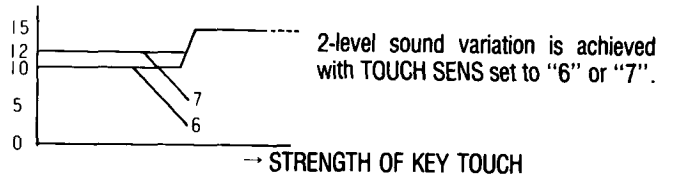
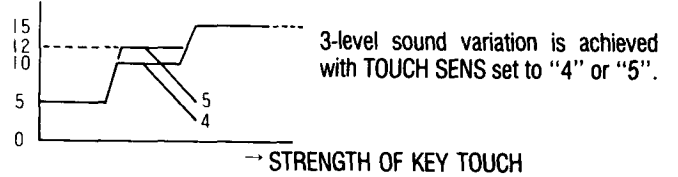
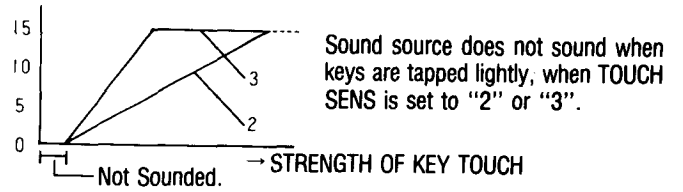
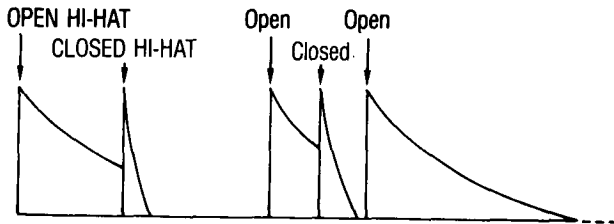
MONO (Monaural). In this mode, each note played will cut off the previous note played on the same instrument. For example, this would add clarity to a rapid bass guitar passage, avoiding overlapping of notes.

(MONO MODE)



EXCLUSIVE. This mode is usually used to set two instruments so they cannot be sounded at the same time. In our example, the OPEN HIHAT sound is cut off by the CLOSED HIHAT sound, just as it would be on authentic drums. Other possibilities are SNARE and RIMSHOT, HI CONGA and MU CONGA, THUMB BASS and PULL BASS — all ideal for the EXCLUSIVE mode because they are sounds that reproduce two different ways of playing the same percussion instrument.

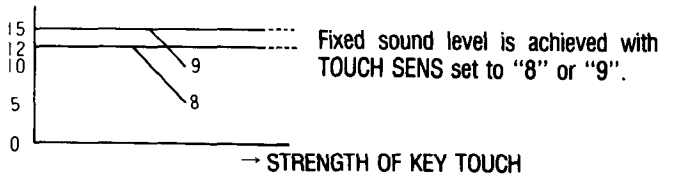
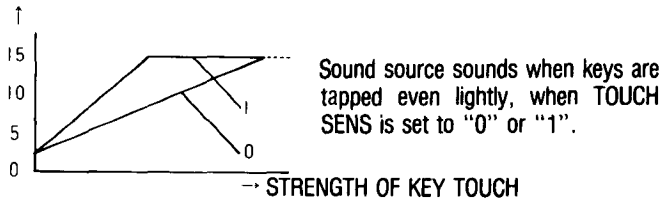
(EXCLUSIVE MODE)



f-7: TOUCH SENSE

Lets you alter the touch sensitivity of each instrument key. The DDD-5's instrument keys are touch sensitive, which means that they respond to your playing; the harder you hit a key, the louder the note. RANGE: 0 — 9.

DYNAMIC



f-8: COPY

Lets you copy one instrument set to another instrument set. This is convenient if you have spent time creating an instrument set, and wish to create a similar instrument set, without having to start from scratch. Simply copy the instrument set and make minor changes to the copied set.

You can also copy a "default" instrument set to any of the six instrument sets. The selected instrument set will then contain the instruments named above the instrument keys. Complete settings for the default instrument set are as follows:

INST. KEY	OUTPUT LEVEL	PAN	TUNE	DECAY	ASSIGN	TOUCH SENSE
A	15	C	064	15	BASS 1	0
B	15	C	064	15	SNARE 1	0
C	15	R1	000	15	CL HIHAT	0
D	15	R1	000	15	OP HIHAT	0
E	15	L2	064	15	COWBELL	0
F	15	C	064	15	CLAPS	0
G	15	C	064	15	STICK	0
H	15	R3	064	15	HI TOM	0
I	15	C	064	15	MID TOM	0
J	15	L3	064	15	LO TOM	0
K	15	L2	000	15	CRASH	0
L	15	R2	000	15	RIDE	0
M	15	C	064	15	THM BAS	0
N	15	C	064	15	PULL BASS	0

2. OPERATIONS

- In the PROGRAMMABLE mode, to select INSTRUMENT SET- After setting the playing mode, you can move the cursor back to the voice number (using the CURSOR LEFT key) and select another voice, if desired. select PAN, press the f-3 key after pressing MODE key 4. The first time you press MODE key 4, function f-1 will always be selected.

f-1: INSTRUMENT SETTING

Use the -1, +1 keys or the numeric keys to select an instrument set. RANGE: 0 - 5.

```

SET SELECT      I = 0
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- The currently displayed pattern may be played with the selected instrument set, by pressing START.

f-2: OUTPUT LEVEL

```

OUTPUT LEVEL
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Press the instrument key for which output level is to be set. Example: key L (RIDE).

Output level

```

L = R I D E      L = 1 5
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Use the -1, +1 keys or the DATA slider to set the output level. RANGE: 0 - 15.
- Repeat steps 1 and 2 to set output levels for other instrument keys.

f-3: PAN

```

STEREO PAN
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Press the instrument key for which pan position is to be set. Example: key H (HI TOM).

Pan position

```

H = H I T O M   P = L 3
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Use the -1, +1 keys or the DATA slider to set the pan position. RANGE: L3 (LEFT), L2, L1, C (CENTER), R1, R2, R3 (RIGHT).
- Repeat steps 1 and 2 to set pan positions for other instrument keys.

f-4: TUNE

```

TOTAL TUNE
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Press the instrument key for which tuning is to be set. Example: key B (SNARE 1).

Tuning level

```

B = S N A R E 1 T = 0 6 4
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Use the -1, +1 keys or the DATA slider to set the tuning. RANGE: 000 - 127.
- Repeat steps 1 and 2 to set tuning for other instrument keys.

f-5: DECAY

```

TOTAL DECAY
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Press the instrument key for which decay length is to be set. Example: key C (CL HIHAT).

Decay length

```

C = C L H H      D = 1 5
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Use the -1, +1 keys or the DATA slider to set the decay length. RANGE: 0 - 15.
- Repeat steps 1 and 2 to set decay lengths for other instrument keys.

f-6: ASSIGN

```

INST ASSIGN
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- Press the instrument key to which a voice is to be assigned. Example: key F (CLAPS).

Voice name Voice number

```

F = C L A P S      1 0 6 M
P 0 1 - 0 1    : * P T N - 0 1 *
    
```

- (2) Use the -1, +1 keys or the DATA slider to select the voice that is to be assigned. Voice numbers will be displayed in the following order:

I 01 — I 29 (Internal ROM voices 1 thru 29)

C11 — C18 (Voices 1 — 8 from ROM card inserted into card slot 1)

C21 — C28 (Voices 1 — 8 from ROM card inserted into card slot 2)

- If no card is inserted, the LCD will show "NO INST" if you attempt to select a ROM card voice.
 - The DATA slider stops at either end of the selectable voice range. The -1, +1 keys let you step continuously through the voice range.
- (3) To assign a playing mode to the instrument key, press CURSOR RIGHT to move the cursor to the mode indicator.

Mode indicator
┆

F =	CLAPS	I 0 6	M
P 0 1 - 0 1	: * P T N - 0 1 *		

Use the -1, +1 keys to change the playing mode. You can step continuously through the playing modes in the following order using the +1 key: "P" (POLY), "M" (MONO), "E" (EXCLUSIVE), or in the reverse order using the -1 key.

After setting the playing mode, you can move the cursor back to the voice number (using the CURSOR LEFT key) and select another voice, if desired.

- (4) Repeat steps 1 thru 3 to assign voices and playing modes to other instrument keys.

f-7: TOUCH SENSE

TOUCH SENS
P 0 1 - 0 1 : * P T N - 0 1 *

- (1) Press the instrument key for which touch sense is to be set. Example: key A (BASS).

Touch Sense setting
┆

A =	BASS	S = 0
P 0 1 - 0 1	: * P T N - 0 1 *	

- (2) Use the -1, +1 keys or the DATA slider to set the touch sense. RANGE: 0 — 9.
- (3) Repeat steps 1 and 2 to set touch sense for other instrument keys.

f-8: COPY

- (1) After using function f-1 (SETTING SELECT) to select the instrument set that is to be copied, press f-8.

INST SET COPY
I . N o . 0 - I . N o . █

┆
Inst setting to be copied

- (2) Use the numeric keys to select the copy destination. RANGE: 0 — 5.

- The number of the instrument set that is to be copied can NOT be selected as a copy destination.

Sure (Y / N) ?
I . N o . 0 - I . N o . 1

┆
Copy destination

- (3) Press YES to copy the instrument set. (You can cancel this operation by pressing NO, if you do not wish to copy the instrument set.) The LCD will show

COPY !
I . N o . 0 - I . N o . 1

followed by the "INST SET COPY" display.

f-8: COPY (DEFAULT)

This function lets you return an instrument set to the default settings detailed in section 1 of this chapter.

- (1) After using function f-1 (SETTING SELECT) to select the instrument set that is to be returned to the default settings, press f-8.

INST SET COPY
I . N o . 0 - I . N o . █

┆
Inst setting to be defaulted

- (2) Press f-8 again to select DEFAULT.

Sure (Y / N) ?
DEFAULT - I . N o . 1

- (3) Press YES to default the instrument set. (You can cancel this operation by pressing NO, if you do not wish to default the instrument set.) The LCD will show.

COPY !
DEFAULT - I . N o . 1

followed by the "INST SET COPY" display.

PATTERN RECORD

1. OVERVIEW

Here's how you create a new pattern on the DDD-5. (You can also select an existing pattern and record new data into it.)

BEFORE RECORDING A PATTERN

- Select an instrument set for use in the pattern that you intend to record.
- Select a METRONOME setting. This sets the length of each metronome beat (quarter-note, 8th-note, etc.) NOT the tempo. (Real Time recording only).
- Select the number of the pattern you wish to record.
- If the time signature will be other than 4/4 (the default time signature) select the TIME SIGNATURE.
- If the pattern will contain more than one bar, select the NUMBER OF BARS.
- Select the RESOLUTION (the shortest beat that can be recorded).
- If you wish to use rolls and flams, select the Roll Rate (Real Time recording only) and Flam time.
- Select the TEMPO at which you wish to record the pattern (Real Time recording only).

PATTERN RECORDING

You can record the pattern using Real Time record, Step record, or both. These are described in sections 3 and 4 of this chapter.

- During or after recording, you can ERASE any wrong notes.

AFTER RECORDING A PATTERN

- After recording a pattern you can alter the DYNAMICS, TUNE and DECAY of each note, using the SEQUENCE PARAMETER FUNCTION.
- You can give a pattern a name of up to 8 characters.
- The PATTERN EDIT mode, described in the PATTERN EDIT chapter, provides a variety of other pattern functions.

PATTERN SELECT and TEMPO are described in the PLAY OPERATIONS chapter. Other functions in the PATTERN PLAY/RECORD mode are as follows:

f-2: TIME SIGNATURE

Lets you set the time signature, or "meter" of a pattern. The range is as follows:

BEATS PER BAR (Numerator): 1 — 8

BEAT LENGTH (Denominator): 1/4 (quarter-note) — 1/32nd-note).

The overall time signature range is therefore 1/32 — 8/4.

f-3: NUMBER OF BARS

Lets you set the pattern length by specifying the number of bars (measures). RANGE: 1 — 99 bars. You can also use this function to change the length of an existing pattern, by either adding empty bars to the end of the pattern (into which you can then record new notes) or deleting bars from the end of the pattern (the deleted data cannot be restored). This function can be used for pattern play as well as pattern record.

f-4: RESOLUTION

Lets you set the length of the shortest beat which can be recorded. RANGE: 1/4 — 1/32T and HIGH.

(RESOLUTION)

The diagram illustrates the RESOLUTION function by showing musical notation for various time signatures and resolutions. It consists of several rows of notation:

- 1/4 time signature: Four measures, each with a single quarter note. Brackets above the notes are labeled "1 Beat", "2 Beat", "3 Beat", and "4 Beat".
- 1/4T time signature: Four measures, each with a triplet of three eighth notes. A bracket above each triplet is labeled "3".
- 1/8 time signature: Four measures, each with two eighth notes. A bracket above each pair is labeled "2".
- 1/8T time signature: Four measures, each with a triplet of three eighth notes. A bracket above each triplet is labeled "3".
- 1/16 time signature: Four measures, each with four sixteenth notes. A bracket above each group is labeled "4".
- 1/16T time signature: Four measures, each with a triplet of six sixteenth notes. A bracket above each triplet is labeled "6".
- 1/32 time signature: Four measures, each with eight thirty-second notes. A bracket above each group is labeled "8".
- 1/32T time signature: Four measures, each with a triplet of twelve thirty-second notes. A bracket above each triplet is labeled "12".
- HIGH (1/32) resolution: Four measures, each with a triplet of twenty-four thirty-second notes. A bracket above each triplet is labeled "24".

This function works in two ways, according to the selected recording mode.

- In Real Time record, it acts as an timing correction device. When resolution is set to HIGH, the pattern is recorded exactly as you played it. However, when resolution is set to 1/8, the shortest note that may be recorded is an 8th-note. Therefore, even if you play notes that are out of time, they will be moved to the nearest 8th-note. This can make pattern recording fast and accurate.

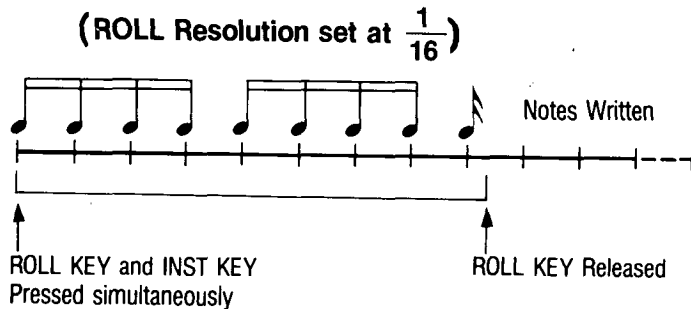
The diagram illustrates the timing correction function. It shows two musical staves for Snare, Bass, and Drum. The top staff is labeled "Rhythm actually played" and shows notes that are slightly off the grid. The bottom staff is labeled "Corrected Rhythm" and shows the notes snapped to the nearest grid lines. A large downward arrow indicates the correction process.

- In Step record, the resolution sets the step length. You then move through the pattern in single steps, adding notes or rests.
- Different resolution settings may be used in the same pattern. So in either recording mode, you can save time by recording simple drum parts (for example, the Bass Drum, which usually needs a resolution of 1/4 or 1/8) at low resolution settings. Then, while the DDD-5 has stopped recording, change resolution to, say, 1/16 to add a HiHat part. Finally, set resolution to HIGH and add ad-libs on other instruments.

f-5: ROLL/FLAM

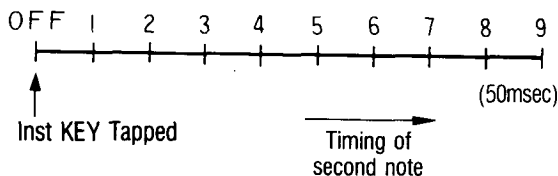
Lets you use two realistic drum techniques, for manual playing, or for recording (Real Time only for ROLL function). A ROLL is a rapid series of notes played on one instrument. The rate (resolution) of the ROLL can be varied. A FLAM is a double beat on one instrument, with a slight (and variable) time gap between the two beats.

- Roll. the resolution can be from 1/4 (quarter-note) to 1/32T (32-note triplet). The roll is played by holding down the ROLL key and pressing an instrument key. The roll lasts as long as both keys are held down.



NOTE: When recording in real time, the roll cannot be faster than the RESOLUTION setting. For example, if the roll resolution is 1/32 and the resolution is 1/16, a roll of 1/16 (a series of sixteenth-notes) will actually be recorded.

- FLAM. The flam time can be set between 0 (OFF) and 9, in 50 msecs (thousandths of a second). Flam time is not related to resolution when recording a pattern.



f-6: SEQUENCE PARAMETER

Lets you alter the tuning, decay length and level of each note already recorded in a pattern. This operation can be done in Real Time Record or in Step Record. You can also "rehearse" this function during play of a pattern.

The f-6 key is used to select the following three functions:

- SEQUENCE TUNE. Lets you alter the pitch of any instrument. RANGE: +/- 12 semitones.

NOTE: Each instrument has a pitch (tune) range of one octave. At default settings, instrument pitch is located in the center of this range, so the SEQUENCE TUNE function will have a range of +/- half an octave. If you have altered an instrument's TOTAL TUNE using the TUNE function in the INSTRUMENT SETTING mode, the available SEQUENCE TUNE range will change accordingly. For example, if an instrument's TOTAL TUNE setting is 92, it can be raised by 3 semitones and lowered by 9 semitones, using the SEQUENCE TUNE function.

This function lets you alter Tom Toms to create Conga effects; tune Bass Guitar sounds to create riffs; tune a Cowbell to create Agogo sounds, etc.

- SEQUENCE DECAY: Lets you alter the decay time (length) of any instrument sound. RANGE: 0 — 15. If you have shortened an instrument's TOTAL DECAY using the DECAY function in the INSTRUMENT SETTING mode, the full SEQUENCE TUNE range may still be used. Even if the TOTAL DECAY has been set to 0, it may be further shortened using the SEQUENCE DECAY function.

NOTE: Some short sounds such as RIM SHOT cannot be shortened by SEQUENCE DECAY past a certain point.

This function lets you alter CRASH to create a hand-muted effect; alter Tom Toms for a damped effect; etc.

- SEQUENCE DYNAMICS. Lets you alter the level of any instrument sound. RANGE: 0 — 15. If you have lowered an instrument's OUTPUT LEVEL using the OUTPUT LEVEL function in the INSTRUMENT SETTING mode, the full SEQUENCE DYNAMICS range can still be used. If this function is set at 0, no sound will be heard.

This function lets you add dynamic expression to a pattern; create fade-ins and fade-outs; etc.

f-7: TEMPO

See section 6 in the PLAY OPERATIONS chapter.

f-8: ERASE

Lets you erase three types of unwanted data in a pattern:

- ENTIRE INSTRUMENT. When play is stopped, you can select an instrument to be erased. Every note that the selected instrument played in a pattern will be erased. It can sometimes be quicker to erase an entire instrument part, then re-record it, rather than try to erase individual notes in a pattern.
- SECTION OF A PATTERN. During Real Time record, you can erase any section of one instrument's part in a pattern (this can also be one note, or the entire part for that instrument). This is handy for removing unwanted notes while recording a pattern.
- SINGLE NOTE. During Step Record, you can erase single notes. This is a convenient way of locating and removing unwanted notes, without affecting the rest of the pattern.

2. OPERATIONS PRIOR TO PATTERN RECORDING

- PATTERN RECORD operations are executed while the DDD-5 is in the PROGRAMMABLE mode. To select PATTERN RECORD functions press MODE key 1, then the appropriate function key, as indicated before the function name heading each of the function sections in this chapter. For example, to select ROLL/FLAM press the f-5 key after pressing MODE key 1.

NOTE: The first time you press MODE key 1, function f-1 will always be selected.

INSTRUMENT SET SELECT

See f-1 SETTING SELECT in section 2 of the INSTRUMENT SETTING chapter for details of this operation.

- All patterns used together in a song will have the same instrument set; remember this when selecting instrument sets for patterns that you are recording for use in the same song.
- The instrument set can NOT be memorized for a pattern. This operation only selects an instrument set temporarily. For example, if, after executing this operation, you play a song that has a different instrument set, then return to pattern play, the new instrument set will operate.

METRONOME

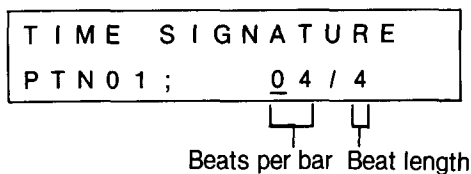
See f-4 METRONOME in section 2 of the SYSTEM FUNCTIONS chapter for details of this operation.

f-1: PATTERN SELECT

See section 2 of the PLAY OPERATIONS chapter for details of this operation.

f-2: TIME SIGNATURE

A time signature of 4/4 will be displayed: this is the default time signature. (If you have selected a pattern that already contains data, it's time signature will be displayed, without a cursor, and can NOT be altered).



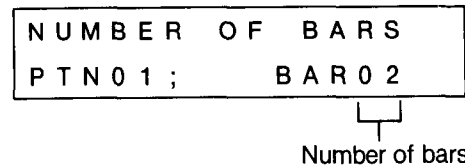
- (1) Use the -1, +1 keys or the numeric keys to set the number of beats in each bar. RANGE: 01 — 08 (At quarter-note beat length).
- (2) Press CURSOR RIGHT to move the cursor to the beat length position. Use the -1, +1 keys or the numeric keys to set the beat length. RANGE: 1/4 (quarter-note) to 1/32 (32nd-note).

NOTE: The beat length values are printed on the RIGHT above each numeric key. If a beat length value is followed by a "T", the corresponding key can NOT be used for beat length setting.

- You can use the CURSOR keys to move the cursor again, then reset values as desired.

f-3: NUMBER OF BARS

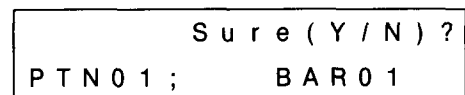
A pattern length of 01 (1 bar) will be displayed: this is the default number of bars. (If you have selected a pattern that already contains data, it's pattern length will be displayed, and can be altered).



- (1) Use the -1, +1 keys or the numeric keys to set the number of bars in the pattern. RANGE: 01 — 99.

- If you have selected a pattern that already contains data, and the newly selected number of bars is higher than the original number of bars, empty bars will be added to the pattern to make up the new number of bars.

- (2) If you have selected a pattern that already contains data, and the newly selected number of bars is lower than the original number of bars, the LCD will show:

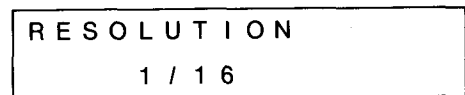


Press YES to enter the new number of bars. Bars will be deleted from the end of the pattern to shorten it to the new number of bars. (You can cancel this operation by pressing NO, if you do not wish to lose data by shortening the pattern).

The LCD will return to the previous display:

f-4: RESOLUTION

A resolution setting of 1/16 (16th-notes) will be displayed if you have not altered the resolution setting since turning on power to the DDD-5. This is the default setting.

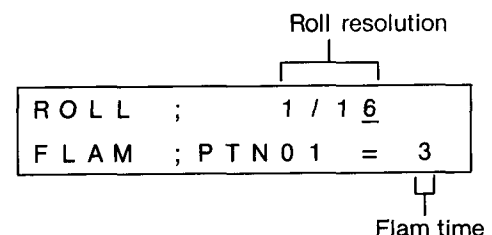


- (1) Use the -1, +1 keys or the numeric keys to select the resolution setting. RANGE: 1/4 — 1/32 plus 1/4T — 1/32T (triplet notes) plus HIGH (96th notes).

- Several resolution settings may be used in a single pattern. Stop recording each time you wish to change the resolution setting.

f-5: ROLL/FLAM

The LCD will display the last ROLL RESOLUTION and FLAM TIME values that were set.



- (1) The cursor will appear at the ROLL position. Use the -1, +1 keys or the numeric keys to set the roll resolution. RANGE: 1/4 — 1/32 plus 1/4T — 1/32T.
 - (2) Press CURSOR RIGHT to move the cursor to the FLAM position.
 - (3) Use the -1, +1 keys or the numeric keys to set the flam time. RANGE: 0 (OFF) — 9.
- You can use the CURSOR keys to move the cursor again, then reset values as desired.

f-7: TEMPO

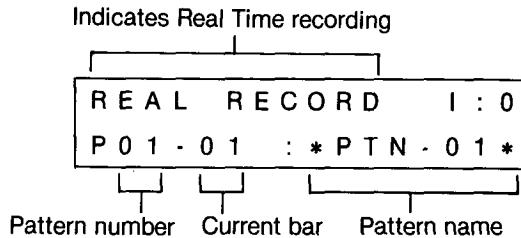
See section 6 of the PLAY OPERATIONS chapter.

3. REAL TIME RECORDING

After setting all the functions explained in the previous section, you're ready to record a pattern. Real Time recording lets you create a pattern by tapping the instrument keys while listening to a metronome. You can hear the pattern build up as you play (for example, play the Bass Drum part; listen to it; play the Snare part; listen; add a HiHat part; and so on).

- You can also record in Real Time from drum pads or a MIDI keyboard. See section 2 of the USING THE DDD-5 WITH OTHER DEVICES chapter.

- (1) While holding REC, press START. The LCD will show.



As in Pattern play, the RUN LED will light, and the LED's next to the MODE keys will indicate the tempo and the beats. The current bar will be displayed on the LCD.

- (2) Use the DATA slider to adjust the metronome volume.
 - (3) Use the instrument keys to enter notes, while listening to the metronome. You can change the instrument group at any time by pressing the INSTRUMENT GROUP key, so all 14 available instrument sounds can be recorded in the same pattern.
- To enter flams or rolls, hold down the ROLL or FLAM key while entering notes.
 - If you make any mistakes, notes can be erased (see f-8 ERASE in section 5 of this chapter).
- (4) To stop recording, press STOP. Like pattern play, the LCD will return to the PATTERN SELECT display. Also, the RUN LED will flash.

You can alter the NUMBER OF BARS and the RESOLUTION while Real Time record is stopped, using the operations described in section 2 of this chapter. Real Time record will start from the beginning of the pattern after setting the NUMBER OF BARS or the RESOLUTION.

At this point, you also have three options:

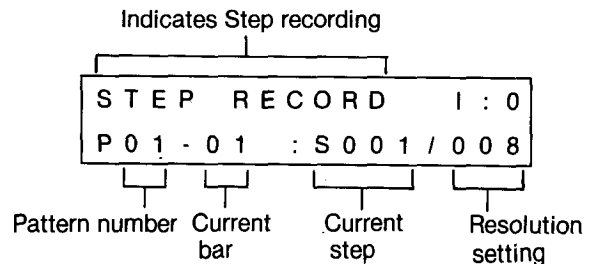
- Return to step 1 of this operation, to continue Real Time recording from the point at which you stopped.
 - Press START to play the pattern from the point at which you stopped.
 - Hold down REC and press STOP to enter Step Record (this could be done if you wanted to add some complex rhythms which are difficult to play in Real Time Record). The LCD would show the STEP RECORD display, indicating the beat following the point at which you stopped. Step recording is described in the next section of this chapter.
- (5) If you press STOP again, the RUN LED will go out. You can now execute any of the three options just described, starting from the beginning of the pattern.

4. STEP RECORDING

Step recording lets you create a pattern by entering notes one at a time at pre-selected intervals of time (or steps), whose length is set by the RESOLUTION function (see f-4 RESOLUTION in this chapter). This gives you total control over the timing of the pattern, and it's easy to "move" backwards or forwards through the pattern to locate a particular beat, then enter or delete a note at that beat. Each step is displayed on the LCD, and as you enter notes, the LCD will automatically move to the next step. Notes are entered in Step record by tapping the instrument keys. Touch Sensitivity is also recorded in Step record.

- Rolls cannot be entered in step recording; Use Real Time recording for this function.

- (1) While holding REC, press STOP. The LCD will show



The RUN LED will light during Step record.

- (2) Use the instrument keys to enter notes. When you enter a note, the Step display on the LCD will increase by 1. You can change the instrument group at any time by pressing the INSTRUMENT GROUP key, so all 14 available instrument sounds can be recorded in the same pattern.
 - (3) Use the +1 key to enter a rest. When you enter a rest, the Step display on the LCD will increase by 1. (Actually, a rest is not entered — you just move to the next beat).
 - (4) At the end of the pattern, Step recording will start again at beat 001 of the first bar of the pattern. You can keep cycling through the pattern, adding notes on any instrument as you please.
- If you make any mistakes, notes can be erased (see f-8 ERASE in section 5 of this chapter).

(5) You can, at any time, "move" through the pattern backwards or forwards in single steps by pressing the -1 or +1 keys respectively. Holding down either of these keys lets you move quickly through the pattern (like fast forward or rewind on a tape deck). As you move forward, you will hear the sounds that have been recorded at each beat. No sound is heard when you move backwards.

- This function lets you locate any beat quickly, for erasing notes, entering notes, or altering SEQUENCE PARAMETERS (described in section 5 of this chapter).

(6) To stop Step recording, press STOP. The LCD will return to the PATTERN SELECT display. Also, the RUN LED will flash.

You can alter the NUMBER OF BARS and the RESOLUTION while Step record is stopped, using the operations described in section 2 of this chapter. Step record will start from the beginning of the pattern after setting the NUMBER OF BARS or the RESOLUTION.

At this point, you also have three options:

- Return to step 1 of this operation, to continue Step recording from the point at which you stopped.
- Press START to play the pattern from the point at which you stopped.
- Hold down REC and press START to enter Real Time record (this could be done if you wanted to add drum parts with a live feel). Real Time recording would start at the beat following the point at which you stopped. Real Time recording is described in the previous section of this chapter.

(7) If you press STOP again, the RUN LED will go out. You can now execute any of the three options just described, starting from the beginning of the pattern.

NOTE: During Step record, the DDD-5 does not move to the next Step until you actually release an instrument key. This lets you record more than one instrument simultaneously on the same beat. Hold down one instrument key, then hold down another instrument key to enter a second instrument at the same beat. While doing this, you can also change the instrument group by pressing the INSTRUMENT GROUP key — you'll hear the second instrument group sounds of all instrument keys currently held down, and they'll be recorded. As long as at least one instrument key is held down, other instruments can be entered. Up to 12 instruments can be entered at the same time in this way.

5. OTHER PATTERN OPERATIONS

f-6: SEQUENCE PARAMETERS

There are two ways to record sequence parameters:

- In Real Time, while recording a pattern, or at any time after you have completed entering notes in a pattern. This lets you hear immediately the result of the sequence parameter recording, and is a rapid way of altering sequence parameters. For example, a string of pre-recorded Tom Tom notes could be instantly tuned to a scale by holding down the Tom Tom key and moving the DATA slide during SEQUENCE TUNE recording. Or you could create a fade-in on a Snare Drum roll by using SEQUENCE DYNAMICS in the same way. You can even "rehearse" the sequence parameter recording by executing it in the pattern play mode.

- In Step record, also during or after recording a pattern. This is an accurate way of locating a single note and altering its parameters. For example, you could damp a single cymbal note in the middle of a string of cymbal notes, by locating the cymbal note and altering its SEQUENCE DECAY parameter.

(1) Before or during pattern recording or play, press f-6 (in the Pattern Play/Record mode, of course). Repeated pressing of this key let you step through the three types of sequence parameter in the following order: TUNR — DECAY — DYNAMICS — TUNE, etc.

(2) If you are not already recording or playing, start recording or playing in the normal way. The LCD will show the following displays (if, for example, you have selected SEQUENCE TUNE):

REAL TIME RECORD or PATTERN PLAY (see steps 3A, 4A, 5A, 6A below)

```

  S E Q   T U N E
  P 0 1 - 0 1   : * P T N - 0 1 *
  
```

STEP RECORD (see steps 3B, 4B, 5B, 6B below)

```

  S E Q   T U N E
  P 0 1 - 0 1   : S 0 0 1 / 0 0 8
  
```

(3A) In Real Time record or pattern play, hold down the instrument key corresponding to the instrument whose sequence parameters you wish to alter. For example, TUHMB BASS:

Key name	Instrument name	Current sequence parameter value
M = T H M	B A S S	+ 0 0
P 0 1 - 0 1 : * P T N - 0 1 *		

While you hold down the instrument key, the LCD will show the key name and the instrument name. Each time the instrument plays a note, its current sequence parameter value will be displayed. If you have not already altered this instrument's sequence Parameters, default values will be displayed as follows:

```

  SEQ TUNE: +00
  SEQ DECAY: 15
  SEQ DYNAMICS: anywhere from 0 — 15 according to the
                 strength with which the instrument key
                 was tapped when recording this instru-
                 ment.
  
```

(4A) Use the DATA slider to alter the sequence parameter value while holding down the instrument key. The new values will be displayed on the LCD each time the selected instrument plays a note.

Once you release the instrument key, parameters can not be altered, and you will now hear the effect of the parameter

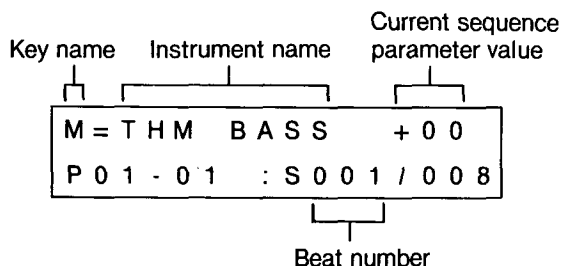
change. (If you are in the pattern play mode this effect will only be heard while you are moving the DATA slider. After you release the key, the notes will be heard with their original parameter values. This lets you rehearse the parameter change before recording). The RANGE of each sequence parameter is as follows (see the restrictions on these ranges in the OVERVIEW of this chapter):

SEQ TUNE: +/- 12 semitones (absolute 12 steps only effect)
 SEQ DECAY: 0 — 15
 SEQ DYNAMICS: 0 — 15

(5A) You can select another sequence parameter by pressing f-6, and/or select another instrument by holding down an instrument key, and use the DATA slider to alter the parameter value. Continue in this way until you have completed sequence parameter recording for your selected pattern.

(6A) If you wish to continue recording notes in this pattern, press f-1 to return to Real Time record. Otherwise, press STOP to exit Real Time record.

(3B) In Step record, use the -1, +1 keys to locate the note whose sequence parameters you wish to alter. Then hold down the instrument key corresponding to the instrument whose sequence parameters you wish to alter. For example, THUM BASS:



While you hold down the instrument key, the LCD will show the key name, the instrument name, and the parameter value relating to the selected note played by that instrument. Default values will be displayed as described in step 3A above.

(4B) Use the DATA slider to alter the sequence parameter value while holding down the instrument key. The new value will be displayed on the LCD. To check the sound of the altered note, press the instrument key again.

The RANGE of each sequence parameter is as described in step (4A) above.

(5B) You can select another sequence parameter by pressing f-6, and/or select another instrument by holding down an instrument key, and/or locate another beat using the -1, +1 keys, then use the DATA slider to alter the parameter value. Continue in this way until you have completed sequence parameter recording for your selected pattern.

(6B) If you wish to continue recording notes in this pattern, press f-1 to return to Step record. Otherwise, press STOP to exit Step record.

f-8: ERASE

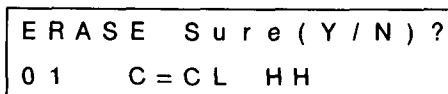
The three types of erase operation are described in the OVERVIEW to this chapter. They are executed as follows:

- PATTERN SELECT (recommended for erasing an entire instrument part in a pattern).

- (1) Select the pattern from which you wish to erase an entire instrument part (if you are recording a pattern, press STOP to stop the recording).
- (2) Press f-8.



- (3) Press the instrument key corresponding to the instrument you wish to erase. Example: Closed HiHat.



You can press any other instrument key at this time, if you have selected the wrong instrument.

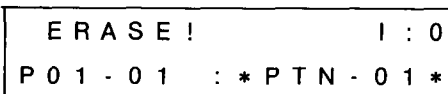
- (4) Press YES to erase the entire instrument part. (You can cancel this operation by pressing NO, if you do not wish to erase the selected instrument.) The LCD will show



then return to the display shown in step 2 above. You can then select another instrument to erase, or exit this function by pressing f-1.

- REAL TIME RECORD (recommended for erasing part of a pattern).

- (1) During Real Time record, hold down f-8.

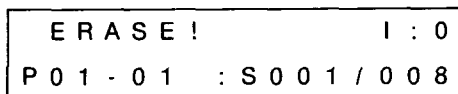


- (2) While you continue holding down f-8, the Erase function is ready. Now, any time you press an instrument key, you will not hear notes played by that instrument, because they are being erased. For example, to erase a single Snare note, listen for the note you wish to erase. Then hold down f-8 and press the SNARE key at the time of that note. Release the SNARE key at once, or following Snare notes will also be erased. You can erase more than one instrument at a time by pressing more than one instrument key while holding down f-8.

- (3) When you release the f-8 key, the Erase function stops, and normal Real Time recording is resumed.

- STEP RECORD (recommended for erasing a single note).

(1) During Step Record, use the -1, +1 keys to locate the beat containing the note you wish to erase. Then press f-8.



(2) While you continue holding down f-8, the Erase function is ready. Now, when you press the instrument key corresponding to an instrument that plays on the selected beat, that instrument's note will be erased. Once you release the instrument key, the LCD will move to the next beat. You can erase more than one instrument at a time by pressing more than one instrument key while holding down f-8.

(3) When you release the f-8 key, the Erase function stops, and normal Step recording is resumed.

6. PATTERN NAME

Pattern names are created in the PATTERN SELECT mode, before or after recording a pattern. They can be changed at any time.

- (1) Select the pattern to be named.
- (2) Press CURSOR RIGHT twice to move the cursor to the first character in the name.



CURSOR moves

(3) Use the -1, +1 keys or the DATA slider to select a new character at the cursor position. The available characters are shown in the following table. Spaces can be entered by moving the DATA slider to its lowest position.

0	1	2	3	4	5	6	7	8	9
C	B	A	H	P	X	h	f	X	
!)	1	9	A	T	O	Y	a	i
"	*	2	:	B	J	R	Z	b	j
#	+	3	:	C	K	S	I	c	k
\$.	4	<	D	L	T	*	d	l
%	-	5	=	E	N	U	J	e	n
&	.	6	>	F	N	U	^	f	n
'	/	7	?	G	O	W	_	g	o
									*

NOTE: Characters which can be selected using the DATA slider are limited to the range indicated in the table. For characters outside this range (lower case letters and some symbols) use the -1, +1 keys. These controls allow you to step through this character table vertically, i.e., up or down one column at a time.

(4) Press CURSOR RIGHT to move the cursor to the next position in the pattern name, then enter a new character in the same way. Repeat this operation until the complete pattern name has been entered.

PATTERN EDIT

1. OVERVIEW

- PATTERN EDIT operations are executed when the DDD-5 is in the PROGRAMMABLE mode. To select PATTERN EDIT functions press MODE key 2, then the appropriate function key, as indicated before the function name heading each of the function sections in this chapter. For example, to select EXTERNAL COPY press the f-5 key after pressing MODE key 2.

NOTE: The first time you press MODE key 2, function f-1 will always be selected.

In the PATTERN EDIT mode, you can execute a variety of pattern functions:

- SWING lets you automatically add a natural swing feel to patterns that have been recorded.
- COPY lets you copy a pattern to another pattern location.
- APPEND lets you connect two patterns to form a single long pattern.
- EXTERNAL COPY lets you copy a pattern from the internal ROM, or from a KORG ROM Pattern card, ROM Pattern/Voice card or RAM card.
- AVAILABLE MEMORY lets you instantly check the remaining empty pattern memory.
- CLEAR lets you delete a pattern.

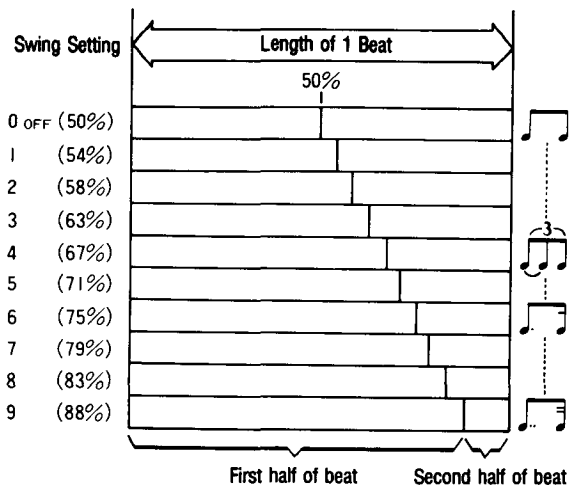
Functions in the PATTERN EDIT mode are as follows:

f-1: PATTERN SELECT

Lets you select a pattern prior to executing a PATTERN EDIT operation.

f-2: SWING

Lets you add a swing feel by delaying the second half of each quarter-note beat. This enables you to create a jazz or shuffle feel easily, by recording a simple eight beat pattern (for example) then using the swing function after recording, to add the swing feel. Swing can be varied from 50% (no swing: the second half of the beat is not delayed) to 88% (extreme swing). At a swing setting of 67% a tied triplet figure is created. The following diagram illustrates the full range of swing settings.



f-3: COPY

Lets you copy any existing pattern to another pattern location. This is useful if you wish to create two slightly different patterns. Simply copy the pattern, then alter the one of the patterns as desired.

NOTE: When a pattern is copied, the pattern name is also copied. You may want to alter the name of one of the patterns after copying.

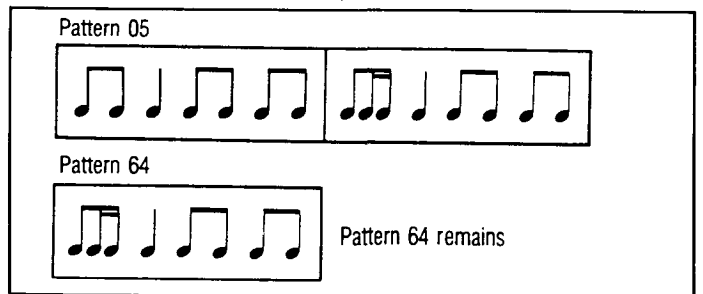
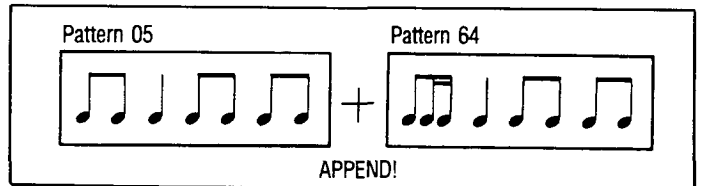
f-4: APPEND

Lets you connect two patterns to make a longer pattern. This can save time when assembling songs: you could append several patterns to form a sequence for a verse. When you create the song, simply enter the long pattern whenever a verse is needed.

The pattern you select before the APPEND operation will be extended by the pattern you select during the APPEND operation. For example, if you select pattern 05, then select APPEND and pattern 64, the APPEND operation will connect pattern 64 to the end of pattern 05, thus extending pattern 05.

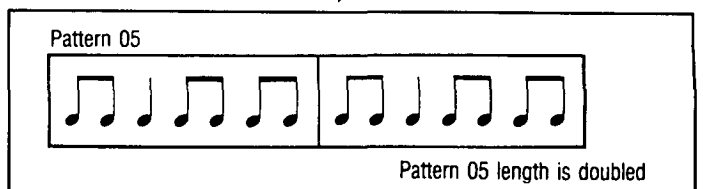
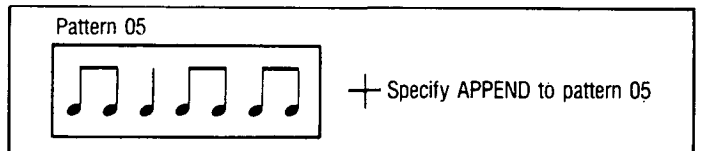
Example of APPEND

Appending to a different pattern



You can append a pattern to itself. This doubles the length of the pattern.

Appending a pattern to itself



NOTE: Only patterns with the same time signature may be appended, and only if the appended pattern will not be longer than 99 bars.

f-5: EXTERNAL COPY

Lets you copy an "external" pattern from the DDD-5's built-in ROM (Read Only memory) in which preset patterns are Permanently stored. You can also copy patterns from the following types of KORG data card:

- ROM Pattern card (contains preset pattern data).
- ROM Pattern/Voice card (contains preset pattern and voice data).
- RAM card (contains pattern data which you have created and saved onto the card, using the DATA TRANSFER operation).

Once you've copied a pattern, you can play it or alter it to create a new pattern.

f-7: AVAILABLE MEMORY

Lets you check the amount of empty memory space available in the DDD-5's pattern memory. This is useful when you have already recorded a large number of patterns; checking the available memory avoids the risk of the memory running out while you're recording a new pattern. When the pattern memory is full, the LCD will indicate 100%. While trying to write new patterns when the pattern memory is full, an error message will appear (see the ERROR MESSAGES chapter).

f-8: CLEAR

Lets you delete a single pattern. After clearing a pattern, values for some parameters relating to that pattern will be as follows:

- TIME SIGNATURE: 4/4
- NUMBER OF BARS: 01
- FLAM TIME: 3
- SWING: 50% (OFF)
- NAME: *PTN-nn* (nn = pattern number)

NOTE: All patterns in the DDD-5 may be cleared simultaneously, using the SYSTEM RESET operation (see the SYSTEM RESET chapter later in this manual). This operation, however, resets the entire memory contents of the DDD-5, and should be used with caution.

2. OPERATIONS

f-1: PATTERN SELECT

Before using PATTERN EDIT functions f-2 thru f-5, and f-8, select a pattern to be edited.

See section 6 in the PLAY OPERATIONS chapter for details of this operation.

f-2: SWING

(1) After selecting an existing pattern, press f-2.

```

SWING  VALUE
PTN 01  =  0
  
```

(2) Use the -1, +1 keys or the numeric keys to set the swing value. RANGE: 0 — 9.

(3) Press START to hear the pattern at the new swing setting.

f-3: COPY

(1) After selecting the pattern you wish to copy, press f-3.

```

COPY
PTN 01  -  PTN ■■
  
```

(2) Use the numeric keys to enter the number of the copy destination. RANGE: 00 — 99. The LCD will show:

```

Sure (Y/N)?
PTN 01  -  PTN 02
  
```

• If the copy destination contains data, the LCD will show:

```

Rewrite (Y/N)?
PTN 01  -  PTN 02
  
```

(3) In either case, you can execute or cancel the copy operation. Press NO to cancel the operation (the LCD will return to the display shown in step 1) then enter another copy destination number. Press YES to execute the operation. The LCD will show:

```

COPY !
PTN 01  -  PTN 02
  
```

then return to the display shown in step 1.

f-4: APPEND

(1) After selecting the pattern which is to be extended by appending another pattern to it, press f-4.

```

APPEND
PTN 01  +  PTN ■■
  
```

(2) Use the numeric keys to select the number of the pattern which is to be appended to the first pattern. (This can be the same pattern number). RANGE: 00 — 99. The LCD will show:

```

Sure (Y/N)?
PTN 01  +  PTN 02
  
```


- If the two patterns have different time signatures, the LCD will show:

```

Parameter Error!
PTN01 + PTN02
  
```

then return to the display shown in step 1. You can select another pattern for appending.

- (3) Press YES to append the patterns. (You can cancel this operation by pressing NO, if you do not wish to append the patterns). The LCD will show:

```

APPEND!
PTN01 + PTN02
  
```

then return to the display shown in step 1.

- (4) Press START to play the appended pattern.

f-5: EXTERNAL COPY

External patterns may be copied from the DDD-5's ROM pattern memory, or from a data card (KORG ROM Pattern card, ROM Pattern/Voice card, or RAM card). We'll describe these two types of operation separately.

● ROM PATTERN COPY

- (1) After selecting a pattern number as the copy destination into which an external pattern will be copied, press f-5.

```

EXT PATTERN COPY
ROM PTN■■■ - PTN00
  
```

- (2) Use the numeric keys to enter the number of the external pattern you wish to copy. RANGE: 00 — 99. The LCD will show:

```

Sure (Y/N) ?
ROM PTN01 - PTN00
  
```

- If the copy destination contains data, the LCD will show:

```

Rewrite (Y/N) ?
ROM PTN01 - PTN00
  
```

- (3) In either case, you can execute or cancel the copy operation. Press NO to cancel the operation (the LCD will return to the display shown in step (1)), use the PATTERN SELECT function to select another copy destination number, and start this operation again. Press YES to execute the operation. The LCD will show:

```

COPY!
ROM PTN01 - PTN00
  
```

then return to the display shown in step (1).

- (4) Press START to hear the copied pattern.

● CARD PATTERN COPY

- (1) Insert the card into card slot 1 on the rear of the DDD-5.
- (2) After selecting a pattern number as the copy destination into which an external pattern will be copied, press f-5.

```

EXT PATTERN COPY
ROM PTN■■■ - PTN00
  
```

- (3) Press -1 to select card pattern copy.

```

EXT PATTERN COPY
CAD PTN■■■ - PTN00
  
```

Indicates card

- (4) Execute steps 2 through 4 of the ROM PATTERN COPY operation. (Operation is identical, but the LCD will always show "CAD" instead of "ROM" to indicate card pattern copy.)

f-7: AVAILABLE MEMORY

Press f-7. The available memory will be shown as a percentage.

```

AVAILABLE MEMORY
099%
  
```

f-8: CLEAR

- (1) After selecting the pattern to be cleared, press f-2.

```

CLEAR Sure (Y/N) ?
P01-01 : *PTN-01*
  
```

- (2) Press YES to clear the pattern. (You can cancel this operation by pressing NO, if you do not wish to clear the selected pattern.) The LCD will show:

```

CLEAR!
P01-01 : *PTN-01*
  
```

followed by the PATTERN SELECT display.

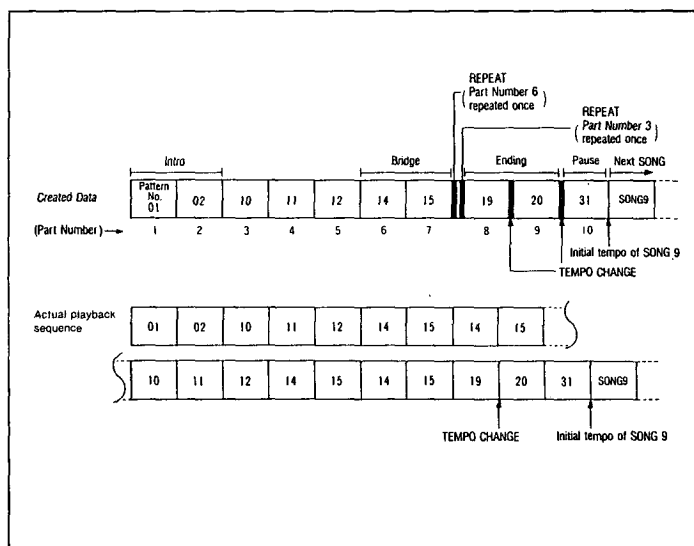
SONG CREATE

1. OVERVIEW

Here's how you create a new song on the DDD-5. (You can also select an existing song and record new data into it.)

- Select the number of the song you wish to create.
- Select the CREATE function and enter patterns into the song. Each pattern is entered as a "part."
- You can enter another song into a part. This lets you use another song as a section of the song you are creating; or connect a number of songs, to form a song sequence (or medley) for a performance.
- During SONG CREATE, you can also select patterns for a preset song (see section 5 of this chapter).
- Repeats and tempo changes can also be entered. They are entered into parts that already contain a pattern. You can enter any number of repeats or tempo changes in a single part.
- Before or after creating the song, select an instrument set for the song.
- You can set an initial tempo for the song.
- You can give a song a name of up to 8 characters.
- You can insert or delete parts of the song, to edit (alter) it to create a new song.
- You can copy the song.
- You can clear (delete) the song.

Here's an example of a song. It contains repeats and tempo changes. At the end, pattern 31 (an empty pattern) provides a pause before the next part plays, which contains an entire song.



Functions in the SONG PLAY/EDIT mode are as follows:

f-1: SONG SELECT

Lets you select the number of the song you wish to create or edit. See section 3 of the PLAY OPERATIONS chapter.

f-2: CREATE

When you select the CREATE function, the first part in the song is displayed. If the song is empty, the part will be empty, and you can enter a pattern or song number. If the song contains data, you can step through to the end of the song and add more parts, or locate any part in the song and alter it. Up to 99 parts can be entered.

f-3: REPEAT

This allows a section of the song to be played a specified number of times (up to 99). You select the first and last part of the section, and the number of times it will be repeated. You can even "nest" one repeat inside another.

Repeats are entered into a part that already contains a pattern or song, so they do not add extra parts to the song. However, they do use up song memory, so the maximum number of parts will be less than 99 when repeats are used.

f-4: TEMPO CHANGE

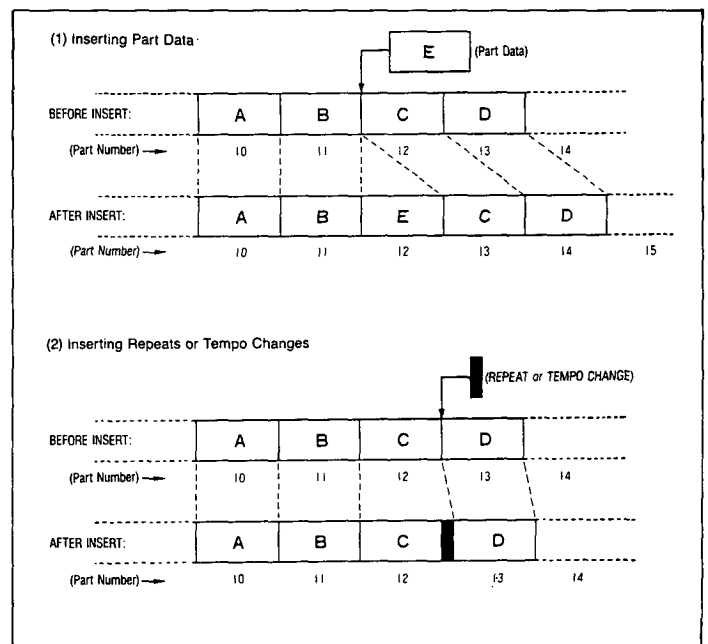
Lets you alter the tempo of the song, by adding or subtracting up to 99 to the current tempo.

NOTE: The tempo cannot be altered beyond the DDD-5's tempo limits (40 — 250 quarter-notes/minute). You can create a gradual tempo change by entering a slight tempo in a series of parts. An easier way is to enter a slight tempo change in a repeat section: every time the repeat section plays, the tempo will change.

Tempo changes are entered into a part that already contains a pattern or song, so they do not add extra parts to the song. However, they do use up song memory, so the maximum number of parts will be less than 99 when tempo changes are used.

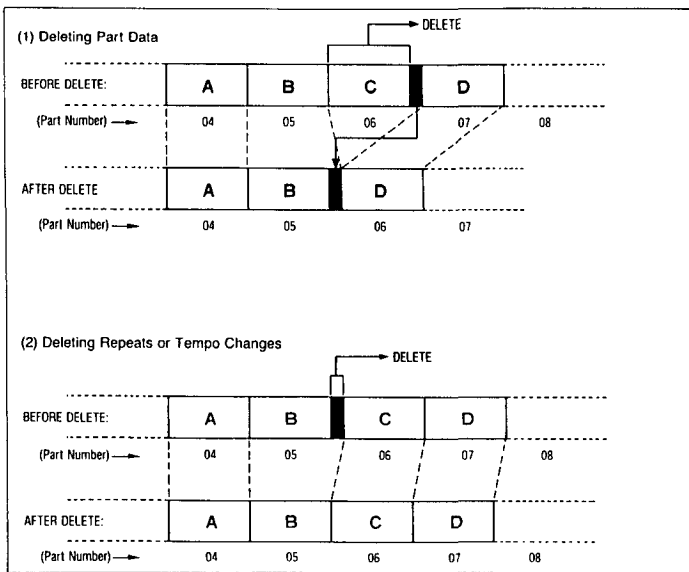
f-5: INSERT

Lets you insert part data (patterns or songs), repeats or tempo changes into an existing song.



f-6: DELETE

Lets you delete part data (patterns or songs), repeats or tempo changes from an existing song.



f-7: TEMPO

Lets you alter the playback tempo of a song, before or during play in the SONG SELECT mode, the initial tempo can be memorized for each song. Initial tempo is independent of tempo changes entered using function f-4 (above), or using function f-7 during play. In other words, the song will always start playback at the initial tempo. See section 6 of the PLAY OPERATIONS chapter for details on song tempo setting.

If not initial tempo is set for a song, it will play at the default tempo of 120.

NOTE: The tempo set using the TEMPO MEMORY function in the preset mode will also affect the corresponding song in the PROGRAMMABLE mode. For example, if you alter the memorized tempo of preset song ROCK 1, then change the DDD-5 to PROGRAMMABLE mode, you will find that the initial tempo of song 00 is at the same value. The reverse is also true (setting initial song tempo in PROGRAMMABLE mode affects the memorized tempo of the corresponding preset song).

f-8: COPY/CLEAR

Lets you clear (erase) an entire song. After clearing, the initial tempo will be reset to 120. The instrument set will remain as selected for the song.

2. OPERATIONS

- SONG PLAY/EDIT operations are executed while the DDD-5 is in the PROGRAMMABLE mode. To select SONG PLAY/EDIT functions press MODE key 3, then the appropriate function key, as indicated before the function name heading each of the function sections in this chapter. For example, to select INSERT press the f-5 key after pressing MODE key 3.

NOTE: The first time you press MODE key 3, function f-1 will always be selected.

f-1: SONG SELECT

See section 3 of the PLAY OPERATIONS chapter for details of this operation.

f-2: CREATE

(1) After selecting a song, press f-2.

```
CREATE 00 * SNG - 00 *
PART 00 = PTN 00
```

(2) Use the CURSOR keys to select pattern or song. CURSOR LEFT selects song (see following LCD illustration); CURSOR RIGHT selects pattern (see previous LCD illustration).

```
CREATE 00 * SNG - 00 *
PART 00 = SNG 00
```

(3) Enter a pattern or song number using the numeric keys. RANGE: 00 — 99 (pattern). 00 — 23 (song). Enter numbers freely until you have entered the correct number.

(4) Press + 1 to move to the next part, then repeat steps 2 and 3. Continue in this way until all part data has been entered for the song.

- During song create you can move backwards or forwards through the song using the -1 and +1 keys respectively. Pressing these keys moves you to the next part; holding down these keys lets you move continuously through the song (like the rewind/fast forward keys on a tape deck). When you locate a part you can alter the pattern or song number in that part, using the numeric keys.
- During song create you can play the displayed part by pressing START. If the part contains a pattern, play will continue until you press STOP. If the part contains a song, it will be played once only. This is a convenient way of checking that the selected part is the one you want.

f-3: REPEAT

Repeats are entered AFTER the entire section to be repeated has been entered in the song. The INSERT function is used to insert the repeat.

(1) Locate the last part of the section to be repeated, using the -1, +1 keys in the SONG CREATE mode. Press f-5 to select the INSERT function, then press f-3.

```
CREATE 00 * SNG - 00 *
PART 10 : TO ■■ x ■■
```

(2) Use the numeric keys to enter the number of the first part of the section to be repeated.

```
CREATE 00 * SNG - 00 *
PART 10 : TO 03 x ■■
```

- (3) Use the numeric keys to enter the number of repeats. RANGE: 01 — 99. (This should be ONE LESS than the total number of times the repeat section is to be played). On the LCD a letter will indicate the position of the repeat within the part. (Tempo changes are indicated in the same way: "a" for the first tempo change or repeat, "b" for the second, etc. After 26 tempo changes and/or repeats, lettering will begin again at "a").

```
CREATE 00 * SNG - 00 *
PART 10 a : T O O 3 x 0 2
```

└┘
Indicates first repeat in a part

- You can alter the numbers entered in steps 2 and 3, by using the CURSOR keys to move the cursor to the appropriate position and using the numeric keys to alter the number.

- (4) Press f-2 to exit the INSERT function and return to normal song create.

f-4: TEMPO CHANGE

Tempo changes are entered in a part that already contains a pattern or song. The INSERT function is used to insert the tempo change.

- (1) Locate the part in which the tempo change is to be inserted, using the -1, +1 keys in the SONG CREATE mode. Press f-5 to select the INSERT function, then press f-4.

```
CREATE 00 * SNG - 00 *
PART 10 : UP ■■
```

- (2) Use the CURSOR keys to select tempo change DOWN or UP. CURSOR LEFT selects DOWN (see following LCD illustration); CURSOR RIGHT selects UP (see previous LCD illustration).

```
CREATE 00 * SNG - 00 *
PART 10 : DOWN ■■
```

- (3) Use the numeric keys to enter the value of the tempo change. RANGE: 01 — 99. On the LCD a letter will indicate the position of the tempo change within the part. (Repeats are indicated in the same way: "a" for the first tempo change or repeat, "b" for the second, etc. After 26 tempo changes and/or repeats, lettering will begin again at "a").

```
CREATE 00 * SNG - 00 *
PART 10 a : UP 20
```

└┘
Indicates first tempo change in a part

- You can alter the numbers entered in step 3, using the numeric keys to alter the number.

- (4) Press f-2 to exit the INSERT function and return to normal song create.

f-5: INSERT

Insertion of repeats and tempo changes is explained in the previous two sections (f-3 and f-4). Insertion of part data (patterns and songs) is explained in this section.

- (1) In song create, use the -1, +1 keys to locate the part at which data is to be inserted. Press f-5.

```
INSERT 00 * SNG - 00 *
PART 10 > PTN ■■
```

- (2) Use the CURSOR keys to select pattern or song, then enter a pattern or song number using the numeric keys (as explained in detail, in section f-2 CREATE, above). Example: pattern 01.

```
INSERT 00 * SNG - 00 *
PART 10 = PTN 02
```

- (3A) Press f-2 to exit the INSERT function and return to normal song create.

- (3B) Alternatively, press +1 to move to the next part, and insert part data there in the same way.

- When part data is inserted, all subsequent parts are moved forwards one place (see the INSERT section in the OVERVIEW to this chapter).

f-6: DELETE

- (1) In song create, use the -1, +1 keys to locate the part which is to be deleted. Press f-6.

```
DELETE 00 * SNG - 00 *
PART 10 ? PTN 02
```

- (2) Press YES to delete the displayed part. (You can cancel this operation by pressing NO, if you do not wish to delete the displayed part). The LCD will show:

```
DELETE !
PART 10 PTN 02
```

then return to the CREATE display.

- When part data is deleted, all subsequent parts are moved back one place (see the DELETE section in the OVERVIEW to this chapter).

f-7: TEMPO

See section 6 in the PLAY OPERATIONS chapter for details of song tempo.

f-8: COPY

- (1) Select the song that is to be copied, then select SONG COPY by pressing f-8. (Subsequent pressings of f-8 will alternately select SONG CLEAR and SONG COPY.)

```
SONG COPY
SONG 00 - SONG ■■
```

- (2) Use the numeric keys to enter the number of the copy destination. RANGE: 00 — 23. The LCD will show:

```
      Sure ( Y / N ) ?
SONG 00 - SONG 01
```

- (3) You can execute or cancel the copy operation. Press NO to cancel the operation (the LCD will return to the display shown in step 1) then enter another copy destination number. Press YES to execute the operation. The LCD will show:

```
COPY !
SONG 00 - SONG 01
```

then return to the display shown in step (1).

f-8: CLEAR

- (1) Select the song that is to be cleared, then select SONG CLEAR by pressing f-8 twice. (Subsequent pressings of f-8 will alternately select SONG COPY and SONG CLEAR).

```
CLEAR Sure ( Y / N ) ?
SONG 00 : * SNG - 00 *
```

- (2) You can execute or cancel the clear operation. Press NO to cancel the operation (the LCD will return to the SONG COPY display). Press YES to execute the operation. The LCD will show:

```
CLEAR !
SONG 00 : * SNG - 00 *
```

then return to the SONG COPY display.

NOTE: All songs in the DDD-5 may be cleared simultaneously, using the SYSTEM RESET operation (see the SYSTEM RESET chapter). This operation, however, resets the entire memory contents of the DDD-5, and should be used with caution.

3. INSTRUMENT SET SELECT

Before or after creating a song, you can select an instrument set from the six instrument sets available. The selected instrument set will be assigned to all parts in the song, even if the patterns contained in those parts had different instrument sets before they were programmed into a song (see NOTE below about parts containing songs).

- (1) In SONG SELECT function (f-1) select the song whose instrument set is to be assigned.
(2) Press CURSOR LEFT to move the cursor to the instrument set number.

Instrument set number

```
SONG SELECT  | = 0
S 0 0 - 0 0 1 : * SNG - 0 0 *
```

- (3) Use the -1, +1 keys or the numeric keys to select the instrument set. RANGE: 0 — 5.

NOTE: There is a way to use more than one instrument set in a song: by assigning another song (which uses another instrument set) to a part. When the part containing the song plays, the new instrument set will be heard. After that part has played, the instrument set assigned to the entire song will be heard.

NOTE: During play, only the sound will change; the instrument set displayed on the LCD will NOT change.

4. SONG NAME

- (1) In SONG SELECT function (f-1) select the song whose name is to be entered.
(2) Press CURSOR RIGHT twice to move the cursor to the first character in the name.

```
SONG SELECT  | = 0
S 0 0 - 0 0 1 : * SNG - 0 0 *
```

CURSOR moves

- (3) Use the -1, +1 keys or the DATA slider to select a new character at the cursor position. The available characters are shown in section 6 of the PATTERN RECORD chapter. Spaces can be entered by moving the DATA slider to its lowest position.
(4) Press CURSOR RIGHT to move the cursor to the next position in the song name, then enter a new character in the same way. Repeat this operation until the complete song name has been entered.

NOTE: Names given to songs in the PROGRAMMABLE mode will also apply to the correspondingly numbered preset songs (playable in the PRESET mode). For example, if song 00 is called "ROCK 1," when you change the DDD-5's operation to PRESET mode and select preset song 00, you'll see that it, too, is called "ROCK 1."

5. CREATING PRESET SONGS

- (1) During SONG CREATE, return to part 01 of the song.
- (2) Press the -1 key. The LCD will show the RHYTHM part of the preset song.

```

CREATE 00 * SNG - 00 *
RHYTHM = PTN ■■
  
```

- (3) Use the numeric keys to enter a pattern number.

```

CREATE 00 * SNG - 00 *
RHYTHM = PTN 00
  
```

└─┬─┘
Pattern number

- (4) Pressing -1 lets you select the other parts for the preset song in the following order: INTRO, FILL-IN, ENDING. Enter pattern numbers for these parts in the same way.
- (5) You can use the -1, +1 keys to locate any of the four preset song parts and change the pattern number at any time.
- (6) After entering patterns into all four preset song parts, use the OPERATION function (see section 3 in the GETTING STARTED chapter) to set the DDD-5 to the preset mode. You can now play the preset song (see section 4 in the PLAY OPERATIONS chapter).

PRESET MODE OPERATIONS

NOTE: Creating preset songs is executed in the SONG PLAY/EDIT mode while the DDD-5 is in the PROGRAMMABLE mode. See section 5 of the SONG CREATE/EDIT chapter for details.

1. CREATING COMBINATIONS

Combinations are created by selecting patterns already assigned to preset songs. Combination selection and play is described in section 4 of the PLAY OPERATIONS chapter.

- (1) Select the combination you wish to create. RHYTHM pattern A will be displayed on the LCD. The preset pattern assigned to RHYTHM pattern A will also be displayed (the number of the preset song from which it is taken, and the type of pattern),

```

♪ = 1 2 0      S = 0      I : 0
C 4 1 R a = S 0 0 R : C M B N 1
  
```

└─┬─┘
Indicates RHYTHM pattern A

└─┬─┘
Preset pattern type

└─┬─┘
Preset song number

- (2) Press CURSOR RIGHT to move the cursor to the preset song number.

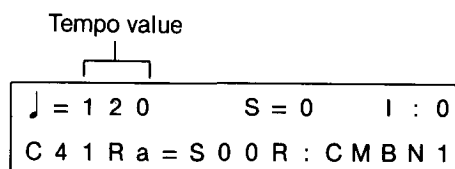
- (3) Use the numeric keys to enter the number of the preset song from which the pattern will be extracted. RANGE: 00 — 23.
- (4) Use the -1, +1 keys to select the pattern type (RHYTHM, ENDING FILL-IN or INTRO, indicated by "R," "E," "F" or "I").
- (5) Press CURSOR LEFT to return the cursor to the combination number.
- (6) Pressing -1 lets you select the other parts for the combination in the following order: FILL-IN A, RHYTHM pattern B, FILL-IN B, FILL-IN, INTRO, ENDING (indicated on the LCD by "Fa," "Rb," "Fb," "I," "E"). Pressing +1 lets you select these parts in the reverse order. Enter pattern numbers for these parts in the same way.
- (7) You can use the -1, +1 keys to locate any of the six combination parts and change the pattern number at any time.
- (8) You can now play the preset combination.

2. TEMPO MEMORY SETTING

This function lets you memorize a tempo setting for each preset song and combination.

- (1) Select the preset song or combination whose tempo is to be memorized.

- Press the CURSOR LEFT key (twice for presets, once for combinations) to move the cursor to the tempo value.



- Press TEMPO MEMORY to turn on the tempo memory function (the LED next to this key should be lit).
- Use the DATA/TEMPO slider, the -1, +1 keys or the numeric keys to set the tempo. RANGE: 040 — 250.

NOTE: If no initial tempo is set for a preset song, it will play at the default tempo of 120.

- See f-7 TEMPO in the OVERVIEW of the SONG CREATE/EDIT chapter for a comment on the relationship between preset song's memorized tempo and PROGRAMMABLE mode song's initial tempo.

3. FUNCTION SETTING

While the DDD-5 is in the PRESET mode, the FUNCTION mode allows you to set a number of functions normally set while the DDD-5 is in the PROGRAMMABLE mode. These functions are identical to functions in the PROGRAMMABLE mode's INST SETTING and SYSTEM FUNCTION modes. Operation of these functions will not be described here: you will be referred to the corresponding sections in the INSTRUMENT SETTING and SYSTEM FUNCTIONS chapters.

- To select functions in the FUNCTION mode, press MODE key 5, then the appropriate PRESET key, as indicated before the function name heading each of the function descriptions in this section. For example, to select PAN press the PRESET C key after pressing MODE key 5.

NOTE: The first time you press MODE key 5, function A will always be selected.

Functions in the PRESET mode are as follows:

A: CLOCK

See f-1 CLOCK in the SYSTEM FUNCTIONS chapter.

B: OUTPUT LEVEL

See f-2 OUTPUT LEVEL in the INSTRUMENT SETTING chapter.

C: PAN

See f-3 PAN in the INSTRUMENT SETTING chapter.

D: TUNE

See f-4 TUNE in the INSTRUMENT SETTING chapter.

E: DECAY

See f-5 DECAY in the INSTRUMENT SETTING chapter.

F: ASSIGN

See f-6 ASSIGN in the INSTRUMENT SETTING chapter.

G: OPERATION

See f-7 OPERATION in the SYSTEM FUNCTIONS chapter.

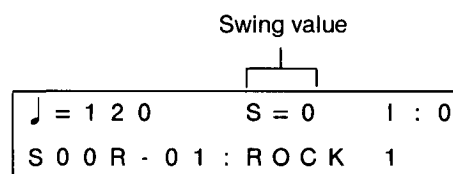
H: DATA TRANSFER

See f-8 DATA TRANSFER in the SYSTEM FUNCTIONS chapter.

4. SWING

This lets you alter the swing setting of the RHYTHM pattern in preset songs.

- Select the preset song whose RHYTHM pattern's swing value is to be set.
- Press CURSOR LEFT to move the cursor to the swing value.



- Use the -1, +1 keys or the numeric keys to set the swing value. RANGE: 0 — 9.

NOTE: The new swing value will also apply to the pattern stored in its original location in the PROGRAMMABLE mode.

SYSTEM FUNCTIONS

1. OVERVIEW

The SYSTEM FUNCTIONS mode lets you execute a number of important functions which affect the basic operation of the DDD-5.

- Set the CLOCK to determine whether the play of the DDD-5 is controlled by its internal clock, or by external devices.
- Set the MIDI functions of the DDD-5, when using it with other MIDI devices. (See the USING THE DDD-5 WITH OTHER DEVICES chapter for suggested MIDI applications of the DDD-5.)
- Set the metronome beat, for Real Time pattern record.
- Change the OPERATION between PRESET mode and PROGRAMMABLE mode.
- Transfer the entire memory contents of the DDD-5 to tape, KORG RAM card or to a MIDI storage device. This data can be reloaded into the DDD-5 at any time.

Functions in the SYSTEM FUNCTION mode are as follows:

f-1: CLOCK

The CLOCK can be compared to a motor which “drives” the DDD-5, when playing or recording. The clock controls START, STOP and TEMPO functions. You can select three different clock functions:

- INTERNAL. The DDD-5's internal clock, used for normal play and record operation, or when using the DDD-5 as a master clock for other MIDI devices.
- MIDI. This setting lets you control the DDD-5 with an external MIDI device such as another DDD-5, or a sequencer.
- TAPE. This setting lets you control the DDD-5 with a synchronization signal recorded on tape.

f-2: MIDI RECEIVE

As well as being controlled by an external MIDI clock (see CLOCK earlier in this section) the DDD-5 can be controlled by MIDI as follows:

- An external MIDI device such as a keyboard, drum pads, sequencer, or even another DDD-5 can use the DDD-5's instruments as a sound source. By sending MIDI note data (patterns recorded on a sequencer, or notes played on a keyboard) the external device actually plays the DDD-5.

MIDI RECEIVE lets you set four functions for reception of MIDI signals from an external MIDI device:

- NOTE AVAILABLE. This determines whether the DDD-5 will receive (available) or ignore (unavailable) incoming MIDI note and Data (such as program change and song pointer). This function does not affect incoming MIDI Clock information (SEE f-1: Clock, above).

- OMNI MODE. MIDI data can be sent on any one of 16 MIDI channels (for example, a sequencer can send MIDI data on different channels to independently control several MIDI devices at the same time). The OMNI mode, when turned ON, allows the DDD-5 to receive MIDI data on all 16 MIDI channels. When turned OFF, MIDI data is received only on the MIDI channel selected using the CHANNEL function.
- CHANNEL. Lets you set the MIDI channel on which data is received by the DDD-5. RANGE: 1 — 16.
- INSTRUMENT NOTE. This sets the MIDI note number for each of the DDD-5's instruments. For example: the MIDI note number of Middle C is 60. If you set the COWBELL to 60, every time a MIDI note number of 60 is from an external MIDI device, the cowbell will sound. The range of MIDI note numbers on the DDD-5 is 25 — 71.

f-3: MIDI TRANSMIT

As well as using its internal CLOCK to control external MIDI devices (see CLOCK earlier in this section) the DDD-5 can control external MIDI devices as follows:

- An external MIDI drum machine such as another DDD-5 or DDD-1 can be used by the DDD-5 as a sound source. By sending MIDI note data the DDD-5 actually plays the external drum machine's sounds. Also this MIDI note data can be sent to a sequencer (such as the SQD-1) and stored. (Upon playback the sequencer sends this note data back to the MIDI drum machine which then acts only as an external MIDI sound source). In addition, each instrument key on the DDD-5 can be set to a different MIDI transmit channel, allowing the DDD-5 to control several (up to 14 — one per instrument key) external MIDI devices.

MIDI TRANSMIT lets you set two functions for transmission of MIDI signals from the DDD-5:

- NOTE AVAILABLE. This determines whether the DDD-5 will transmit MIDI note data. (You do NOT need to set this function if you are only using the DDD-5 to send a MIDI Clock signal to control another drum machine or sequencer.)
- CHANNEL. Lets you set the MIDI channel on which data is transmitted by each of the DDD-5's instrument keys. RANGE: 1 — 16. (The MIDI note transmitted by each instrument key is set in f-2 MIDI RECEIVE mode).

f-4: METRONOME

Lets you select the beat length of the metronome. The default setting is 1/4 (after system reset is executed). This means you'll hear a click on every quarter-beat. On the first beat of each measure, the click is accented. The metronome is always heard during Real Time pattern record. You can also set the metronome to play during pattern play. Metronome level can be adjusted using the DATA slider.

The metronome range is 1/4 — 1/32T (these correspond to the resolution settings; see the chart in f-4 RESOLUTION in section 2 of the PATTERN RECORD chapter.)

f-5: OPERATION

Lets you switch the DDD-5 between PRESET mode and PROGRAMMABLE mode.

f-6: DATA TRANSFER

Lets you save (store) the entire memory contents of the DDD-5 (pattern/song data, instrument set data). You can save data in three ways:

- KORG RAM card. A handy way of storing a large amount of data in a small space. Card operations are fast, too — about 2 seconds to save the entire memory data of the DDD-5. KORG RAM cards have a Protect Switch to avoid accidental erasing of data. The data can be given a name of up to 8 characters.
- Standard cassette tape. The data can be given a name of up to 8 characters. Tape operations are slower, but you can store several sets of data on a single cassette tape.
- MIDI. DDD-5 data can be transmitted in the form of System Exclusive messages, to another DDD-5, to a KORG SQD-1 sequencer (where it can be stored on a Quick Disk) or to any MIDI storage device.

After saving (to RAM card or tape) use the VERIFY operation to check that data has been correctly saved. The VERIFY function compares the original data with the saved data.

You can reload the data into the DDD-5 at any time using the LOAD operation (this will erase all existing data in the DDD-5). In the card mode, you can also load preset patterns into the DDD-5 from KORG ROM Pattern cards and ROM Pattern/Voice cards.

2. OPERATIONS

- Most SYSTEM FUNCTIONS are executed only while the DDD-5 is in the PROGRAMMABLE mode. To select a function in the SYSTEM FUNCTION mode, press MODE key 5, then the appropriate function key, as indicated before the function name heading each of the function sections in this chapter. For example, to select METRONOME press the f-4 key after pressing MODE key 5.

NOTE: The first time you press MODE key 5, function f-1 will always be selected.

NOTE: Functions f-1 CLOCK, f-7 OPERATION and f-8 DATA TRANSFER can also be executed while the DDD-5 is in the PRESET mode. See section 3 of the PRESET MODE OPERATIONS chapter for details on how to select these functions in the PRESET mode. Actual execution of these functions is as described in this chapter.

f-1: CLOCK

- (1) Press f-1. The LCD will show the current clock setting. For example, "INTERNAL"

```
C L O C K
      " I N T E R N A L "
```

- (2) Use the +1 key to step through the clock settings in the following order: INTERNAL, MIDI TAPE. (The -1 key steps through clock settings in the opposite direction). The setting will appear on the LCD.

NOTE: When the clock is set to MIDI or TAPE, the following display will appear when the TEMPO function is selected (for example, during pattern play):

```
TEMPO :  E X T E R N A L
P 0 1 - 0 1 : * P T N - 0 1 *
```

This indicates that the tempo is being controlled by an external device, and cannot be altered by the DDD-5's TEMPO function.

f-2: MIDI RECEIVE

Four functions may be selected for MIDI RECEIVE. When you first press f-2, NOTE AVAILABLE will be selected. Repeated pressings of f-2 let you step through the functions in the following order: NOTE AVAILABLE, OMNI MODE, MIDI CHANNEL, INSTRUMENT NOTE.

NOTE AVAILABLE

- (1) The LCD will show the current NOTE AVAILABLE setting.

```
M I D I  R E C E I V E
N O T E ; A V A I L A B L E
```

- (2) Press NO to turn MIDI RECEIVE OFF (the LCD will show NOTE UNAVAILABLE). Press YES to turn MIDI RECEIVE ON (the LCD will show note AVAILABLE).

OMNI MODE

(1) The LCD will show the current OMNI MODE setting.

```
M I D I   R E C E I V E
O M N I   M O D E ;   O F F
```

(2) Press NO to turn OMNI MODE OFF. Press YES to turn OMNI MODE ON.

MIDI CHANNEL

(1) The LCD will show the current MDI CHANNEL setting.

```
M I D I   R E C E I V E
C H A N N E L ;   0 2
```

(2) Use the -1, +1 keys or the numeric keys to select the MIDI channel. RANGE: 01 — 16.

INSTRUMENT NOTE

```
M I D I   R E C E I V E
I N S T   N O T E ;   ■ =
```

(1) Press the instrument key to select the instrument whose MIDI note is to be set. The current MIDI note for the selected instrument will be displayed.

```
M I D I   R E C E I V E
I N S T   N O T E ;   J = 3 7
```

(2) Use the -1, +1 keys or the numeric keys to set the MIDI note for the selected instrument. RANGE: 25 — 71.

(3) Repeat steps 1 and 2 to set MIDI notes for other keys. More than one instrument can be assigned to the same MIDI note.

f-3: MIDI TRANSMIT

Two functions may be selected for MIDI TRANSMIT. When you first press f-3, NOTE AVAILABLE will be selected. Repeated pressings of f-3 let you alternate between NOTE AVAILABLE and INSTRUMENT CHANNEL.

NOTE AVAILABLE

(1) The LCD will show the current NOTE AVAILABLE setting.

```
M I D I   T R A N S M I T
N O T E ; A V A I L A B L E
```

(2) Press NO to turn MIDI TRANSMIT OFF (the LCD will show NOTE UNAVAILABLE). Press YES to turn MIDI TRANSMIT ON (the LCD will show NOTE AVAILABLE).

INSTRUMENT CHANNEL

```
M I D I   T R A N S M I T
I N S T   C H ;   ■ =
```

(1) Press the instrument key to select the instrument whose MIDI channel is to be set. The current MIDI channel for the selected instrument will be displayed.

```
M I D I   T R A N S M I T
I N S T   C H ;   K = 0 1
```

(2) Use the -1, +1 keys or the numeric keys to set the MIDI channel for the selected instrument. RANGE: 01 — 16.

(3) Repeat steps 1 and 2 to set MIDI channels for other keys. More than one instrument can be assigned to the same MIDI channel.

f-4: METRONOME

(1) Press f-4. The current metronome setting will be displayed.

```
M E T R O N O M E ;   O F F
B E A T   ;   1 / 8
```

(2) Use the -1, +1 keys or the numeric keys to select the metronome setting. If using numeric keys, refer to the fractions printed on the right above each numeric key. RANGE: 1/4 — 1/32 plus 1/4T — 1/32T (triplet notes).

(3) Press CURSOR LEFT to move the cursor to the OFF/ON position.

```
M E T R O N O M E ;   O F F
B E A T   ;   1 / 4
```

(4) Press -1 to turn the metronome OFF for playback; press +1 to turn the metronome ON for playback.

f-5: OPERATION

See section 3 in the GETTING STARTED chapter for details of this operation.

f-6: DATA TRANSFER

Three types of DATA TRANSFER may be selected. When you first press f-8 after turning the DDD-5's power on, CARD will be selected. Repeated pressings of f-8 let you step through the functions in the following order: CARD, TAPE, MIDI.

After selecting a function, you can carry out SAVE, VERIFY (card or tape only) and LOAD operations.

NOTE 1: DATA TRANSFER operations described here are all "successful" operations. If there is any fault during a DATA TRANSFER operation an error message will appear on the LCD. The ERROR MESSAGES chapter explains all DDD-5 error message displays.

NOTE 2: All SAVE, VERIFY and LOAD operations may be immediately cancelled by pressing CANCEL. The LCD will show (for example, during a CARD SAVE operation):

```

CARD SAVE
Cancel End.
  
```

Press SAVE, LOAD or VERIFY then repeat the operation, or press any MODE or FUNCTION key to clear the CANCEL END message from the LCD.

● CARD DATA TRANSFER — SAVE

When executing a card save operation a KORG RAM card should be inserted into card slot 1 on the rear of the DDD-5.

NOTE: Some KORG RAM cards, designed for use with other KORG digital instruments such as the DS-8 Digital Synthesizer, may also be used with the DDD-5. The DDD-5 data requires 128-kbyte of memory space. Any card with less memory capacity than 128 kbyte can NOT be used for saving DDD-5 data.

(1) After selecting DATA TRANSFER: CARD, press SAVE.

```

CARD SAVE
Sure ? ; * * * * *
  
```

(2) If you wish to enter a name for the data (this step, and step 3, may be omitted) press CURSOR RIGHT to move the cursor to the first character space. Use the DATA slider or the -1, +1 keys to select the first character. See section 6 in the PATTERN RECORD chapter for a table of the available characters.

(3) Repeat step 2 until you have entered the complete data name. Then use the CURSOR LEFT key to return the cursor to the position shown in step 1.

(4) Press YES to execute the save operation. (You can cancel this operation by pressing NO, if you do not wish to save the data). The LCD will show:

```

CARD SAVE
Execute!
  
```

When the data has been saved the LCD will show:

```

CARD SAVE
Finish
  
```

(5) Press any MODE or FUNCTION key to exit the card data transfer mode.

● CARD DATA TRANSFER — VERIFY

Verify should be carried out immediately after saving data. When executing a card verify operation a KORG RAM card should be inserted into card slot 1 on the rear of the DDD-5.

(1) After selecting DATA TRANSFER: CARD, press VERIFY (you can also press VERIFY immediately after the end of a save operation).

```

CARD VERIFY
Ready ? ; * * * * *
  
```

(2) Press YES to execute the verify operation. (You can cancel this operation by pressing NO, if you do not wish to verify the data). The LCD will show:

```

CARD VERIFY
Execute!
  
```

When the data has been verified the LCD will show:

```

CARD VERIFY
Finish.
  
```

(3) Press any MODE or FUNCTION key to exit the card data transfer mode.

● CARD DATA TRANSFER — LOAD

When executing a card load operation a KORG RAM card, ROM Pattern card or ROM Pattern/Voice card should be inserted into card slot 1 on the rear of the DDD-5.

NOTE: A load operation will erase all data currently in the DDD-5's memory. If you wish to preserve this data, save it to another card before executing the load operation.

(1) After selecting DATA TRANSFER: CARD, press LOAD.

```

CARD LOAD
Sure ? ; * * * * *
  
```

(2) Press YES to execute the load operation. (You can cancel this operation by pressing NO, if you do not wish to load the data). The LCD will show:

```

CARD LOAD
Execute!
  
```

When the data has been loaded the LCD will show:

```
CARD LOAD
Finish .
```

- (3) Press any MODE or FUNCTION key to exit the card data transfer mode.

TAPE DATA TRANSFER

The following points should be remembered when executing a tape data transfer with the DDD-5:

- If you are using the EARPHONE jack for playback on a stereo cassette recorder, save data on the LEFT track of the tape; otherwise, the data cannot be verified or loaded.
- Record and playback levels should be as high as possible, without causing distortion.
- Make sure tape heads are clean and demagnetized and that batteries, if used, are fully charged.
- Excessively wow and flutter can impair data transfer. Also, the cassette recorder should not be vibrated or moved, or have its levels altered, during data transfer.
- Some connection cords available contain resistors. These can impair data transfer.
- Use high-quality, fresh tape, and store it away from a magnetic field, or recorded data could be scrambled.
- You can save several sets of data on a single cassette tape. Be sure to leave at least 10 seconds' gap between each set of data, and give each set of data a name when saving.
- If you listen to a tape of recorded data, you'll hear four distinct tones:

LEVEL SET TONE (high-pitched tone). Tone used to set recording level (after pressing YES first time in tape save function).

LEADER TONE (lower-pitched tone). Indicates the start of data saving (after pressing YES second time in tape save function).

DATA TONE (medium-pitched noise). Indicates actual recorded data.

END TONE (short, high-pitched tone). Indicates the end of data saving.

CONNECTIONS

For all tape data transfer operations, connect the tape jacks on the rear panel of the DDD-5 to a cassette recorder as follows:

- (1) Connect the DDD-5's TAPE IN jack to the LINE OUT or EARPHONE jack of the cassette recorder.
- (2) Connect the DDD-5's TAPE OUT jack to the LINE IN or MIC jack of the cassette recorder.
- (3) If you are using the cassette recorder's LINE IN/OUT jacks, set the DDD-5's TAPE LEVEL switch to the left position. If you are

using the cassette recorder's MIC/EARPHONE jacks, set the DDD-5's TAPE LEVEL switch to the right position.

● TAPE DATA TRANSFER — SAVE

- (1) After selecting DATA TRANSFER: TAPE, press SAVE.

```
TAPE SAVE
Ready ? ;
```

- (2) If you wish to enter a name for the data (this step, and step 3, may be omitted) press CURSOR RIGHT to move the cursor to the first character space. Use the DATA slider or the -1, +1 keys to select the first character. See section 6 in the PATTERN RECORD chapter for a table of the available characters.
- (3) Repeat step 2 until you have entered the complete data name. Then use the CURSOR LEFT key to return to the cursor to the position shown in step 1.
- (4) Press YES.

```
TAPE SAVE
Sure ? ; DATA - 5 0 7
```

- (5) Set the cassette recorder to RECORD. At this time, a LEVEL SET TONE is output from the DDD-5's TAPE OUT jack, so you can set the record level by pressing pause on the cassette recorder and adjusting the record level control.
- (6) Release the pause button, so the cassette recorder starts recording. Be sure the tape leader has passed the tape heads before executing the next step.
- (7) Press YES to execute the save operation. (You can cancel this operation by pressing NO, if you do not wish to save the data). The LCD will show:

```
TAPE SAVE
Execute !
```

When the data has been saved the LCD will show:

```
TAPE SAVE
Finish .
```

- (8) Stop the cassette recorder.
- (9) Press any MODE or FUNCTION key to exit the tape data transfer mode.

● TAPE DATA TRANSFER — VERIFY

Verify should be carried out immediately after saving data.

- (1) After selecting DATA TRANSFER: TAPE, press VERIFY (you can also press VERIFY immediately after the end of a save operation).

```
T A P E   V E R I F Y
R e a d y ? ;
```

- (2) Enter the name of the data to be verified, as described in the save operation. After entering the name, return the cursor to the "Ready?" position.

NOTE: If you omit this step, the DDD-5 will verify the first set of data encountered.

- (3) Press YES to execute the verify operation. (You can cancel this operation by pressing NO, if you do not wish to verify the data).

- (4) Start play of the tape. While searching for the data the LCD will show:

```
T A P E   V E R I F Y
S e a r c h ; D A T A - 5 0 7
```

When the DDD-5 encounters data with a different name to that specified in step 2, the LCD will show:

```
T A P E   V E R I F Y
P a s s   ; D A T A - 3 2 5
```

When the DDD-5 encounters the data whose name has been specified (or if no name was specified, when it encounters the first set of data) verifying will start, and the LCD will show:

```
T A P E   V E R I F Y
F i n d   ; D A T A - 5 0 7
```

When the data has been verified the LCD will show:

```
T A P E   V E R I F Y
F i n i s h .
```

- (5) Stop the cassette recorder.
 - (6) Press any MODE or FUNCTION key to exit the tape data transfer mode.
- If in step 4 the "PASS" or "FIND" message does not appear after starting play of the tape, it could indicate that tape playback level is too low. Rewind the tape, raise the playback level and try verifying again.

- If in step 4, the LCD does not change from the "FIND" message to the "FINISH" it could indicate that tape playback level has become too low or too high during the verify operation, or that there is a faulty connection between the cassette recorder and the DDD-5. Check the connections, check the playback level, and repeat the verify operation.

● TAPE DATA TRANSFER — LOAD

NOTE: A load operation will erase all data currently in the DDD-5's memory. If you wish to preserve this data, save it to another tape before executing the load operation.

- (1) After selecting DATA TRANSFER: TAPE, press LOAD.

```
T A P E   L O A D
R e a d y ? ;
```

- (2) Enter the name of the data to be loaded, as described in the save operation. After entering the name, return the cursor to the "Ready?" position.

NOTE: If you omit this step, the DDD-5 will load the first set of data encountered.

- (3) Press YES to execute the load operation (You can cancel this operation by pressing NO, if you do not wish to load the data).

- (4) Start play of the tape. While searching for the data the LCD will show:

```
T A P E   L O A D
S e a r c h ; D A T A - 5 0 7
```

When the DDD-5 encounters data with a different name to that specified in step (2), the LCD will show:

```
T A P E   L O A D
P a s s   ; D A T A - 5 0 7
```

When the DDD-5 encounters the data whose name has been specified (or if no name was specified, when it encounters the first set of data) loading will start, and the LCD will show:

```
T A P E   L O A D
F i n d   ; D A T A - 5 0 7
```

When the data has been loaded the LCD will show:

```
T A P E   L O A D
F i n i s h .
```

- (5) Stop play of the cassette recorder.
- (6) Press any MODE or FUNCTION key to exit the tape data transfer mode.
 - If in step 4 the "PASS" or "FIND" message does not appear after starting play of the tape, it could indicate that tape playback level is too low. Rewind the tape, raise the playback level and try loading again.
 - If in step 4, the LCD does not change from the "FIND" message to the "FINISH" it could indicate that tape playback level has become too low or too high during the load operation, or that there is a faulty connection between the cassette recorder and the DDD-5. Check the connections, check the playback level, and repeat the load operation.

MIDI DATA TRANSFER

For the following descriptions of MIDI data transfer operations, we'll use the KORG SQD-1 MIDI Recorder as an example of the type of MIDI device which can transfer DDD-5 data. Other MIDI devices will have their own modes of operation, and should be set to load MIDI data (when the DDD-5 is saving data) or to save data (when the DDD-5 is loading data) as appropriate.

CONNECTIONS

Connect the MIDI jacks on the rear panel of the DDD-5 to the SQD-1 as follows:

- (1) Connect the DDD-5's MIDI IN jack to the SQD-1's MIDI OUT jack.
- (2) Connect the DDD-5's MIDI OUT jack to the SQD-1's MIDI IN jack.
- (3) Set DIP switch 5 (DATA TRANSFER) on the SQD-1 to MIDI. (See the SQD-1 owner's manual pages 114 — 115 for details).

● MIDI DATA TRANSFER — SAVE

- (1) Set the SQD-1 to load standby (its display will read "LoAd").
- (2) Press SAVE.

M I D I S A V E
R e a d y ?

- (3) Press YES to execute the save operation. (You can cancel this operation by pressing NO, if you do not wish to save the data). The LCD will show:

M I D I S A V E
E x e c u t e !

When the data has been saved the LCD will show:

M I D I S A V E
F i n i s h .

The SQD-1's display will show "FnISH."

- (4) Press any MODE or FUNCTION key to exit the MIDI data transfer mode.

- If in step 3 the SQD-1 is still in the LOAD status after the DDD-5's LCD indicates "Finish" this could indicate that there is a faulty connection between the DDD-5 and the SQD-1. Check the MIDI connections, and repeat the save operation.

● MIDI DATA TRANSFER — LOAD

NOTE: A load operation will erase all data currently in the DDD-5's memory. If you wish to preserve this data, save it to RAM card, tape, another Quick Disk or other MIDI storage device before executing the load operation.

- (1) Press LOAD.

M I D I L O A D
R e a d y ?

- (2) Press YES to set the DDD-5 to receive data from the SQD-1. (You can cancel this operation by pressing NO, if you do not wish to load the data). The LCD will show:

M I D I L O A D
E x e c u t e !

- (3) Transmit data from the SQD-1 using the SQD-1's save function. During transmission, the SQD-1's display will show "SAvE." When the data has been loaded the SQD-1's display will show "FnISH" and the DDD-5's LCD will show:

M I D I L O A D
F i n i s h .

- (4) Press any MODE or FUNCTION key to exit the MIDI data transfer mode.

- If in step 3 the DDD-5's LCD still shows "Execute" after the SQD-1's display indicates "FnISH" this could indicate that there is a faulty connection between the DDD-5 and the SQD-1. Check the MIDI connections, and repeat the load operation.

USING THE DDD-5 WITH OTHER DEVICES

MIDI stands for Musical Instrument Digital Interface. MIDI allows digital musical instruments to control each other in a virtually unlimited range of configurations. The DDD-5 is fully MIDI compatible. It can function as part of a MIDI music system in three basic ways: MIDI TRANSMIT (the DDD-5 controls another MIDI device), MIDI RECEIVE (the DDD-5 is controlled by another MIDI device) and TAPE SYNC (the DDD-5 can transmit or be controlled by a synchronization signal which is recorded on tape). In this chapter, we'll describe these applications of the DDD-5, and explain which connections and operations are necessary to enable the DDD-5 to perform in some examples of MIDI music systems.

NOTE: MIDI signals can be sent on any one of 16 MIDI channels, numbered 1 thru 16. In any MIDI application, the controlling MIDI device ("Master") and receiving MIDI device ("Slave") should be set to the same MIDI channel. The DDD-5 is also capable of sending MIDI Note data on several MIDI channels simultaneously, to control several MIDI devices independently (see f-3 MIDI TRANSMIT in section 2 of the SYSTEM FUNCTIONS chapter).

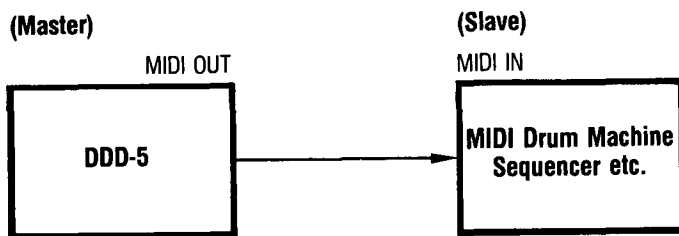
1. MIDI TRANSMIT

The DDD-5 can transmit two types of MIDI data:

MIDI CLOCK SIGNALS

MIDI Clock signals are transmitted when the DDD-5 is used (as a Master) to control the playback of another device (a Slave). For example, you could use the DDD-5 to control START, STOP and TEMPO functions of another drum machine. The DDD-5 could also control playback of music stored in a sequencer such as the KORG SQD-1 MIDI Recorder. For this type of MIDI application, the DDD-5's clock should be set to INTERNAL (see f-1 CLOCK in section 2 of the SYSTEM FUNCTIONS chapter). The Slave's clock should be set to MIDI.

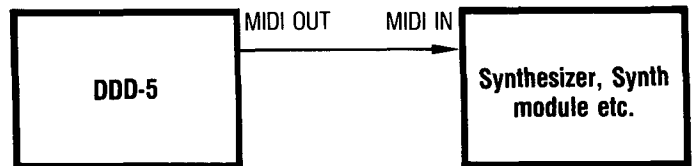
- If the Slave has a SYNC input instead of a MIDI input, you'll need a KORG KMS-30 MIDI Synchronizer to convert the DDD-5's MIDI signal to a SYNC signal.



Set Clock to "INTERNAL"

Set to receive MIDI Clock signals.

possible to independently control up to 14 external MIDI devices from the DDD-5. For this type of MIDI application, the NOTE AVAILABLE and CHANNEL functions should be set (see f-3 MIDI TRANSMIT in section 2 of the SYSTEM FUNCTIONS chapter). The note number for each key should also be set using the INSTRUMENT NOTE function (see f-2 MIDI RECEIVE in section 2 of the SYSTEM FUNCTION chapter).



Set MIDI TRANSMIT functions.

NOTE: The DDD-5 transmits a NOTE OFF message immediately after transmitting a NOTE ON signal, so some synth modules may not respond.

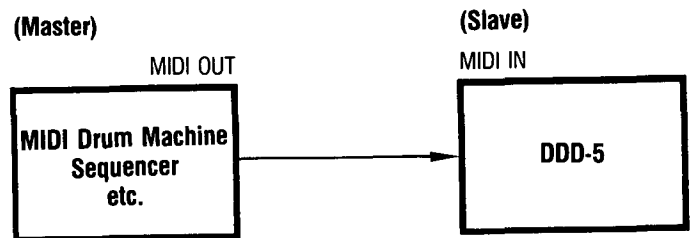
2. MIDI RECEIVE

The DDD-5 can receive two types of MIDI data:

MIDI CLOCK SIGNALS

MIDI Clock signals are received when an external device (another DDD-5, or a sequencer or MIDI computer) is used (as a Master) to control the STOP, START and TEMPO functions of the DDD-5. For example, you could use a KORG SQD-1 MIDI Recorder to control pattern and song play on the DDD-5. For this type of MIDI application, the DDD-5's clock should be set to MIDI (see f-1 CLOCK in section 2 of the SYSTEM FUNCTIONS chapter). The Master device's clock should be set to INTERNAL.

- If the Master has a SYNC output instead of a MIDI output, you'll need a KORG KMS-30 MIDI Synchronizer to convert its SYNC signal to a MIDI signal.



Set to transmit MIDI Clock signals.

Set Clock to "MIDI"

MIDI NOTE SIGNALS

MIDI Note signals are transmitted when the DDD-5 is using another MIDI device as a sound source. Each time the DDD-5 plays a note, the sound source (another DDD-5, a synthesizer, synth module, sampler, etc.) also plays a note, at a selected pitch. This enables the DDD-5 to use any sounds in its patterns, and even create melodic sequences. You can select the note that each of the DDD-5's instrument keys will transmit. You can also set the MIDI Transmit channel of each instrument key, making it

NOTE: When controlling play of the DDD-5 from another MIDI device, the procedure is as follows:

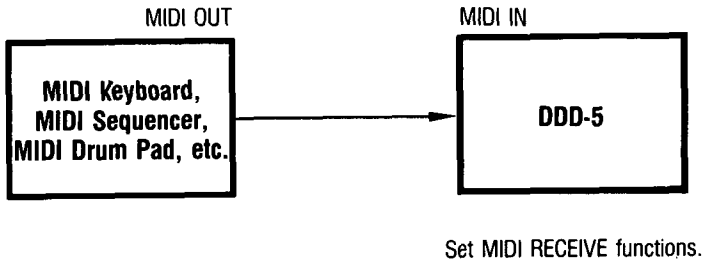
- (1) Select the pattern or song you wish to play on the DDD-5.
- (2) Press START on the Master device. The DDD-5 will start to play. Its tempo will be controlled by the Master, and it will stop when STOP is pressed on the master.

(3) If playing a preset song or combination on the DDD-5, the RHYTHM pattern will now be heard (in the case of a combination, RHYTHM pattern A). To start with the INTRO pattern, press INTRO in step 2 above. During play, you can press the FILL-IN key at any time in the normal way. You can also press ENDING and STOP at any time.

- If the DDD-5 fails to start play when you press START on the Master, there may be a fault in the MIDI connection. Check the MIDI cable, and try again.

MIDI NOTE SIGNALS

MIDI Note signals are received when the DDD-5 is used as a sound source by another MIDI device. Each time the external MIDI device sends a MIDI note signal (for example, a note played on a MIDI keyboard, or a note stored in a sequencer) the DDD-5 plays a note, just as if one of its instrument keys had been tapped. If the external device features Touch Sensitivity, the DDD-5's volume can also be controlled. For this type of MIDI application, the CHANNEL, NOTE AVAILABLE and INSTRUMENT NOTE functions should be set (see f-2 MIDI RECEIVE in section 2 of the SYSTEM FUNCTIONS chapter).



You can even use a MIDI keyboard to control the tuning and decay of the DDD-5's instruments, as shown in the following diagram.

When notes are played on the keyboard in the range 26 — 71, the DDD-5 instruments will be heard as normal. If, while playing an INST key you hold down a DECAY key or a TUNE key, you can alter the decay and tune of the note you are playing. This lets you damp cymbals, play melodic bass guitar riffs, tune toms, etc., while you play.

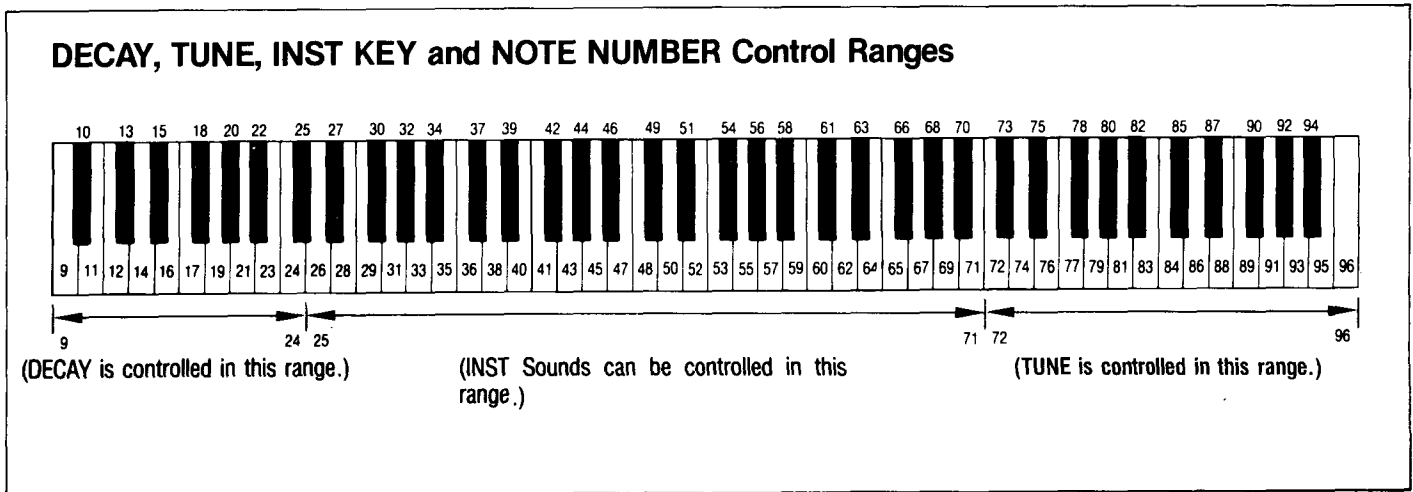
You can also use this technique to record pattern on the DDD-5. And of course this type of MIDI Note data could be sent from a MIDI sequencer as well as from a MIDI keyboard.

3. TAPE SYNC

Tape Sync lets you combine acoustic and digital music in the following manner:

- A Tape Sync signal is recorded onto one track of a multitrack tape deck from the DDD-5 during pattern or song play.
- The Tape Sync signal stops when you press STOP on the DDD-5 (in the case of pattern play) or when play of a song on the DDD-5 finishes.
- When you play back the Tape Sync signal, it starts play of the DDD-5, maintains play at the tempo which was set when the Tape Sync signal was recorded, and stops play.
- You can then record other instruments or vocals on other tracks of the multitrack tape deck. The Tape Sync signal ensures that the DDD-5 always stays in sync with the recorded tracks.

NOTE: Only a synchronization signal is recorded from the DDD-5, NOT the actual drum patterns. This means that you can actually alter the DDD-5's pattern or song after recording the Tape Sync signal. The Tape Sync signal determines only the duration and tempo of playback. So for example, after recording instruments and vocals, you could change patterns in a song to create fill-ins (using the SONG CREATE function). As long as you keep the song at the same number of bars, you can alter the patterns in the song as you like.



Tape Sync procedures are as follows:

TAPE SYNC RECORD

- (1) Connect the TAPE OUT of the DDD-5 to one of the input jacks of the multitrack tape deck.
- (2) Set the DDD-5 clock to INTERNAL (see f-1 CLOCK in section 2 of the SYSTEM FUNCTIONS chapter).
- (3) Set the tape deck to record, then press the pause button. The DDD-5 outputs a LEADER TONE allowing you to adjust the record level (which should be high, but not so high as to cause distortion). The TAPE LEVEL switch can be set to match the tape deck.
- (4) Select a pattern, song, preset song or combination on the DDD-5. Adjust the tempo carefully, because it cannot be altered after recording the Tape Sync signal.
- (5) Start recording on the tape deck. Wait a few seconds, then start play on the DDD-5. The LEADER TONE (a clear tone) will change to a buzzy-sounding TAPE SYNC TONE.
- (6) When play stops (by pressing STOP; by allowing a song to finish; or on the last beat of an ENDING pattern in the PRESET mode) the LEADER TONE will be heard again. Wait a few seconds, then stop the tape deck.

TAPE SYNC PLAYBACK

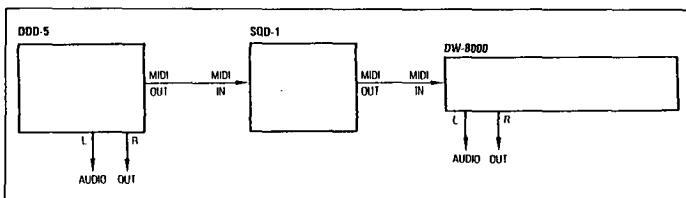
- (1) Connect the TAPE IN of the DDD-5 to the appropriate output jack of the multitrack tape deck.
- (2) Set the DDD-5 clock to TAPE (see f-1 CLOCK in section 2 of the SYSTEM FUNCTIONS chapter).
- (3) Press START on the DDD-5. The RUN LED will light, but the DDD-5 will not begin playing.
- (4) Play the tape from the beginning of the recorded Tape Sync signal. As soon as the TAPE SYNC TONE starts, the DDD-5 will start play. The DDD-5 will continue playing (at the tempo selected when the Tape Sync signal was recorded) as long as the TAPE SYNC TONE continues. When the LEADER TONE resumes, the DDD-5 will stop play.

- If the DDD-5 fails to start play on playback of the Tape Sync signal, or if its tempo is unsteady, the Tape Sync signal may have been recorded at too low or too high a level. Try recording it again, after checking the record level.
- If you have selected a preset song or combination on the DDD-5, read the note at the end of the MIDI CLOCK SIGNALS part of section 2 in this chapter.

4. SYSTEM EXAMPLES

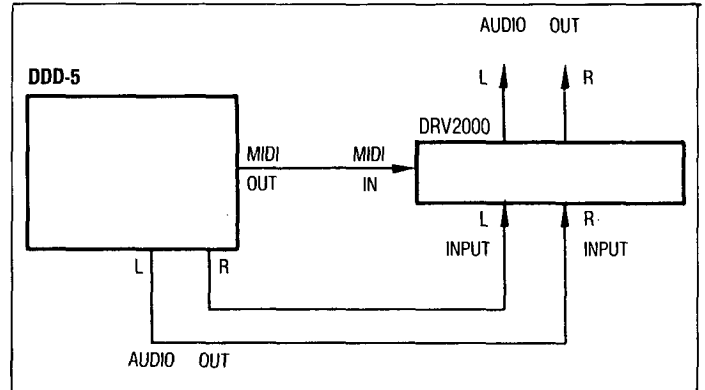
The DDD-5 can be used in an enormous variety of MIDI applications. Here are a few system examples, featuring a range of KORG digital equipment, to give you an idea of the versatility of the DDD-5. Read the previous three sections of this chapter for details on the MIDI settings required for these systems.

MIDI CLOCK OUT



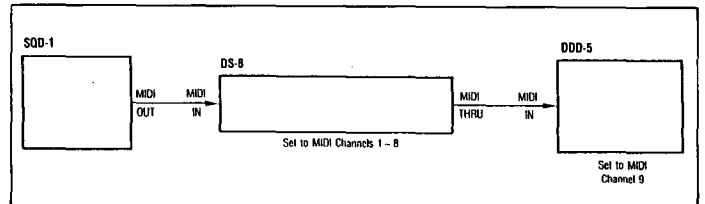
The DDD-5 is used to control playback of the SQD-1 MIDI Recorder, which contains music data recorded from the DW8000 Programmable Digital Waveform Synthesizer. This connection configuration is useful when you have completed programming music data, and are working on the DDD-5's rhythm patterns — you can control the whole system from the DDD-5. Every time you press START on the DDD-5, the SQD-1 will play the digital music track via the DW8000. You can adjust tempo from the DDD-5. You can alter the DDD-5's part (for example, by changing patterns in a song) to exactly fit the music.

MIDI NOTE OUT



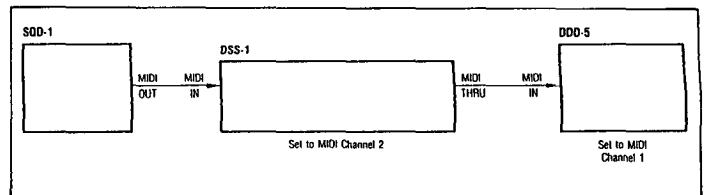
The DRV2000 Digital Reverb includes an innovative Multi Modulation feature which allows you to alter reverb time by input level, by a volume pedal, or by MIDI Note Number. In this system, the DDD-5's output is processed by the DRV2000, to create a full, powerful sound. (Reverb is highly recommended for making the DDD-5's instruments sound even more authentic). The DDD-5 controls reverb time by transmitting a different MIDI Note Number from each instrument. By careful selection of MIDI Note Numbers, you can, for example, set a long, thunderous reverb on the snare; medium reverb on the Toms; short reverb on the bass drum.

MIDI CLOCK IN



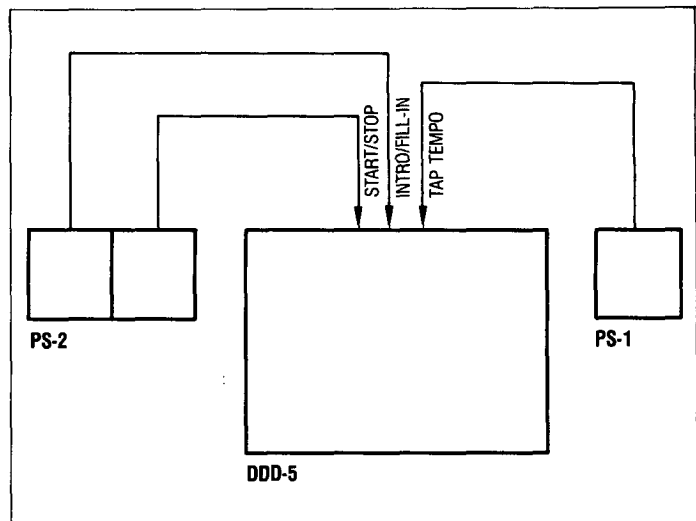
Similar to the MIDI CLOCK OUT system described earlier, this system comprises the DDD-5, the SQD-1 plus a digital synthesizer (in this case, the DS-8). The system is controlled from the SQD-1. When you press PLAY on the SQD-1 the DDD-5 starts to play (for example, a song that has been created to fit the music data stored in the SQD-1). The SQD-1 controls the tempo, and sends eight tracks of music data on eight separate MIDI channels to the DS-8 (which has eight independent voices).

MIDI NOTE IN



In this system, the SQD-1 is not using MIDI clock signals to control the DDD-5. It is actually sending data for each note of the DDD-5 (which, therefore, does not need to be set to PLAY). The notes recorded on the SQD-1 correspond to the MIDI Note Numbers set for each of the DDD-5's instruments. The exciting feature of this system is that you can use the SQD-1 to actually edit each note of the DDD-5's drum part. You can move notes to alter their timing, or change the pitch of notes so that they are played on another of the DDD-5's instruments.

FOOT SWITCH PLAY



The SQD-1 sends MIDI NOTE data to the DDD-5 on MIDI channel 1, and to the DSS-1 Digital Sampling Synthesizer on MIDI channel 2.

- See the MIDI NOTE SIGNAL part of section 2 of this chapter for notes on the control of the DDD-5 from a MIDI keyboard.

TAPE SYNC

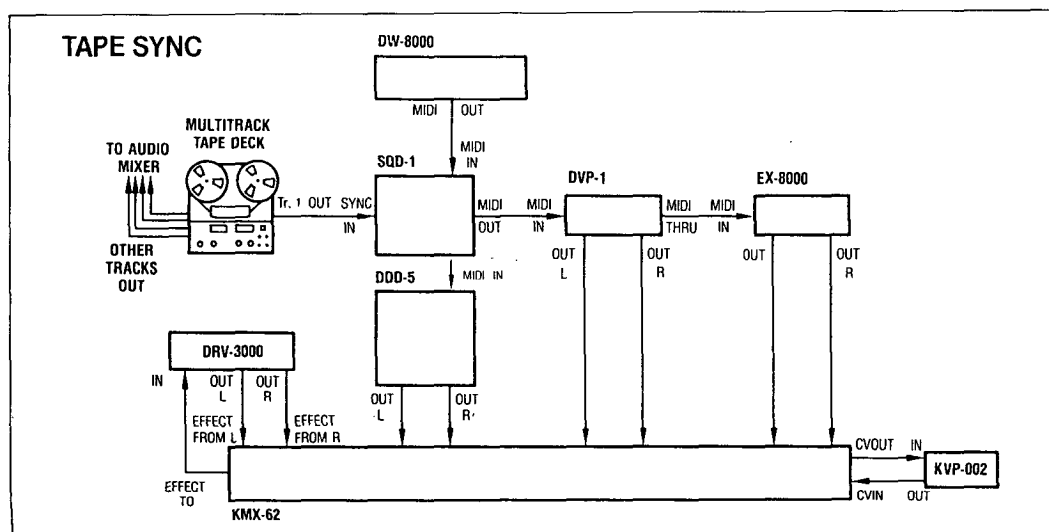
This advanced KORG system uses Tape Sync to synchronize the DDD-5 with other instruments and vocals recorded on a multitrack tape deck.

The Tape Sync signal has been recorded simultaneously on two tracks of the multitrack tape deck, and is also used to control an SQD-1 MIDI Recorder, which contains music data recorded from a DW-8000 Digital Synthesizer. When the tape is played, you hear the recorded music. The Tape Sync signal on track 1 starts the DDD-5 and keeps it in tempo. The Tape Sync signal on track 2 starts the SQD-1 and keeps it in tempo.

The SQD-1 sends MIDI music data on separate MIDI channels to the DVP-1 Digital Voice Processor (which creates realistic voice sounds) and the EX-8000 (which produces the same digital sounds as the DW-8000). All instruments are routed to the KMX-62 Keyboard Mixer, which has a VCA (Voltage Controlled Amplifier) feature enabling you use the KVP-002 Volume Pedal to control overall volume, or volume of selected channels. The DRV-3000 Dual Digital Effect Processor lets you add reverb and effects to the instruments.

The DDD-5 is not just for those musicians who are seriously involved in MIDI. For example, in this system, a guitarist/singer uses the DDD-5 to accompany his solo performance. PS-1 Pedal Switches, operated by foot, enable him to perform the following operations:

- **TAP TEMPO.** Before playing the DDD-5 (for example, during a solo guitar intro) the guitarist can tap this footswitch in time with his playing, to ensure that when he starts play on the DDD-5, it will be exactly in time with his playing. This feature could also be used to alter the DDD-5's tempo during a pause in the middle of a song.
- **START/STOP.** Lets the guitarist start playback of the DDD-5, then stop playback at any time. One application of this would be as follows (using the DDD-5 in the PROGRAMMABLE mode): all songs for the performance could be assigned to parts of one song, with blank patterns providing a pause in between each song. This avoids having to select songs during the show — the guitarist simply stops the DDD-5 between songs; the next time he starts the DDD-5, the next song will play.
- **INTRO/FILL-IN.** With the DDD-5 in the PRESET mode, a pedal switch connected to the INTRO/FILL-IN jack lets the guitarist start the preset song with an intro, and add fill-ins at any time. The full use of pedal switches in the preset mode is described in sections 4 and 5 of the PLAY OPERATIONS chapter.



MIDI IMPLEMENTATION

1. TRANSMITTED DATA

1 CHANNEL MESSAGES

STATUS	SECOND	THIRD	DESCRIPTION
1 0 0 1 n n n n	0 k k k k k k k k	0 0 0 0 0 0 0 0	Note Off (NOTE1) k k k k k k k =25~71
1 0 0 1 n n n n	0 k k k k k k k k	0 v v v v v v v v	Note On (NOTE1) k k k k k k k =25~71 v v v v v v v v =1~127

★ nnnn = 0 ~ 15: Channel Numbers set to individual keys via MIDI Transmit Function.

NOTE

- Note OFF transmitted immediately after Note ON transmission.

2 SYSTEM MESSAGES

STATUS	SECOND	THIRD	DESCRIPTION
1 1 1 1 0 0 0 0	0 1 0 0 0 0 1 0	0 x x x x x x x	Exclusive Messages (NOTE 1)
1 1 1 1 0 1 1 1	_____	_____	EOX (NOTE 1)
1 1 1 1 0 0 1 0	0 l l l l l l l l	0 h h h h h h h h	Song Position Pointer (NOTE 2)
1 1 1 1 0 0 1 1	0 s s s s s s s s	_____	Song Select (NOTE 3)
1 1 1 1 1 0 0 0	_____	_____	Timing Clock (NOTE 4)
1 1 1 1 1 0 1 0	_____	_____	Start
1 1 1 1 1 0 1 1	_____	_____	Continue
1 1 1 1 1 1 0 0	_____	_____	Stop

NOTES

- Transmitted when set to MIDI in Data Transfer Mode.
- Transmitted when measure is selected with Song Select Function set to STOP (However, transmission is impossible when o l l l l l l l o h h h h h h h h exceeds 0 1 1 1 1 1 1 1 1 0 1 1 1 1 1 1.)
- Transmitted when SONG is selected with Song Select Function set to STOP.
- Transmitted when Clock is not set to MIDI (not transmitted when set to STOP).

3 SYSTEM EXCLUSIVE MESSAGES

1 SEQUENCE DATA

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	EXCLUSIVE STATUS
0 1 0 0 0 0 1 0	KORG ID 42H
0 0 1 1 0 0 0 0	FORMAT ID 30H
{ 0 0 0 1 0 1 1 0	DDD-5 ID 16H } (NOTE 1)
{ 0 0 0 0 0 1 1 1	
0 1 0 0 1 0 0 0	SEQUENCE DATA 48H
0 d d d d d d d d	DATA } Data up to 56 bytes *57 bytes for the first block only
⋮	
0 d d d d d d d d	DATA }
1 1 1 1 0 1 1 1	EOX

2 DATA END BLOCK

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	EXCLUSIVE STATUS
0 1 0 0 0 0 1 0	KORG ID 42 H
0 0 1 1 0 0 0 0	FORMAT ID 30 H
{ 0 0 0 1 0 1 1 0	DDD-5 ID 16 H } (NOTE 1)
{ 0 0 0 0 0 1 0 0	
0 1 0 0 1 1 1 1	DATA END BLOCK 4FH
1 1 1 1 0 1 1 1	EOX

3 DEVICE ID

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	EXCLUSIVE STATUS
0 1 0 0 0 0 1 0	KORG ID 42H
0 0 1 1 0 0 0 0	FORMAT ID 30H
0 0 0 1 0 1 1 0	DDD-5 ID 16H
1 1 1 1 0 1 1 1	EOX

2. RECOGNIZED RECEIVED DATA

1 CHANNEL MESSAGES

STATUS	SECOND	THIRD	DESCRIPTION
1 0 0 0 n n n n	0 k k k k k k k k	0 x x x x x x x	Note Off(NOTE 1)
1 0 0 1 n n n n	0 k k k k k k k k	0 0 0 0 0 0 0 0	Note Off(NOTE 1)
1 0 0 1 n n n n	0 k k k k k k k k	0 v v v v v v v v	Note On (NOTE 2) v v v v v v v v = 1 ~ 127
1 1 0 0 n n n n	0 p p p p p p p p	—————	Program Change(NOTE 3)
1 0 1 1 n n n n	0 1 1 1 1 1 0 0	0 x x x x x x x	Omni Mode Off
1 0 1 1 n n n n	0 1 1 1 1 1 0 1	0 x x x x x x x	Omni Mode On

★ nnnn = 0 ~ 15: Channel Numbers set via the MIDI Receive Function at OMNI MODE ON, all messages received regardless of setting. At OMNI MODE OFF, only set Channel Message is received. However, Channel Mode Messages receive set Channel Messages regardless of OMNI ON/OFF status.

NOTES

1. Recognized Note OFF Note Numbers

k k k k k k k k = 9 ~ 24 (SEQ DECAY)

k k k k k k k k = 72 ~ 96 (SEQ TUNE)

★ kkk kkkk = 25 ~ 71 is ignored.

2. Recognized Note ON Note Numbers

k k k k k k k k = 9 ~ 24 (SEQ DECAY)

k k k k k k k k = 25 ~ 71 (INST KEY)

k k k k k k k k = 72 ~ 96 (SEQ TUNE)

3. When a Program Change Message is received in the INST SETTING mode, Instrument settings may be altered.

★ Program change Numbers outside of the range are ignored. Program change Numbers outside of the p p p p p p = 0 ~ 5 range are ignored.

2 SYSTEM MESSAGES

STATUS	SECOND	THIRD	DESCRIPTION
1 1 1 1 0 0 0 0	0 1 0 0 0 0 1 0	0 x x x x x x x	Exclusive Messages (NOTE 1)
1 1 1 1 0 1 1 1	_____	_____	EOX (NOTE 1)
1 1 1 1 0 0 1 0 1 1 1 1 0 0 1 1	0 l l l l l l l l 0 s s s s s s s s	0 h h h h h h h h _____	Song Position Pointer (NOTE 2) Song Select (NOTE 2)
1 1 1 1 1 0 0 0 1 1 1 1 1 0 1 0 1 1 1 1 1 0 1 1 1 1 1 1 1 1 0 0	_____ _____ _____ _____	_____ _____ _____ _____	Timing Clock (NOTE 3) Start Continue Stop

NOTES

1. Recognized when Data Transfer Mode is set to MIDI.
2. Recognized only when Song Select Function is set to STOP. Song Numbers outside the sss ssss = 0 ~23 range are ignored.
3. Recognized when Clock is set to MIDI.

3 SYSTEM EXCLUSIVE MESSAGES

1 DATA DUMP REQUEST

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	EXCLUSIVE STATUS
0 1 0 0 0 0 1 0	KORG ID 42H
0 0 1 1 0 0 0 0	FORMAT ID 30H
0 0 0 1 0 1 1 0	DDD-5 ID 16H
0 0 0 1 0 0 0 0	DATA DUMP REQUEST 10H
1 1 1 1 0 1 1 1	EOX

② SEQUENCE DATA

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	EXCLUSIVE STATUS
0 1 0 0 0 0 1 0	KORG ID 42H
0 0 1 1 0 0 0 0	FORMAT ID 30H
{ 0 0 0 1 0 1 1 0	DDD-5 ID 16H } (NOTE 1)
{ 0 0 0 0 0 1 0 0	
0 1 0 0 1 0 0 0	SEQUENCE DATA 48H
0 d d d d d d d	DATA } Data up to 56 bytes
⋮	
0 d d d d d d d	DATA } * First block is 57 bytes.
1 1 1 1 0 1 1 1	EOX

NOTE

1. SQD-1 ID transmitted when SAVE operation of "MIDI" function in the data transfer mode and DDD-5 ID transmitted when receives DATA DUMP REQUEST.

③ DATA END BLOCK

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	EXCLUSIVE STATUS
0 1 0 0 0 0 1 0	KORG ID 42H
0 0 1 1 0 0 0 0	FORMAT ID 30H
{ 0 0 0 1 0 1 1 0	DDD-5 ID 16H } (NOTE 1)
{ 0 0 0 0 0 1 0 0	
0 1 0 0 1 1 1 1	DATA END BLOCK 4FH
1 1 1 1 0 1 1 1	EOX

NOTES

1. SQD-1 ID transmitted when SAVE operation of "MIDI" function in the data transfer mode and DDD-5 ID transmitted when receives DATA DUMP REQUEST.

4 DATA DUMP ERROR

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	EXCLUSIVE STATUS
0 1 0 0 0 0 1 0	KORG ID 42H
0 0 1 1 0 0 0 0	FORMAT ID 30H
0 0 0 1 0 1 1 0	DDD-5 ID 16H
0 0 1 0 0 0 0 0	DATA DUMP ERROR 20H
1 1 1 1 0 1 1 1	EOX

5 DEVICE ID REQUEST

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	EXCLUSIVE STATUS
0 1 0 0 0 0 1 0	KORG ID 42H
0 1 0 0 0 0 0 0	FORMAT ID 40H
1 1 1 1 0 1 1 1	EOX

3. SYSTEM EXCLUSIVE MESSAGES

■ The DDD-5 can transmit and receive the following types of information via System Exclusive Messages.

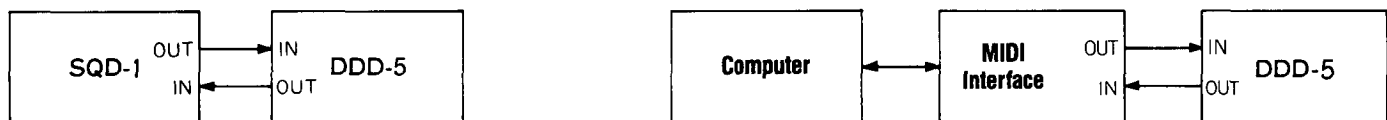
Transmitting

- SEQUENCE DATA** : Refers to the Pattern, Song and Instrument Setting data stored in internal memory. This is sent as a series of 64-byte blocks, the number of which depends on the amount of data recorded in internal memory. When a SAVE is performed in the MIDI function of the DATA TRANSFER MODE, data including SQD-1 is sent. And, when a DATA DUMP REQUEST is received, data including DDD-5 ID is sent.
- DATA END BLOCK** : Marks the end of SEQUENCE DATA transmission. This is sent after the last SEQUENCE DATA block is sent, or when the CANCEL key is pressed.
- DEVICE ID** : Identifies equipment. Sent when a DEVICE ID REQUEST is received in the MIDI Function of the DATA TRANSFER MODE.

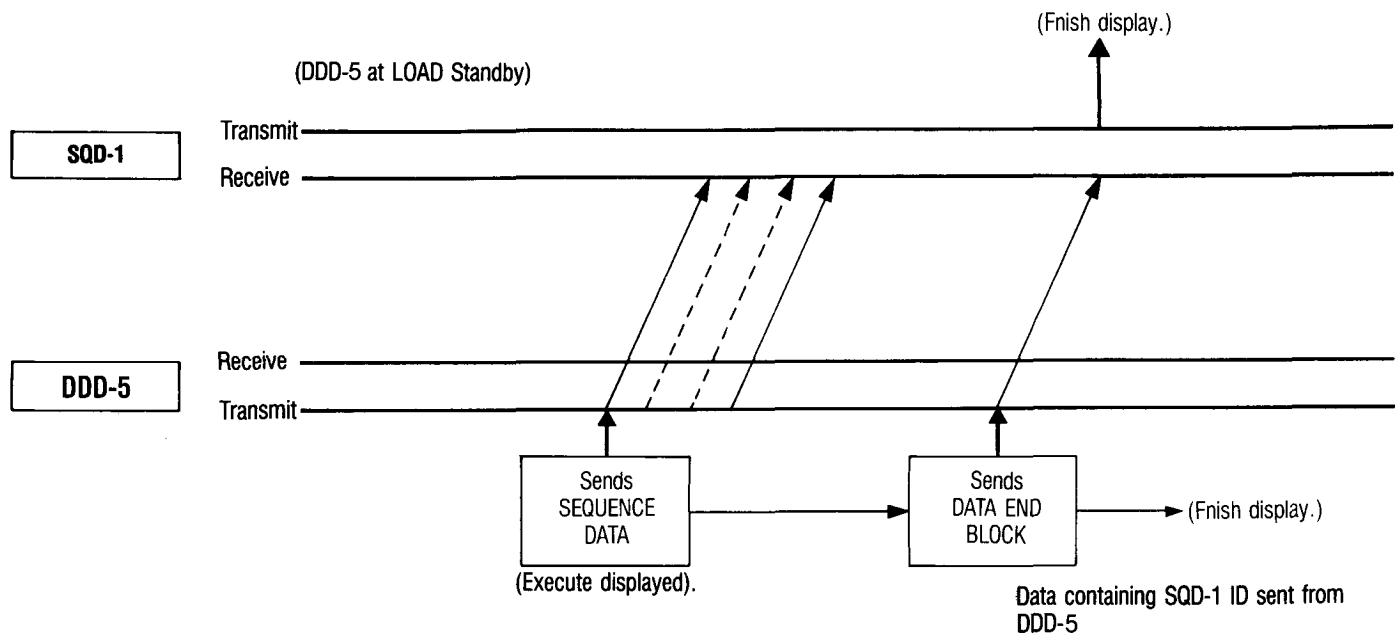
Receiving

- DATA DUMP REQUEST** : A request to send SEQUENCE DATA. SEQUENCE DATA including DDD-5 ID is sent when a DATA DUMP REQUEST is received.
- SEQUENCE DATA** : Pattern, Song and Instrument Setting data.
- DATA END BLOCK** : Marks the end of SEQUENCE DATA transmission. Reception is terminated when this is received.
- DATA DUMP ERROR** : Indicates that something has gone wrong on the receiving side during transmission of sequence DATA.
If a DATA DUMP ERROR is received, then a "Error End" message will be displayed upon completion of data transmission.
- DEVICE ID REQUEST** : A request to send the DEVICE ID. The DEVICE ID is sent when a DEVICE ID REQUEST is received.

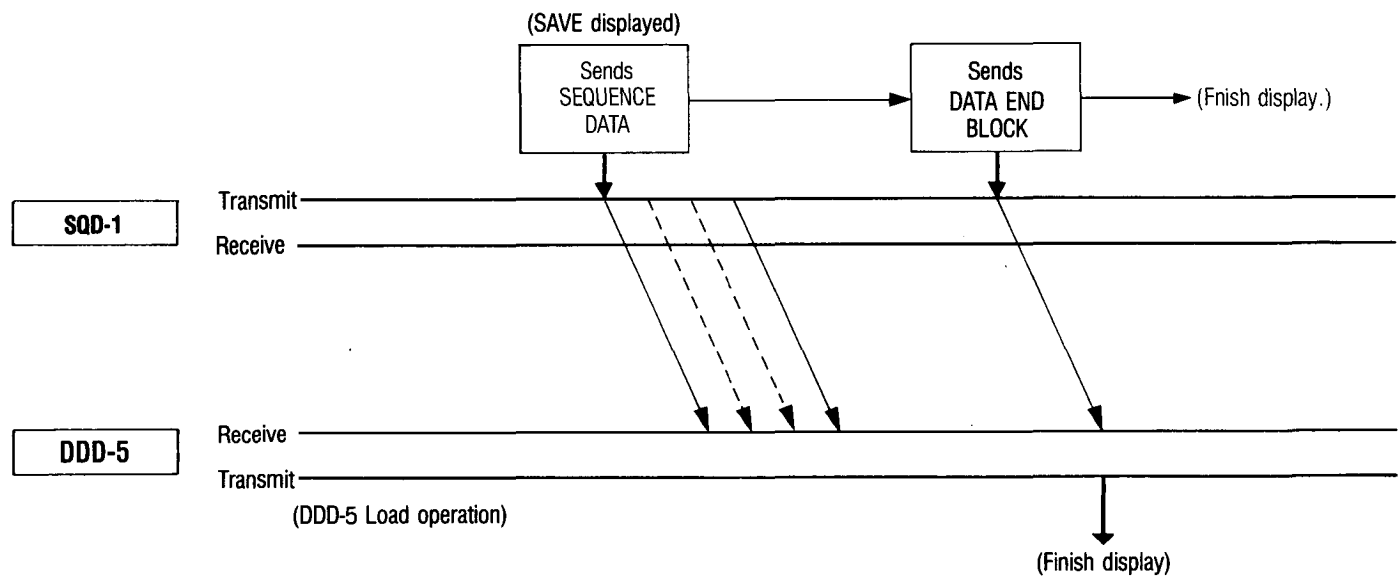
■ These messages can be used for data transmission between the SQD-1 and a computer equipped with a MIDI interface and software that handles these system exclusive messages. Setup examples are shown below:



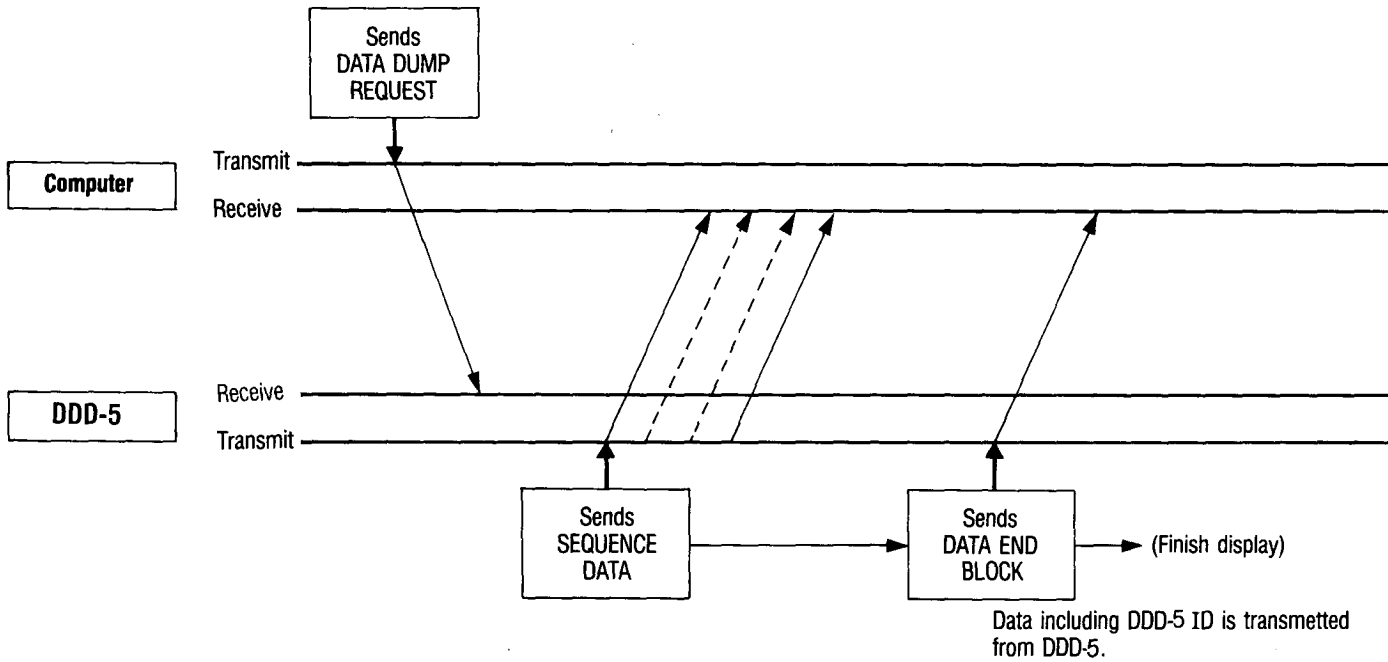
1 Transmitting data to a SQD-1 (SAVE)



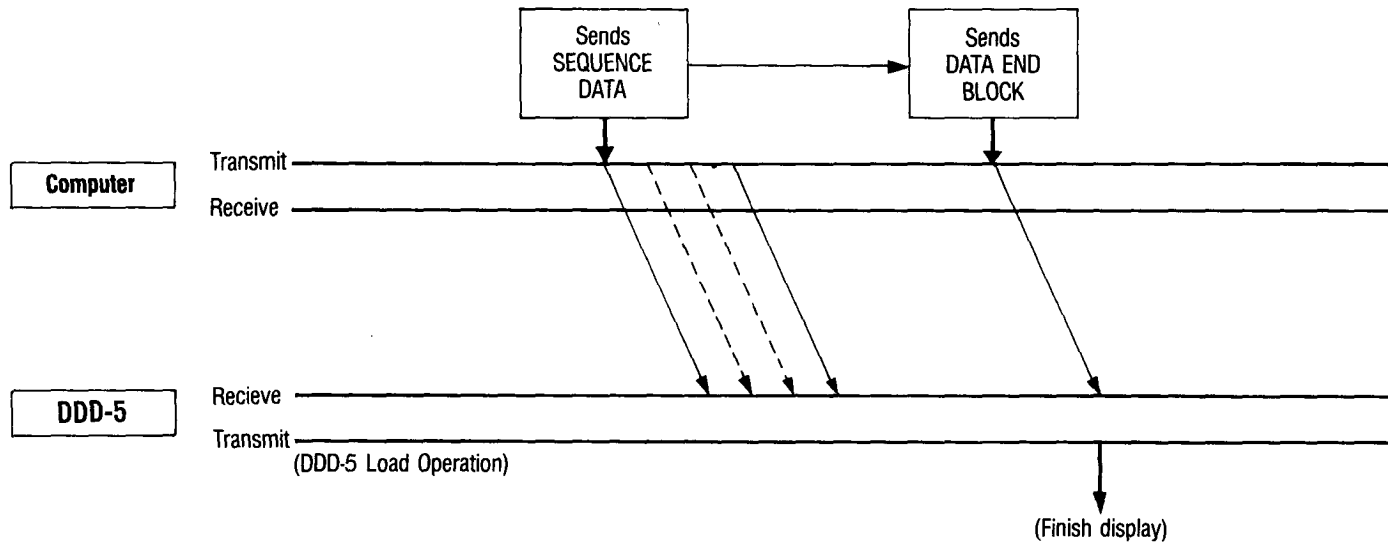
2 Receiving data from a SQD-1 (LOAD)



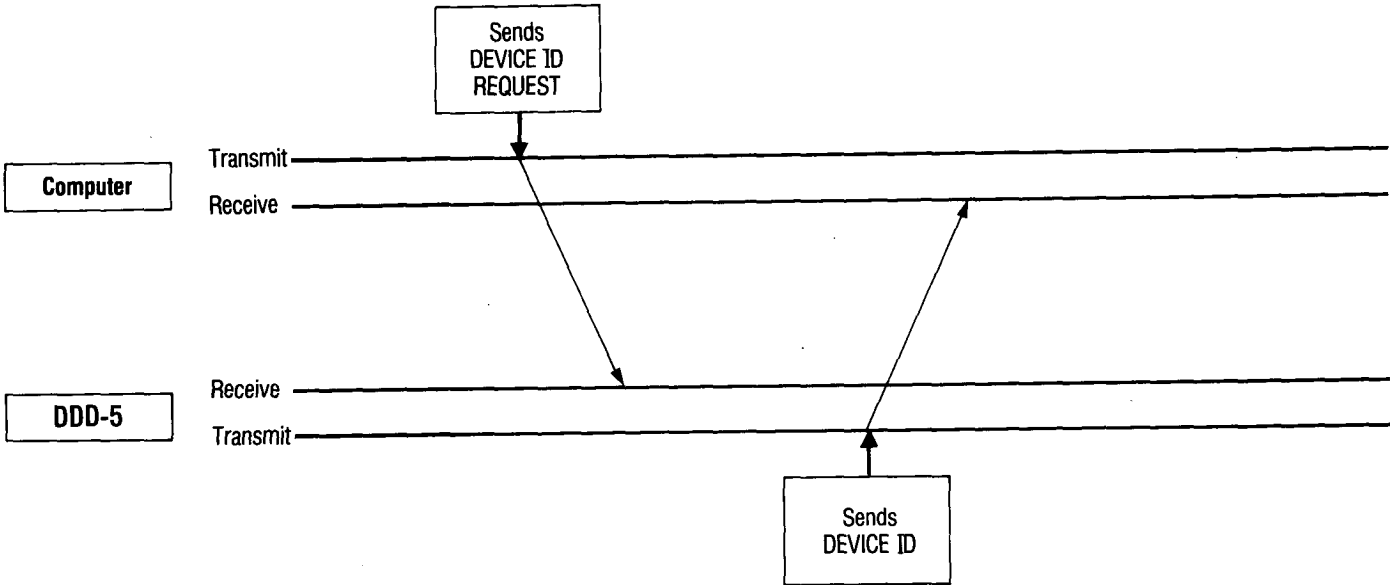
3 Transmitting data to a Computer (SAVE)



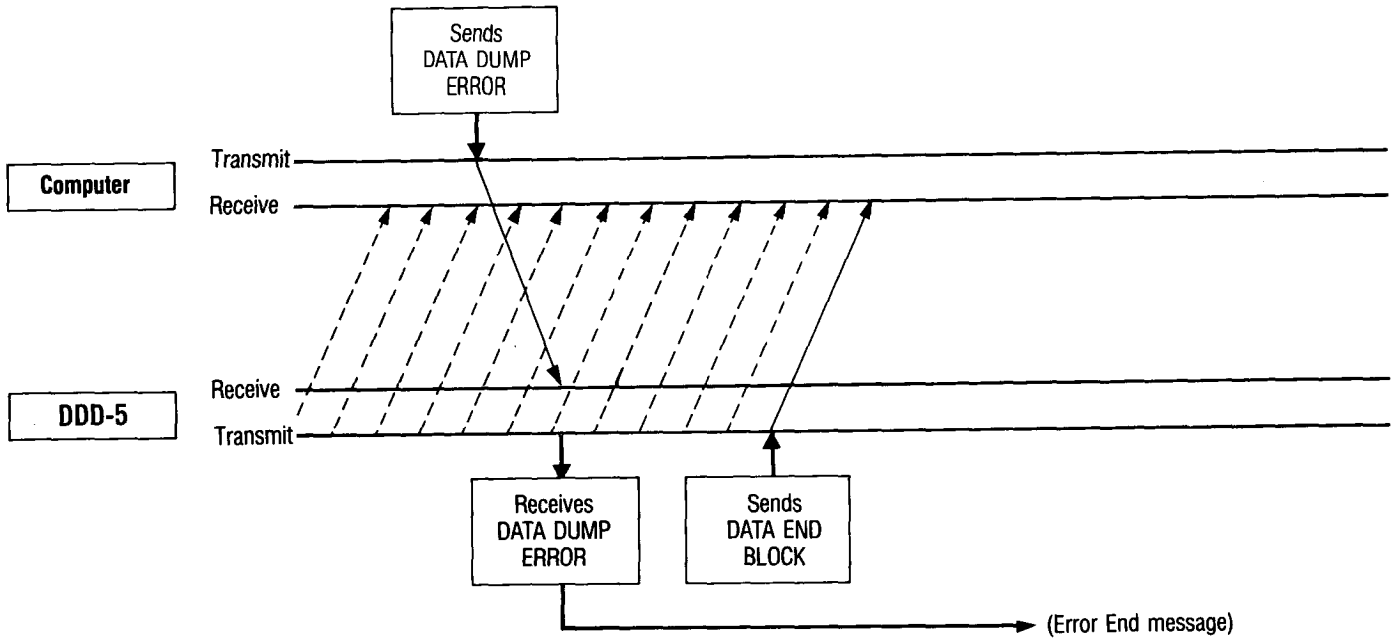
4 Receiving data from a Computer (LOAD)



5 To find out what equipment is connected to a computer.



6 If a DATA DUMP ERROR is received during data transmission.



SYSTEM RESET

NOTE: SYSTEM RESET should be used with caution, as it clears ALL data in the DDD-5. If in doubt, save the data to RAM card, tape or MIDI storage device BEFORE using the SYSTEM RESET function.

The system reset function allows you to execute the following operations:

SYSTEM RESET: PROGRAMMABLE MODE

Lets you clear all pattern and song data from the DDD-5, and reset all instrument sets to their default settings. Because all pattern data in the PROGRAMMABLE mode has been cleared, the preset songs and combinations will also have been cleared. You can now record new patterns (or load preset patterns from the DDD-5's ROM memory using the EXTERNAL COPY function) then create new songs, preset songs and combinations.

The procedure for SYSTEM RESET: PROGRAMMABLE MODE is as follows:

- (1) Turn the DDD-5's power off.
- (2) Hold down the 0 and YES keys, while turning the power on. The LCD will show:

```
K O R G   D D D - 5
S Y S T E M   R E S E T
```

followed by

```
K O R G   D D D - 5
P R O G R A M M A B L E
```

After a few seconds, the display for Pattern 00 will appear.

SYSTEM RESET: PRESET MODE

Lets you reset all preset songs and combinations to their original factory-preset settings. This will load all the preset patterns from the DDD-5's internal ROM. All existing patterns, songs, preset songs and combinations will be cleared. All instrument sets will be reset to their preset values. You can now play the preset songs and combinations, or alter them to make new drum parts.

The procedure for SYSTEM RESET: PRESET MODE is as follows:

- (1) Turn the DDD-5's power off.
- (2) Hold down the 0 and NO keys, while turning the power on. The LCD will show:

```
K O R G   D D D - 5
S Y S T E M   R E S E T
```

followed by

```
K O R G   D D D - 5
P R E S E T
```

After a few seconds, the display for Preset Song 00 will appear.

ERROR MESSAGES

The DDD-5 will inform you, via an error message on the LCD, if you have wrongly executed an operation, or if there is a malfunction. This chapter explains these messages and gives remedies where appropriate.

NOTE: The error messages shown on this chapter will sometimes appear as part of a complete display. Some error messages may also appear during more than one operation. For example, during Real Time pattern recording the MEMORY FULL error message will be shown on the LCD as follows:

```
MEMORY FULL !!
P 0 1 - 0 1 : * P T N - 0 1 *
```

This message may also appear during Step recording.

MEMORY FULL !!

The pattern memory has become full during pattern recording. Save patterns to a data storage medium, then clear patterns on the DDD-5 to make room for new patterns to be recorded.

BAR MEMORY FULL !

During pattern recording you have exceeded the limit of 249 notes in one bar. Record the pattern again using a longer bar length, or use less notes in the bar.

Parameter Error !

You have attempted to append two patterns with different time signatures. Where possible, create a new pattern with a longer time signature, equal to the time signature of the pattern that would have been created if you had appended the two patterns. Normally, append patterns with the same time signature.

MEMORY SHORTAGE !

The pattern memory will be exceeded if you attempt to execute a Pattern Copy or Pattern Append operation. Save patterns to a data storage medium, then clear patterns on the DDD-5 to make room for patterns to be copied or appended.

PART 66: ERROR !!

During Song Create, you have entered a part number (66, in this example) for the beginning of a repeat section that is unacceptable (it is higher than the part number of the end of the repeat section). Enter the correct part number.

Error End.

- During a Card Operation:

SAVE: (1) The RAM card Memory Protect is ON. Turn it off and repeat the save operation. (2) A RAM card with insufficient memory capacity is being used. Replace the RAM card with one that has a memory capacity of at least 128kbytes.

LOAD: Data has been incorrectly transmitted from the card. If this error persists, the card may be faulty.

VERIFY: (1) Data has been incorrectly transmitted from the RAM card, due to a fault in the RAM card. (2) The RAM card or the data in the DDD-5 has been changed since the last SAVE operation. Save the data again, then repeat the Verify operation.

- During a Tape Operation:

LOAD: Data has been incorrectly loaded from the tape. Check connection cables and tape playback volume, and repeat the Load operation.

VERIFY: (1) Data has been incorrectly verified due to a fault in signal transmission. Check connection cables and tape playback volume, and repeat the Verify operation. (2) The tape or the data in the DDD-5 has been changed since the last SAVE operation. Save the data again, then repeat the Verify operation.

No Card

You have selected DATA TRANSFER: CARD, but no card is inserted into card slot 1. Insert the appropriate card.

OTHER CD

(1) You have selected a Save operation, but have inserted a ROM card into card slot 1. Insert a RAM card into card slot 1. (2) You have inserted a card that has a KORG ID, but for another KORG digital musical instrument. However, you can still perform Data Transfer operations with this card.

????????

You have inserted a RAM card that does not contain a KORG ID. However, you can still perform Data Transfer operations with this card.

Card Not Ready !

You are attempting to execute an External Copy operation from a card, but either you have not inserted a card, or you have inserted the wrong type of card (e.g., a ROM Voice card). Insert the correct card into card slot 1.

Finish. BATT ERR

After a RAM card Data Transfer operation (Save, Load or Verify) the DDD-5 automatically checks the condition of the card battery. If this message appears, the battery is running low. DO NOT REMOVE THE CARD! While the card is in the DDD-5, the DDD-5's power protects the data stored in the card. Locate a new battery for the card, then remove the card from the DDD-5 and replace the battery IMMEDIATELY (the card data is safe for a few minutes while the battery is replaced).

SPECIFICATIONS

- **Sound Sources**
29 internal sound sources. Up to 2 ROM Voice or ROM Voice/Pattern cards.
- **Memory**
100 patterns. 24 songs (99 parts per song). 24 preset songs. 8 combinations. 6 instrument sets.
- **Instrument Setting Functions**
Setting select (0 — 5). Touch Sense (0 — 9). Total Tune (0 — 127). Total Decay (0 — 15). Output Level (0 — 15). Stereo Pan (L3...C...R3) Instrument Assign. Copy.
- **Pattern Functions**
Pattern select (00 — 99). Time Signature (1/32 — 8/4). Number of Bars (1 — 99). Resolution (1/4 — 1/32T, HIGH). Roll Rate (1/4 — 1/32T). Flam Time (0 — 9). Sequence Parameter (Tune, Decay, Dynamics). Tempo (40 — 250 quarter-notes/minute). Erase. Swing. Copy. Append. Available Memory. Clear. External Copy.
- **Song Functions**
Song Select (00 — 23). Create. Repeat. Tempo Change (+/-99) quarter-notes/minute). Delete. Insert. Initial Tempo (40 — 250 quarter-notes/minute). Copy. Clear.
- **Preset Song/Combination Functions**
Preset Song Select (00 — 23). Combination Select (1 — 8). Tempo Memory (40 — 250 quarter-notes/minute). Swing (0 — 9).
- **System Functions**
Clock (INT, MIDI, TAPE). MIDI Receive (NOTE AVAILABLE ON/OFF, OMNI MODE ON/OFF, MIDI CHANNEL 1 — 16, INSTRUMENT NOTE 25 — 71). MIDI Transmit (NOTE AVAILABLE ON/OFF, MIDI CHANNEL 1 — 16). METRONOME (1/4 — 1/32T). OPERATION (PRESET/PROGRAMMABLE). DATA TRANSFER (CARD, TAPE, MIDI).
- **Controls: Preset/Programmable Modes**
INSTRUMENT KEY x7. INSTRUMENT GROUP KEY. STOP/VERIFY KEY. START/SAVE KEY. TAP TEMPO/CANCEL KEY. +1/YES KEY. -1/NO KEY. NUMERIC KEY PAD (0 — 9). CURSOR KEYS (<>). VOLUME SLIDER.
- **Controls: Preset Mode**
PRESET KEYS A — H. PRESET KEYS 1 — 5. INTRO/FILL-IN KEY. ENDING KEY. TEMPO MEMORY/LOAD KEY. DATA/TEMPO SLIDER.
- **Controls: Programmable Mode**
FUNCTION KEYS f-1 — f-8. MODE KEYS 1 — 5. FLAM KEY. ROLL KEY. REC/LOAD KEY. DATA SLIDER.
- **Indicators: Preset/Programmable Modes**
2-line 16-character LCD. RUN LED. Instrument Group LED's (Upper, Lower).
- **Indicators: Preset Mode**
Preset Bank LED'S (1 — 3). Combination Bank LED. Function Mode LED. Tempo Memory LED.
- **Indicators: Programmable Mode**
Mode LED's (1 — 5). Record LED.
- **Rear Panel**
Phones. Output (L, R/MONO). Tape Out (LINE/MIC). Tape In (LINE/EARPHONE). Tape Level Switch. Start/Stop Footswitch. Intro/Fill-in Footswitch. Tap Tempo Footswitch. MIDI In/Out. DC 9V In. Power On/Off Switch. Card Slots (1, 2).
- **Power Supply**
AC Power Adaptor (9V/300mA)
- **Dimensions (W x D x H)**
340.6 x 231 x 56.5mm (13.4" x 9.1" x 2.2")
- **Weight**
1.5 kg
- **Accessories**
Front Panels (PRESET MODE, PROGRAMMABLE MODE). 9V AC Power Adaptor.

Design and specifications are subject to change without notice.

N O T I C E

KORG products are manufactured under strict specifications and voltages required by each country. These products are warranted by the KORG distributor only in each country. Any KORG product not sold with a warranty card or carrying a serial number disqualifies the product sold from the manufacturer's/distributor's warranty and liability. This requirement is for your own protection and safety.

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