KORG
DS-8
DIGITAL SYNTHESIZER

OWNER'S MANUAL

IMPORTANT SAFETY PRECAUTIONS

LOCATION

The DS-8 should not be used under the following conditions for long periods, or malfunctions may occur:

- In direct sunlight.
- In extremes of temperature or humidity.
- In sandy or dusty environments.

POWER SUPPLY

- Use only with rated AC voltage. If you intend to use your DS-8 in an area or country having a different voltage, be sure to use the proper transformer unit to convert to the rated voltage.
- To avoid noise or degraded sound quality, do not connect your DS-8 to an AC outlet or AC extension cord that is being used by other equipment.

INPUT/OUTPUT JACKS & CONNECTION CORDS

Use standard guitar-type cords with phone plugs, such as the cable supplied with your DS-8, for input and output connections to the rear panel. Never insert any other kind of plug into these jacks.

PREVENTING ELECTRICAL INTERFERENCE

The DS-8 is a sophisticated unit that uses advanced microprocessor circuitry. As a consequence, it may perform erratically if exposed to electrical interference from other electrical devices and fluorescent lamps. Avoid operating the DS-8 near possible sources of interference. If interference appears to be causing problems, the DS-8's computer circuits can be reset to their initial state by turning off the DS-8's power and waiting 10 seconds. When you turn on the DS-8's power once more, normal operation should be resumed.

HANDLE GENTLY

The DS-8's joystick, sliders and keys are built to KORG's high standards of durability. However, they should be treated with care and sensitivity. Excessive force may cause damage.

CLEANING

Wipe the exterior of the DS-8 with a soft, dry cloth. Never use paint thinner, benzene or other solvents.

KEEP THIS MANUAL

Store this manual in a safe place so that it can be referred to at any time.

MEMORY BACKUP

- The DS-8 has a backup battery that preserves the program and combination data stored in the DS-8's internal memory, even when the power is turned off. This battery has a life of about five years, after which time it should be replaced. Do not attempt to replace the battery yourself. Contact your local KORG dealer for battery replacement.
- To avoid risk of losing program or combination data due to a malfunction, we suggest you always save this data onto a RAM card. Then, if any data is accidentally altered, or lost due to a malfunction in the DS-8, it can be reloaded from the RAM card in just a few seconds.

CONTENTS

INTRODUCTION

Thank you and congratulations on your choice of the KORG DS-8. To obtain optimum performance from this advanced digital synthesizer, please read this manual carefully.

FEATURES OF THE KORG DS-8

1. DIGITAL VOICE GENERATION

The DS-8 features warm, digitally generated voices (programs), each of which combines two oscillators to create rich and complex tones. Each oscillator can be set to a variety of waveforms. By using separate EG'S (Envelope Generators) to control each oscillator's timbre and level the character of each note can change in time, providing the random tonal variations that occur in actual acoustic instruments. Natural, expressive acoustic sounds plus exciting contemporary synthesizer voices: the DS-8 can do it all!

2. PROGRAMS & COMBINATIONS

The DS-8 contains 100 preset programs in its internal memory. You can easily edit existing programs to make your own programs. Also available are three kinds of program combinations. The LAYER mode lets you play two programs at once across the entire range of the keyboard. The DOUBLE mode lets you assign separate programs to the upper and lower sections of the keyboard. The innovative MULTI mode allows you to select up to eight different voices and create up to eight separate tracks of music on the DS-8, using an external sequencer such as the KORG SQ-8.

3. RESPONSIVE KEYBOARD

A full 61-note keyboard (C1 -- C6) responds to your playing with Velocity Sensitivity and Aftertouch to control both volume and timbre. All programs can be played in full 8-note polyphony.

4. MULTI EFFECTS

The DS-8 has an innovative MULTI EFFECT function that allows you to add a variety of delay, flanger and chorus effects to the sound. This is like having a sophisticated stereo digital delay unit built in to your synthesizer, and you can store a different effect for each program.

5. PERFORMANCE FEATURES

A range of performance features let you add real expression to your playing. The joystick enables you to modulate pitch, vibrato and timbre from a single handy control. The Performance Editor includes controllers for envelope length, portamento, MULTI EFFECT and other vitally useful performance functions.

6. RAM CARD/ROM CARD

More programs and combinations are available on optional KORG ROM (Read Only Memory) cards, which can be loaded into the DS-8's internal memory in seconds. Also available are RAM (Random Access Memory) cards on which you can store your own programs and combinations. The preset programs and combinations stored in the DS-8's internal memory should be stored on a KORG RAM card, where they will be preserved while you create your own programs and combinations.

7. FOOTSWITCH/FOOT PEDAL

Optional foot switches and foot pedals are available from KORG. These can be assigned to control a variety of functions, including Program Change, volume, vibrato, and MULTI EFFECT On/Off.

8. MIDI COMPATIBILITY

The DS-8 is fully compatible with MIDI (Musical Instrument Digital Interface) allowing it to interface with other MIDI devices such as sequencers, drum machines and effect units. See your KORG dealer for details on the wide range of advanced MIDI equipment available from KORG.
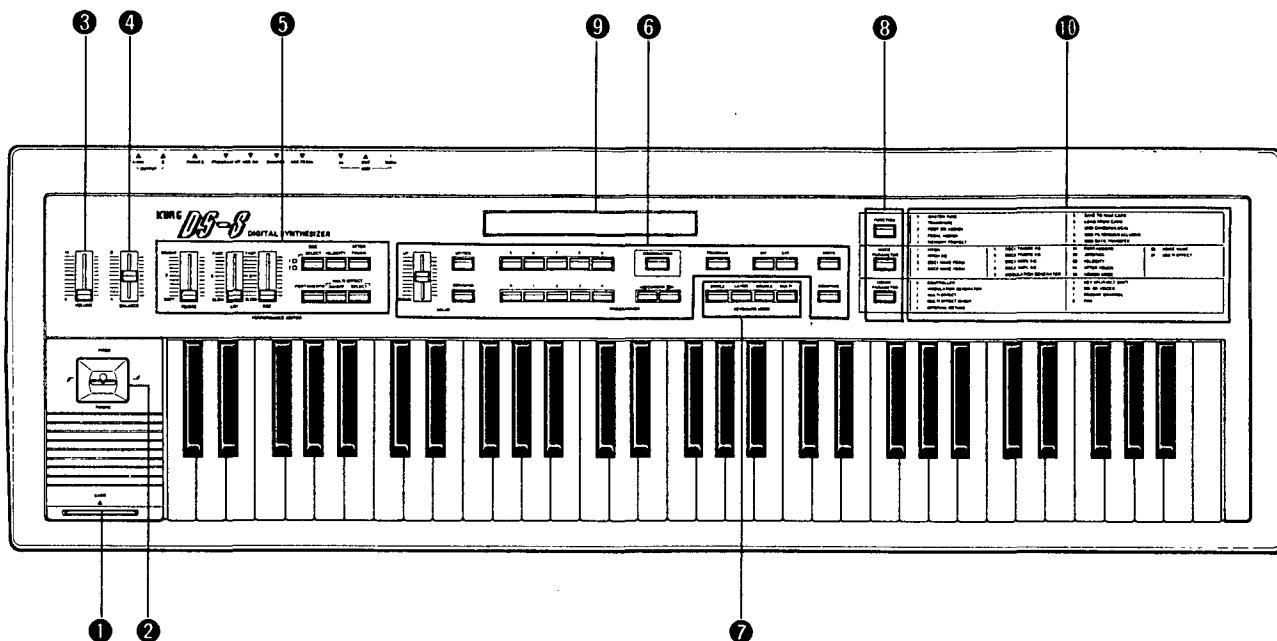
CONTROL PANEL

❶ CARD SLOT

❷ JOYSTICK

❸ VOLUME SLIDER

❹ BALANCE SLIDER

❺ PERFORMANCE EDITOR CONTROLS
- TIMBRE SLIDER • EG1 SLIDER
- EG2 SLIDER • OSCILLATOR SELECT KEY
- VELOCITY OFF/ON KEY
- AFTERTOUCH OFF/ON KEY
- PORTAMENTO OFF/ON KEY
- MULTI EFFECT OFF/ON KEY
- SELECT MULTI EFFECT KEY

❻ PROGRAMMER CONTROLS
- VALUE SLIDER • UP/YES KEY • DOWN/NO KEY

- NUMERIC KEYS 1 ~ 9 • CURSOR KEYS
- COMBINATION KEY • PROGRAM KEY
- INTERNAL MEMORY KEY
- EXTERNAL MEMORY KEY
- WRITE KEY • COMPARE KEY

❼ KEYBOARD MODE CONTROLS
- SINGLE MODE KEY • LAYER MODE KEY
- DOUBLE MODE KEY • MULTI MODE KEY

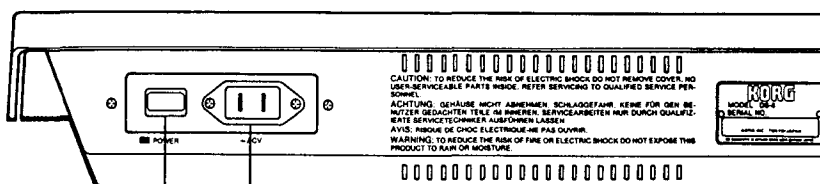**❽ MODE CONTROLS**
- FUNCTION MODE KEY
- VOICE PARAMETER MODE KEY
- COMBINATION PARAMETER KEY

❾ LCD PANEL

❿ JOB TABLE

❶ POWER SWITCH
After everything is properly connected, turn the power on. The LCD will display "KORG DS-8. WELCOME TO SYNTH WORLD" for a few seconds, followed by the display for Program 00.

❷ AC Cord
Insert the plug into a wall socket.
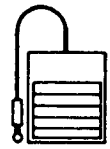
REAR PANEL AND BASIC SETUP
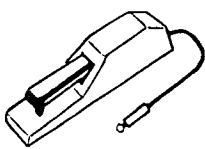
⑥ ASS. SWITCH

For connection of a pedal switch, which can be assigned to Program Down, Oscillator Switch, Velocity Off/On, MULTI EFFECT Off/On, Aftertouch Off/On or Portamento Off/On (see FUNCTION MODE chapter, job #2 for more details).

⑤ DAMPER

For connection of a pedal switch, which can be used (like a piano sustain pedal) for sustain and damping of sounds.

④ ASS. PEDAL

For connection of an expression pedal, which can be assigned to control MIDI Volume, Timbre, Pitch Modulation or Timbre Modulation (see FUNCTION MODE chapter, job #3 for more details.).

OUTPUT

③ MIDI Connectors

Use these jacks to connect to other MIDI equipment (see the MIDI APPLICATIONS chapter for more information).

⑦ PROGRAM UP

For connection of a pedal switch, which can be used for Program Up.
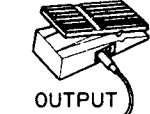
⑧ PHONES

If required, plug stereo headphones into this jack.

⑨ AUDIO OUTPUTS

For connection to amplifiers, mixers or stereo systems. Use outputs A and B for stereo monitoring. Use only output A/MONO for mono monitoring.

KORG

SELECTING PROGRAMS AND COMBINATIONS

ABOUT PROGRAM NUMBERS

The DS-8 can store up to 100 different sounds, or voices, in its internal memory. These sounds are called "programs", and are numbered 00 thru 99. When you want to store a program, you must assign it to a program number. When you want to recall that program, you do it by selecting the same program number. You can then play the program on your DS-8 in full 8-voice polyphony (i.e., you can play up to 8 notes at the same time).

INTERNAL/EXTERNAL PROGRAMS

The programs stored in the DS-8's internal memory are called "internal" programs. You can also select programs that are stored on a handy data card, which is inserted in the DS-8's card slot. These programs are called "external" programs. There are two basic types of KORG data card: a ROM (Read Only Memory) card which contains 100 prese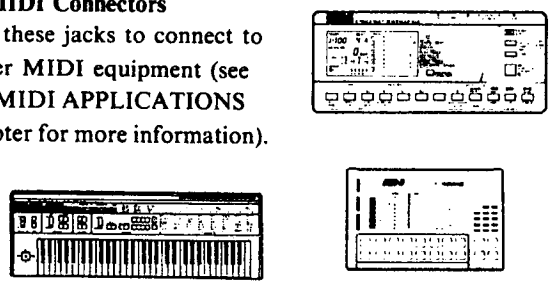t programs and 10 combinations which cannot be altered; and a RAM (Random Access Memory) card onto which you can save your own programs and combinations. For more information about data cards, see jobs #5 and #6 in the FUNCTION MODE chapter.

SELECTING A PROGRAM NUMBER

1. After turning on the DS-8, press PROGRAM. You can now select a program.
2. Press INT to select an internal program. If you wish to select a program stored on a RAM card or ROM card, press EXT.
3. Select the program number or UP/YES, DOWN/NO using the numeric keys. Always enter a two-digit number.

RANGE: 00 — 99.

For example, to select internal program 2, press INT then press "0" followed by "2". On the LCD you'll see:

```
   ① ②     ③
   ┌┐ ┌┐ ┌──┴──┐
┌─────────────────────┐
│       I 02 Piano 3   │
│MANUAL                │
└─────────────────────┘
```
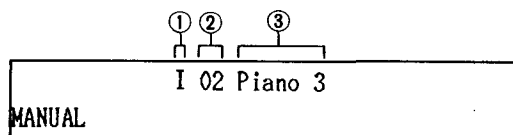
① Indicates internal memory
② Program number ③ Program name

ABOUT COMBINATIONS

On the DS-8 you can also select "combinations" of more than one program. LAYER and DOUBLE combinations are dual-program combinations allowing you to play two sounds at the same time on the DS-8 keyboard. The MULTI combination uses up to eight programs, and is designed for use with a sequencer that can store eight separate tracks of music. These combination types are the three "keyboard modes"

of the DS-8. Like programs, combinations can be stored on a KORG RAM card.

When a program (internal or external)is used in a combination, it is known as a "group". A variety of functions can be set for groups (for example, transposing, detuning, or assigning to one or both of the DS-8's outputs). See the COMBI PARAMETER chapter for more information.

LAYER COMBINATIONS

LAYER combinations have two groups, both of which can be played across the entire range of the DS-8's keyboard. For example, you could combine a piano program with a string program, so that when you press a key you hear piano and strings at the same time. In this mode, you can play up to four notes at a time.

Key assignments programmed into Group 2 are influenced by key assignments programmed into Group 1. (cf. Assign Mode, p. 14) For example, when Group 1 is in the POLY mode, Group 2 is played in POLY even if it is set for UNISON.

LAYER MODE

| GROUP 1: STRINGS. 4 VOICES. |
| GROUP 2: PIANO.   4 VOICES. |
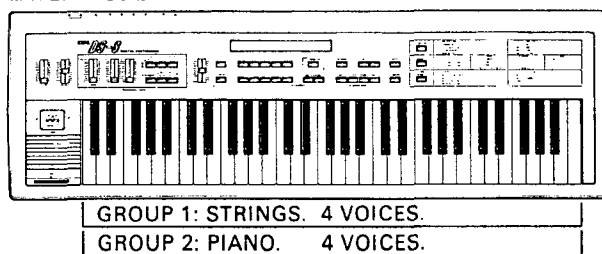
DOUBLE COMBINATIONS

DOUBLE combinations have two groups, with one (Group 1) assigned to the lower part of the DS-8's keyboard, and the other (Group 2) assigned to the upper part. You can select the upper note limit of Group 1 and the lower note limit of Group 2, and change the octave pitch of each group (see COMBI PARAMETER job #5). You can also select how many voices are assigned to each group (see COMBI PARAMETER job #6).

For example, you could have a brass program (with three voices) assigned to the lower part of the keyboard, and a flute program (with five voices) assigned to the upper part. In the middle part of the keyboard the two programs could overlap, to provide an interesting dual sound. If the range of the brass is too low to be useful, Group 1 can be transposed up by one or two octaves. If the range of the flutes is too high to be useful, Group 2 can be transposed down by one or two octaves.

DOUBLE MODE

| GROUP 1: BRASS.   3 VOICES |
| GROUP 2: FLUTES.   5 VOICES |
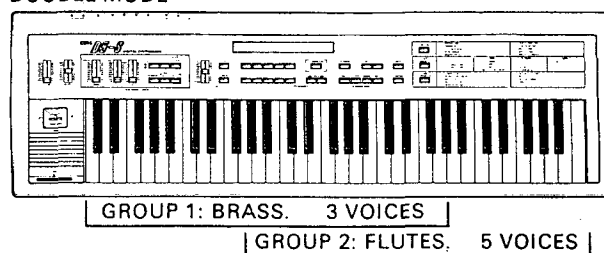
MULTI COMBINATIONS

MULTI combinations have eight groups, each of which can contain a different program and can be played across the entire range of the DS-8's keyboard. MULTI combinations are designed to be used with a sequencer (such as the KORG SQ-8) that can store eight tracks of music data on different MIDI channels. You can select a different MIDI channel for each group (see COMBI PARAMETER job #7) so that when you play the data stored in the sequencer, you hear eight tracks of music, each with a different sound.

You can also assign up to eight voices to each group (see COMBI PARAMETER job #6). As the DS-8 has a maximum capability of 8-voice polyphony, this would mean that you might use less than eight groups. For example, you could assign four voices to Group 1, which contains a piano program; three voices to Group 2, which contains a string program and one voice to Group 3 which contains a bass program. Music data would be recorded onto three tracks of the sequencer, with each track and group set to a matching MIDI channel number.

KEYBOARD MODE: MULTI

GROUP 1: PIANO. 4 VOICES. MIDI CHANNEL 1.
GROUP 2: STRINGS. 3 VOICES. MIDI CHANNEL 2.
GROUP 3: BASS. 1 VOICE. MIDI CHANNEL 3.

See the MIDI APPLICATIONS chapter for more information on how to use MULTI combinations.

⁄SELECTING A COMBINATION⁊

1. After turning on the DS-8, press COMBINATION. You can now select a combination.
2. Press INT to select an internal combination. If you wish to select a combination stored on a RAM card or ROM card, press EXT.
3. Select the combination number using the numeric keys. RANGE: 0 — 9.

The LCD will show one of the following types of displays, according to the type of combination selected.

LAYER
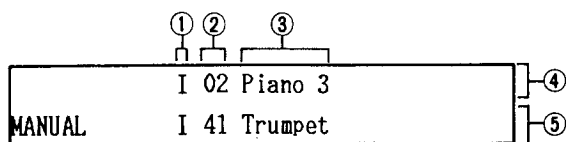
① Memory indicator ② Program number
③ Program name ④ Group 1 ⑤ Group 2

DOUBLE
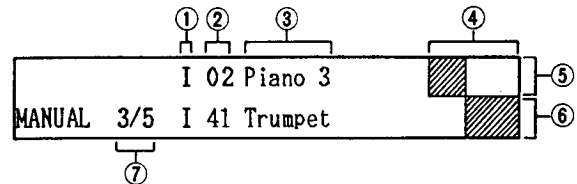
① Memory indicator ② Program number
③ Program name ④ Note range display
⑤ Group 1 ⑥ Group 2
⑦ Number of voices assigned to Groups 1/2

MULTI
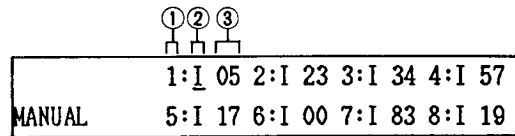
① Group number ② Memory indicator
③ Program number
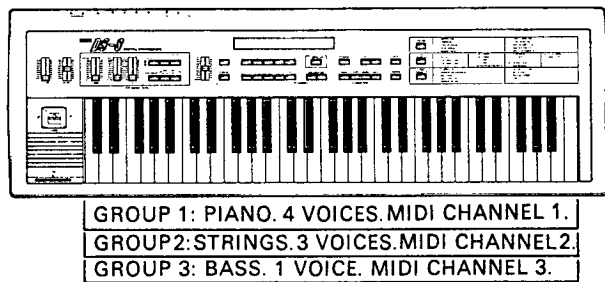
See HOW TO EDIT A COMBINATION in the CREATING PROGRAMS AND COMBINATIONS chapter, to find out how to change programs that are assigned to combinations. You'll also find out how to change a combination from one keyboard mode to another (LAYER, DOUBLE or MULTI), and how to edit parameters in the combination.

⁄PEDAL SWITCH SELECTION⁊

You can select programs by using an optional pedal switch such as the KORG PS-1. This is convenient when you are playing live, as it leaves your hands free for playing and for controlling the joystick and PERFORMANCE EDITOR. You can either step up or down through the programs. It's most convenient to store your programs in the order that you need them for your performance: Program 00 for Song 1, program 01 for Song 2, etc.

PROGRAM UP

Connect the pedal switch to the PROGRAM UP connector on the rear panel. You can now use the pedal switch to step through the programs in numerical order.

PROGRAM DOWN

Connect the pedal switch to the ASS. SW connector on the rear panel. Use FUNCTION MODE job #2 to assign the pedal switch to PROGRAM DOWN. You can now use the pedal switch to step through the programs in reverse order.

PERFORMANCE FEATURES

The DS-8 features a variety of controllers and performance functions. By using them, you can add real expression and dynamics to your playing.

JOYSTICK

The joystick controller at the left side of the keyboard can be moved in four different directions. Each direction affects the sound in a different way. The functions of the joystick are set using jobs #9 and #02 in the VOICE PARAMETER mode, and different joystick settings can be stored for each program.

UP

When you move the joystick up, you can produce vibrato (cyclic pitch modulation) effects. Use job #9 to set the waveform and frequency of the vibrato, and job #02 to set the depth.

Job #02 also has a MOD. SPEED parameter which lets you set the joystick to increase the speed of vibrato by a selectable amount.

DOWN

When you move the joystick down, you can produce tremolo (cyclic amplitude modulation) and wah-wah (cyclic timbre modulation) effects. Use job #9 to set the waveform and frequency of the modulation, and job #02 to set the depth.

Job #02 also has a MOD. SPEED parameter which lets you set the joystick to increase the speed of modulation by a selectable amount.

LEFT/RIGHT

The joystick can also control the timbre and pitch of the sound. Move it to the right to raise pitch and brighten timbre. Move it to the left to lower pitch and soften timbre. Use job #02 to set the amount by which timbre and pitch are affected.

PERFORMANCE EDITOR

The DS-8's PERFORMANCE EDITOR section on the control panel features three sliders and six keys. These allow you to add expression to your playing.

NOTE 1:

When you turn on the DS-8, or when you select a program or combination, the six PERFORMANCE EDITOR switches will be reset to their default settings, as follows:

OSC SELECT:	1 + 2
VELOCITY:	ON
AFTERTOUCH:	ON
PORTAMENTO:	OFF
MULTI EFFECT:	ON
MULTI EFFECT SELECT:	(The effect assigned to the program or combination.)

NOTE 2:

Any one of the PERFORMANCE EDITOR switch functions except MULTI EFFECT SELECT can be turned ON or OFF by a pedal switch connected to the ASS. SW connector on the rear panel. Use FUNCTION job #2 to assign one of these functions to the pedal switch.

TIMBRE SLIDER

The TIMBRE SLIDER controls the timbre (tone) of the DS-8. In the center position, the timbre will be as programmed. Move the slider up to brighten it, down to soften it.

EG1, EG2 SLIDERS

EG stands for ENVELOPE GENERATOR. These sliders control the note length (overall envelope length) of the two oscillators that generate the DS-8's sounds. The EG1 slider controls OSC1, the EG2 slider controls OSC 2. In the center position, envelope length will be as programmed. Move the slider up to shorten envelope length, down to lengthen it.

NOTE 3:

These sliders affect the length of the TIMBRE EG and AMPLITUDE EG of each oscillator, NOT the PITCH EG. See VOICE PARAMETER jobs #2, #5 and #7 for explanations of EG's.

OSC SELECT SWITCH

Allows you to select which of the two oscillators will be heard. Successive pressings of this key will select OSC 1 + 2, OSC 1 alone, OSC 2 alone, (the corresponding LED's will light). This key is useful when you create new programs, since it lets you monitor the sound of individual oscillators.

VELOCITY SWITCH

The DS-8 keyboard has a Velocity Sensitivity function. You can set it so that when you play harder, the level and timbre of each oscillator increases (see VOICE PARAMETER job #03).

This switch turns the Velocity Sensitivity ON or OFF. When turned ON, its LED lights.

AFTERTOUCH SWITCH

The DS-8 keyboard has an Aftertouch function. You can set it so that when you press on a key after playing a note, the program's timbre and vibrato (the speed of which is set using VOICE PARAMETER job #9) and oscillator level increases (see VOICE PARAMETER job #04).

This switch turns the Aftertouch ON or OFF. When turned ON, its LED lights.

PORTAMENTO SWITCH

The DS-8 has a Portamento function, which creates a gradual change in pitch between notes, for a sliding effect. The portamento rate can be varied (see VOICE PARAMETER job #01).

This switch turns the Portamento ON or OFF. When turned ON, its LED lights.

MULTI EFFECT ON/OFF SWITCH

The DS-8's MULTI EFFECT function allows you to add one of six different delay and modulation effects to a program. (These effects are described just below.)

This switch turns the MULTI EFFECT function ON or OFF. When turned ON, its LED lights.

MULTI EFFECT SELECT SWITCH

Six MULTI EFFECTS are available on the DS-8. They are:

- MANUAL DELAY:
    A delay/echo effect. Set the parameters using VOICE PARAMETER job #07.
- LONG DELAY:
    Adds a long delay to the sound.
- SHORT DELAY:
    Adds a short delay to the sound.
- DOUBLING:
    Adds an extremely short delay, which gives the impression of two instruments playing in unison.
- FLANGER:
    A "watery" modulation effect which adds movement and depth to any sound.
- CHORUS:
    A modulation effect which thickens any sound, creating an ensemble effect.

All MULTI EFFECTS except MANUAL DELAY have preset parameter values. However, all MULTI EFFECTS can have their parameter values changed at any time, using VOICE PARAMETER job #7. When using a combination, you can select which groups are processed by the MULTI EFFECT function, and assign the processed sounds to either or both of the DS-8's audio outputs (see COMBINATION PARAMETER job #3).

When you call a program or combination, the MULTI EFFECT assigned to that program or combination will be automatically selected. Successive pressings of this switch allow you to step through the six MULTI EFFECTS.

⟋ DAMPER ⟋

For connection of a pedal switch (such as a KORG PS-1) which can be used, like a piano sustain pedal, for sustain and damping of sounds. Depressing the pedal switch has the same effect as keeping keys depressed on the keyboard.

⟋ ASSIGNABLE PEDAL ⟋

Allows you to use an optional expression pedal (such as the KORG EXP-002 Expression Pedal), connected to the ASS. PEDAL connector on the rear panel, to control one of the following functions: Volume, Timbre, Vibrato or Wah-wah.

Use FUNCTION job #3 to assign one of these functions to the foot pedal.

NOTE:

Misoperation may result if the foot controller is inserted or extracted when the power is on. Therefore, ensure that the power is off before inserting or extracting it.

⟋ ASSIGNABLE SWITCH ⟋

Allows you to use an optional pedal switch (such as the KORG PS-1), connected to the ASS. SW connector on the rear panel, to turn ON or OFF one of the the following PERFORMANCE EDITOR functions: OSC SELECT, VELOCITY, AFTERTOUCH, PORTAMENTO, MULTI EFFECT ON/OFF. This assignable switch can also be used for Program Down (changing programs in reverse order).

Use FUNCTION job #2 to assign one of these functions to the pedal switch.

NOTE:

This product uses a digital sound source; therefore, if the tone, volume, etc., is changed suddenly with a joy stick, after touch, etc., some digital noise may occur.

CREATING PROGRAMS AND COMBINATIONS

On the DS-8, you can create programs and combinations to suit your own style of playing. This is done by editing individual functions to create the exact sound you are looking for.

The DS-8 has two special editing modes. Each mode contains a number of "jobs" (listed on the Job Table on the DS-8's control panel). Each job contains a number of "parameters" — individual functions which can be turned OFF or ON, or set to a specific value.

The two modes are as follows:

VOICE PARAMETER MODE:
This mode lets you create new programs (voices). It has nine jobs, numbered 1 thru 9, which are used to program the tone and structure of a voice. This mode also has seven additional jobs, numbered 01 thru 07, which set performance parameters (such as joystick range or velocity sensitivity).

COMBI PARAMETER MODE:
This mode lets you set parameters when creating new combinations. It has nine jobs, numbered 0 thru 8.

NOTE:

You do not need to enter the COMBI PARAMETER mode if you are only selecting programs for a new combination.

⌐ HOW TO EDIT A PROGRAM ⌐

Here we explain in detail a typical program editing job. Once you understand this example, you'll be able to edit virtually any job in the Voice Parameter mode, because most jobs are accessed and edited in the same way. (There are a few exceptions, which will be described individually in the VOICE PARAMETER MODE chapter.)

For our example we'll select a program for editing, then select one job (job #9: Modulation Generator) and edit its parameters. Later in this chapter we'll explain how you store the newly edited program.

1) Select the program you wish to edit. Also, press SINGLE to set the DS-8 to the Single keyboard mode.
2) Press the Voice Parameter key. Its LED will light. The LCD will show the first job in this mode (job #1: PITCH).

```
┌─────────────────────────────┐
│PITCH     OSC1 OSC2 DTN      │
│1          2    4    3       │
└─────────────────────────────┘
```

3) You can now edit parameters in this job. Since for our example we're using job #9, press Numeric key 9 (some jobs in the Voice Parameter mode have a two-figure number. To select these jobs press "0" and then another Numeric key.) The LCD will display job #9: MODULATION GENERATOR.

```
 ①                    ③
┌─────────────────────────────┐
│MG   WF  FREQ DLY PTCH T/A TSEL ASEL│
│9    TRI  33   12   2   15  1+2  OFF │
└─────────────────────────────┘
 ② ⑤                  ④
```

① Job name   ② Job number
③ Parameter names   ④ Parameter values/settings
⑤ Cursor at first parameter

4) This is a typical job display. The job name and number appear at the left end of the LCD. On the top of the LCD are the parameter names, under each of which is the current parameter value or setting. Most job displays are laid out like this one. Any exceptions will be clearly explained where appropriate.

   In job #9 there are seven parameters. The cursor will appear under the first parameter, which in this case is "WF" (Waveform).

5) There are two ways to edit this parameter: the VALUE slider, or the UP/YES and DOWN/NO keys.

The VALUE slider is useful for rapid changes, especially when a parameter has a wide range of values. As you move the VALUE slider up, the parameter value increases. As you move the VALUE slider down, the parameter value decreases.

The UP/YES and DOWN/NO keys change the parameter setting in single steps. Each time you press the UP/YES key the parameter value increases by one unit. Each time you press the DOWN/NO key the parameter value decreases by one unit.

This parameter (Waveform) has four settings (TRIANGLE, SAWTOOTH, SQUARE, SAMPLE & HOLD), so it's advisable to use the UP/YES and DOWN/NO keys to select the waveform (which will appear on the LCD as "TRI", "SAW", "SQUR" or "S/H"). For example, pressing the UP/YES key once will change the waveform to SAWTOOTH.

```
┌─────────────────────────────┐
│MG   WF  FREQ DLY PTCH T/A TSEL ASEL│
│9    SAW  33   12   2   15  1+2  OFF │
└─────────────────────────────┘
      └─ New waveform setting
```

6) To select another parameter, use the CURSOR keys. Each time one of these keys is pressed it moves the cursor to the parameter immediately to the right or left (depending on the direction of the arrow marked above the key).

   In our example, pressing the CURSOR right key will move the cursor one parameter to the right, to the "FREQ" (frequency) parameter.

7) Since this parameter has a wide value range (0 — 63), it is quicker to edit it by using the VALUE slider to quickly set an approximate value, then the UP/YES and DOWN/NO keys to "fine-tune" the setting.

8) Continue moving the cursor to other parameters, and alter their values or settings in the same way, as long as you like. Then return to step 3, select another job, and edit its parameters.

NOTE:

At any time during editing, you can compare the sound of the edited program with the original, by pressing the COMPARE key. The LCD, however, will not change. To continue editing where you left off, press COMPARE again.

HOW TO EDIT A COMBINATION

There are two basic procedures involved in editing a combination.

First, select which keyboard mode the combination will use, and which programs will make up the combination.
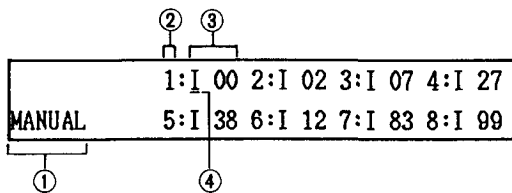
NOTE:

The SINGLE mode can also be selected, should you wish to use the DS-8's combination memory to store single voices.

Second, call up the Combi Parameter mode and edit parameters in the selected combination. Setting parameters in the DS-8's Combi Parameter mode is done in exactly the same way as setting parameters in the Voice Parameter mode, except that you press COMBI PARAMETER to get started. Refer to the previous section for details.

Here's how you carry out the first procedure:

1) Press COMBINATION.
2) Press SINGLE, LAYER, DOUBLE or MULTI according to the keyboard mode you wish to use for the new combination. For example: Multi mode.

```
         ②  ③
      ┌──┐┌──┐
   ┌──────────────────────────┐
   │     1:I 00 2:I 02 3:I 07 4:I 27 │
   │MANUAL    5:I 38 6:I 12 7:I 83 8:I 99 │
   └──────────────────────────┘
   └───┘            └──┘
     ①               ④
```

① MULTI EFFECT   ② Group number
③ Program number   ④ Cursor under group 1

In this mode, eight different programs are assigned to eight different groups. The LCD shows the program number on the right of each group number. It also shows the MULTI EFFECT that is assigned to this combination. The cursor is positioned under group 1.

3) You can now select a Program for group 1, using the normal program selection procedure.
4) Press the CURSOR right key to move the cursor to the next group, and select another program. Continue moving the cursor and selecting programs until you have selected programs for all eight groups. You can now either store the new Combination, or edit its parameters.

NOTE:

You can NOT store a Combination if it contains both internal and external (RAM or ROM card) programs. This type of combination can ONLY be used for performance. For storing, a combination should contain ONLY internal or external programs, and should be stored to the corresponding memory. To get around this, move programs between the internal and external memories (using the program store procedure) until all selected programs are in the same memory. Then create a combination using these selected programs.

STORING AN EDITED PROGRAM OR COMBINATION

This section explains how to store an edited program so that all the new data is preserved for instant recall at any time. Combinations are stored in exactly the same way, except that in step 3 you enter a combination number (range: 0 — 9).

1) Press WRITE. The LCD will show that you wish to store the Voice Parameters of the program that you have edited (for example, internal program 00).

```
┌──────────────────────────┐
│VOICE PARAMETER WRITE     │
│        I 00 → * **        │
└──────────────────────────┘
        └┘└┘  └─┘└─┘
        ① ②   ③  ④
```
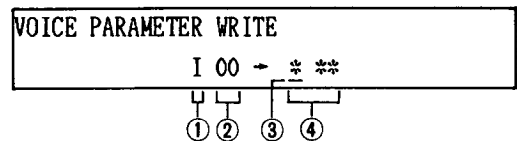
① Indicates internal program
② Program number
③ Cursor at memory position
④ Program destination

2) Press INT if you wish to store the program in the DS-8's internal memory. Press EXT if you wish to store the program on a RAM card (a card must be inserted into the card slot for this purpose). The LCD will show "I" (internal) or "E" (external).

3) Use the Numeric keys to select the destination in which to store the program. RANGE: 00 — 99. The LCD will now show the complete program destination (for example, internal memory number 12).

```
┌──────────────────────────┐
│VOICE PARAMETER WRITE     │
│        I 00 → I 12  SURE? │
└──────────────────────────┘
                 └──┘
                  └── Program destination
```
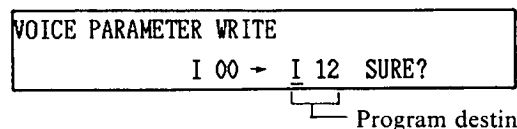
If you change your mind and want to enter a different program destination, simply press WRITE again and return to step 2. You'd want to do this if the selected program destination already contained a program you wish to keep.

You can also cancel the write operation, by pressing DOWN/NO.

4) To store the program, press UP/YES. The program will be stored in the new destination, and the LCD will return to the Program Select mode.

Caution after sound creation write

Program and combination program write operations cannot be performed with a new RAM card until it has been formatted. See parameter 5, SAVE TO RAM CARD, of the function mode regarding formatting procedures.

QUICK GUIDES

To recap, here are quick guides to editing programs and combinations on the DS-8.

PROGRAM EDITING

1) Select a program.
2) Press SINGLE to select the Single keyboard mode.
3) (This step can be omitted). Press VOICE PARAMETER to select the Voice Parameter mode, and edit parameters. Press COMPARE to compare the edited program with the original.
4) After editing, press WRITE. Then select a program storage destination (internal or external). Then press UP/YES to store the program.
5) The DS-8 will return to the Program Select mode.

COMBINATION EDITING

1) Press COMBINATION, and select a keyboard mode.
2) Assign new programs to groups within the combination, by moving the cursor to each group and selecting programs.
3) (This step can be omitted). Press COMBI PARAMETER to select the Combi Parameter mode, and edit parameters.
4) After editing, press WRITE. Then select a combination storage destination (internal or external). Then press UP/YES to store the combination.
5) The DS-8 will return to the Combination Select mode.

THE VOICE PARAMETER MODE

This chapter describes in detail the jobs and parameters available in the Voice Parameter mode. (See the CREATING PROGRAMS AND COMBINATIONS chapter for descriptions of the procedures used for selecting and editing jobs and parameters. Any exceptions to these procedures will be described in this chapter.)

The Voice Parameter mode is selected by pressing VOICE PARAMETER (after first selecting the program that you wish to edit, and setting the DS-8 to Single keyboard mode by pressing SINGLE).

Newly edited programs should be stored, or they will be lost as soon as another program is selected. (See STORING AN EDITED PROGRAM OR COMBINATION in the CREATING PROGRAMS AND COMBINATIONS chapter.)

Jobs available in the Voice Parameter mode are as follows:

JOB #1: PITCH

FUNCTIONS

1) To set the pitch of OSC 1 and OSC 2. Oscillator pitch is measured in harmonic series, like organ pitches. A pitch of 1 is comparable to an 8 foot pipe; a pitch of 2 indicates a 4 foot pipe; a pitch of 0.5 indicates a 16 foot pipe, etc.
2) To set the amount of detune. This adds richness to any voice by slightly altering the tuning of OSC 2 relative to OSC 1.

PARAMETERS

PITCH	OSC1	OSC2	DTN
1	_ 2	4	3

OSC 1. Pitch of OSC 1.
RANGE: 0.5 — 15.
OSC 2. Pitch of OSC 2.
RANGE: 0.5 — 15.
DTN. Detuning.
RANGE: 0 — 3.

JOB #2: PITCH EG

FUNCTION

The pitch envelope generator sets how the pitch of the voice will change over time.

PITCH EG GRAPH
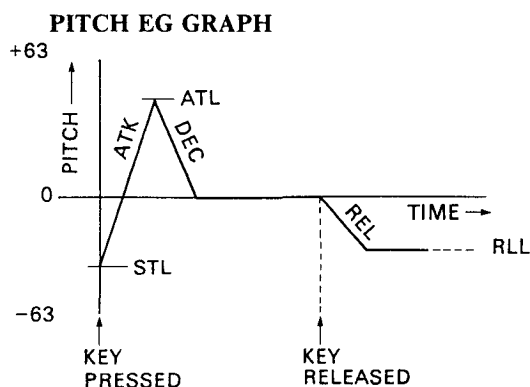
Used subtly, the Pitch EG can add expression and feel to acoustic-sounding voices. Higher settings can create wild effects in synth-type voices.

PARAMETERS

PITCH EG	STL	ATK	ATL	DEC	REL	RLL
2	_ 0	47	+ 6	25	37	- 2

STL: Start Level. The pitch at which the voice will start when a note is played.
RANGE: +/− 63 (0 is standard pitch).

ATK: Attack Rate. The rate at which the pitch will change from the Start level to the Attack level.
RANGE: 0 — 63.

ATL: Attack Level. The peak level of the pitch.
RANGE: +/− 63.

DEC: Decay Rate. The rate at which the pitch will return from the Attack level to the standard level, while a key is held down.
RANGE: 0 — 63.

REL: Release Rate. The rate at which the pitch will change to the Release level after a key is released.
RANGE: 0 — 63.

RLL: Release Level. The level to which the pitch will return after a key is released.
RANGE: +/− 63.

JOB #3: OSC 1 WAVEFORM

FUNCTIONS

1. To select a waveform for OSC 1.
2. To select a variety of tonal effects for OSC 1.
3. To set keyboard tracking for OSC 1, so its tone will change over the range of the keyboard.

PARAMETERS

WFRM1	TYPE	SPCT	RING	LIMT	KBD
3	2	3	0	OFF	1

TYPE: The type of waveform.
RANGE: 1 (Sawtooth), 2 (Square), 3 (Bright Sawtooth) and 4 (Bright Square).

SAWTOOTH/SQUARE WAVES
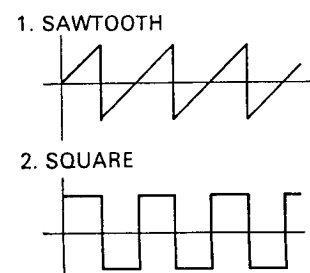
NOTE:

When OSC 2 waveform type is set to XMOD, no sound is output from OSC 1.

SPCT: Spectrum. Alters the resonance of the tone, from a full, bassy timbre to a bright, high timbre.
RANGE: 1 — 8.

RING: Ring Modulation. A special effect that can be used to create metallic sounds. Ideal for bell or cymbal voices.
RANGE: 0 — 3.

LIMT: Limits the amount of timbre modulation created by the joystick, by Aftertouch, or by the Timbre EG (see job #5). When turned OFF, modulation can be increased to produce noise-type voices, especially if OSC 2 waveform type is XMOD.
RANGE: ON, OFF.

KBD: Keyboard Tracking. Sets the amount by which the tone of OSC 1 will change over the range of the keyboard. The tone will brighten as higher notes are played, and soften as lower notes are played.
RANGE: 0 — 3.

JOB #4: OSC 2 WAVEFORM

FUNCTIONS

The functions of this job are identical to job #3, but apply to OSC 2.

PARAMETERS

WFRM2		TYPE	SPCT	RING	LIMT	KBD
4		XMOD	2	1	ON	3

TYPE: The type of waveform.
RANGE: 1 (Sawtooth), 2 (Square), and XMOD (OSC 1 modulates OSC 2, to produce complex waveforms).

NOTE:

When XMOD is selected, no sound is output from OSC 1, since it is only used to modulate OSC 2.

- All other parameters in this job are identical to job #3, but apply to OSC 2.

JOB #5: OSC 1 TIMBRE EG

FUNCTIONS

The timbre envelope generator job allows you to:

1. Set how the timbre of OSC 1 will change over time.

TIMBRE EG GRAPH
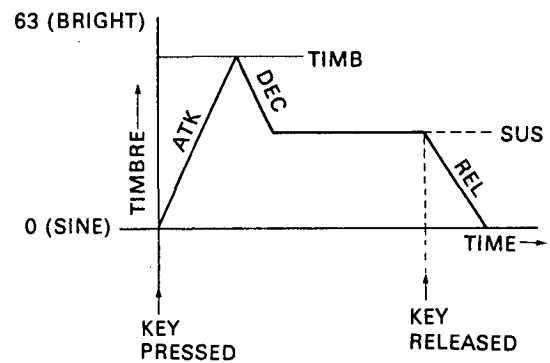
2. Set keyboard tracking for OSC 1, so its timbre EG will change over the range of the keyboard.

PARAMETERS

T.EG1	TIMB	INT	ATK	DEC	SUS	REL	KBD
5	56	12	47	20	10	6	1

TIMB: Timbre. Sets the peak level of the timbre EG. At the minimum setting OSC 1 becomes a pure sine wave. At the maximum setting, maximum tonal variation is possible. This setting can be limited to avoid noise-type timbres by setting the LIMT parameter to ON (see job #3).
RANGE: 0 — 99.

INT: Intensity. Sets the intensity of timbre modulation by the timbre EG. At the maximum setting, modulation occurs as programmed. At the minimum setting, the attack, decay, sustain and release are increased so that no tonal variation occurs. The voice becomes organ-like, instantly rising to the Timbre level as a key is pressed.
RANGE: 0 — 15.

The following graphs show the effect of the Intensity parameter.
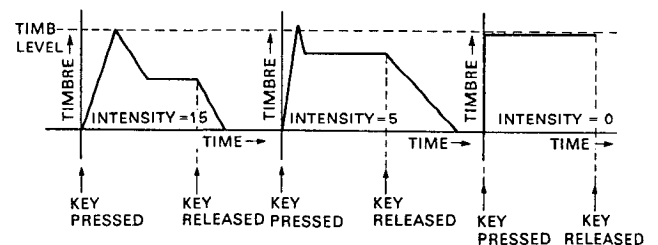
ATK: Attack Rate. The rate at which timbre increases (becomes brighter) to the Timbre level when a key is pressed.
RANGE: 0 — 31.

DEC: Decay Rate. The rate at which timbre decreases (becomes softer) from the Timbre level to the Sustain level, while a key is held down.
RANGE: 0 — 31.

SUS: Sustain. The level at which timbre remains while a key is held down.
RANGE: 0 — 15.

REL: Release Rate. The rate at which timbre decreases after a key is released.
RANGE: 0 — 15.

KBD: Keyboard Tracking. Sets the amount by which the timbre EG of OSC 1 changes over the range of the keyboard. The timbre EG will shorten as higher notes are played, and lengthen as lower notes are played.
RANGE: 0 — 3.

JOB #6: OSC 2 TIMBRE EG

FUNCTIONS

The functions of this job are identical to job #5, but apply to OSC 2.

PARAMETERS

The parameters of this job are identical to job #5, but apply to OSC 2.

JOB #7: OSC 1 AMPLITUDE EG

FUNCTIONS

The amplitude envelope generator job allows you to:

1. Set how the level of OSC 1 changes over time. This allows you to recreate the natural "shape" of acoustic sounds, or create unique sound shapes of your own.

AMPLITUDE EG GRAPH
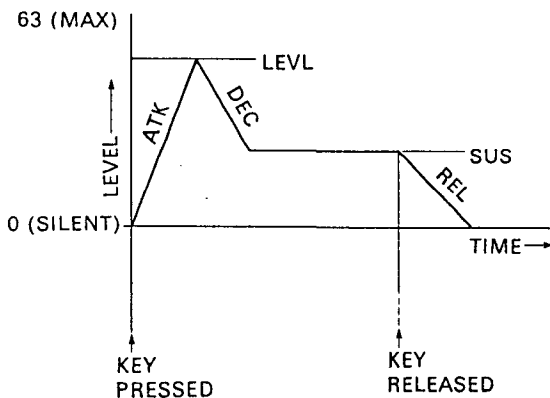
2. Set keyboard tracking for OSC 1, so that its amplitude EG changes over the range of the keyboard.

PARAMETERS

A.EG1	LEVL	ATK	DEC	SUS	REL	KBD
7	61	23	17	12	14	1

LEVL: Level. Sets the peak level of OSC 1. At the minimum setting, OSC 1 is silent. At the maximum setting, maximum level variation is possible.
RANGE: 0 — 63.

ATK: Attack Rate. The rate at which level increases to the Level setting when a key is pressed.
RANGE: 0 — 31.

DEC: Decay Rate. The rate at which level decreases from the Level setting to the Sustain setting while a key is held down.
RANGE: 0 — 31.

SUS: Sustain. The level at which the sound remains while a key is held down.
RANGE: 0 — 15.

REL: Release Rate. The rate at which level decreases after a key is released.
RANGE: 0 — 15.

KBD: Keyboard Tracking. Sets the amount by which the amplitude EG of OSC 1 changes over the range of the keyboard. The amplitude EG will shorten as higher notes are played, and lengthen as lower notes are played.
RANGE: 0 — 3.

NOTE:

If the sound should become distorted when playing a chord, due to the tone setting, lower the level of OSC1 AMPL EG and OSC2 AMPL EG.

JOB #8: OSC 2 AMPLITUDE EG

FUNCTIONS

The functions of this job are identical to job #7, but apply to OSC 2.

PARAMETERS

The parameters of this job are identical to job #7, but apply to OSC 2.

JOB #9: MODULATION GENERATOR

FUNCTION

To add vibrato, wah-wah and tremolo to a selected voice, by modulating the voice with an LFO (Low Frequency Oscillator).

NOTE:

The Aftertouch function and the joystick let you add modulation even if the modulation level is set at zero (see parameters PTCH and T/A in this job).

PARAMETERS

MG	WF	FREQ	DLY	PTCH	T/A	TSEL	ASEL
9	TRI	33	2	17	23	OFF	1+2

WF: Waveform of the LFO.
RANGE: TRIANGLE, SAWTOOTH, SQUARE, SAMPLE & HOLD.

TRIANGLE

SAWTOOTH

SQUARE

SAMPLE & HOLD
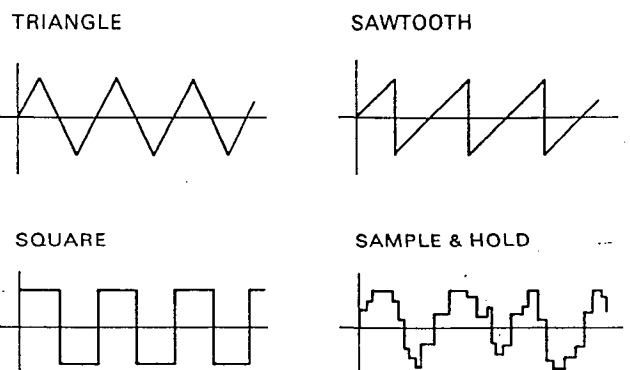
FREQ: Frequency of the LFO (modulation speed).
RANGE: 0 — 63.
DLY: Modulation Delay Time. Can be set so the modulation "fades in" gradually after you play a note. If you set a slow delay, modulation will only be heard on long notes; short notes will have little or no modulation.
RANGE: 0 — 31.
PTCH: Amount of vibrato (pitch modulation).
RANGE: 0 — 63.
T/A: Amount of wah-wah and tremolo (timbre/amplitude modulation)
RANGE: 0 — 63.
TSEL: Timbre Select. Apply wah-wah to OSC 1, OSC 2 or both.
RANGE: OFF, 1, 2, 1+2.
ASEL: Amplitude Select. Apply tremolo to OSC 1, OSC 2 or both.
RANGE: OFF, 1, 2, 1+2.

JOB #01: PORTAMENTO

FUNCTION

To set the rate and mode of portamento, creating a pitch slide between notes.

PARAMETERS

PORTAMENTO	MODE	TIME
01	_1	32

MODE: This parameter sets one of two types of portamento for each ASSIGN mode (see job #05). These are as follows:

In the POLY mode, portamento mode 1 creates a random type of portamento, where notes seem to slide up and down as they wish. With portamento mode 2 the slide will always begin from the last note that was played.

In the UNISON mode, portamento mode 1 creates a pitch slide between every note, no matter how you play. With portamento mode 2, the slide only happens between notes which are played legato (i.e., when a note is played before the previous note is released).

TIME: Sets the speed of the pitch slide. (Total slide time will depend on the pitch distance between notes.)
RANGE: 0 — 63.

JOB #02: JOYSTICK

FUNCTIONS

1. To set the pitch bend range of the joystick, when it is moved left to right. Right = sharp (pitch raised); left = flat (pitch lowered).
2. To set the timbre range of the joystick, when it is moved from left to right. Right = bright (timbre level increased); left = soft (timbre level decreased).
3. To set how much the modulation speed increases when the joystick is moved UP (for PITCH modulation, i.e., vibrato) or DOWN (for TIMBRE modulation, i.e.,

wah-wah). The waveform and frequency of modulation is set using job #9 MODULATION GENERATOR.

PARAMETERS

JOYSTICK	BEND:PITCH	TIMB	MOD:SPEED
02	_3	3	2

BEND: PITCH. Pitch bend range of the joystick.
RANGE: 0 — 12 semitones.
TIMB. Timbre range of the joystick.
RANGE: 0 — 3.
MOD: SPEED. Modulation speed range of the joystick.
RANGE: 0 — 3.

JOB #03: VELOCITY

FUNCTIONS

To set how much the Timbre EG's and Amplitude EG's of OSC 1 and OSC respond to key velocity. You can set these functions so that the harder you play a note, the brighter (Timbre EG) and/or louder (Amplitude EG) it becomes.

PARAMETERS

VELOCITY	TEG1	TEG2	AEG1	AEG2
03	_3	4	3	7

TEG1: Timbre EG 1. Sets how much key velocity will affect the Timbre EG of OSC 1.
RANGE: 0 — 7.
TEG2: Timbre EG 2. Sets how much key velocity will affect the Timbre EG of OSC 2.
RANGE: 0 — 7.
AEG1: Amplitude EG 1. Sets how much key velocity will affect the Amplitude EG of OSC 1,
RANGE: 0 — 7.
AEG1: Amplitude EG 2. Sets how much key velocity will affect the Amplitude EG of OSC 2.
RANGE: 0 — 7.

JOB #04: AFTERTOUCH

FUNCTIONS

To set how much the intensity of the vibrato, timbre, OSC 1 level and OSC 2 level are affected by Aftertouch. You can set these functions so that the harder you press on a key after playing it, the stronger the vibrato becomes (Pitch Modulation), the brighter the timbre becomes (Timbre) and/or the louder each oscillator becomes (Amp 1 and Amp 2).

PARAMETERS

AFT TOUCH	PMG	TIMB	AMP1	AMP2
04	0	_0	1	0

PMG: Pitch Modulation Generator. Sets how much vibrato is applied to OSC 1 and OSC 2 by Aftertouch. The rate and type of vibrato are set using job #9 MODULATION GENERATOR.

RANGE: 0 — 7.

TIMB: Timbre. Sets how much the timbre of OSC 1 and OSC 2 is increased by Aftertouch.
RANGE: 0 — 7.

AMP 1: OSC 1 Amplitude. Sets how much the level of OSC 1 is increased by Aftertouch.
RANGE: 0 — 7.

AMP 2: OSC 2 Amplitude. Sets how much the level of OSC 2 is increased by Aftertouch.
RANGE: 0 — 7.

JOB #05: ASSIGN MODE

FUNCTIONS

1. To set the DS-8 to play in 8-note polyphonic mode (POLY) or in UNISON mode, where eight voices are played when a single key is pressed.
2. In the UNISON mode only, to set TRIGGER and DE-TUNE functions.

The TRIGGER function, when set to MULTI, lets you trigger the envelope generator every time a note is played in the UNISON mode (even if the previous note is still held; i.e., no Note Off signal has been sent). If set to SINGLE, the envelope is triggered only if the previous note has first been released (i.e., a Note Off signal has been sent).

The DETUNE function allows you to detune the pitches of the eight voices in the UNISON mode. This provides a rich chorus effect, with variable depth.

PARAMETERS

POLY mode display:

```
ASSIGN MODE
05  POLY
```

UNISON mode display:

```
ASSIGN MODE    TRIG      DETUNE
05  UNISON     MULTI        0
```

TRIG: Trigger.
RANGE: SINGLE, MULTI.
DETUNE:
RANGE: 0 — 3.

JOB #06: VOICE NAME

FUNCTION

To set a new name (of up to 10 characters) for a voice.

PARAMETERS

```
VOICE NAME
58        India
```

When you enter this job, the cursor appears at the first character space. To select a character, use the VALUE slider and/or the UP/YES and DOWN/NO keys. The available characters are as follows:

	!	"	#	$	%	&	'	(	)	*	+
,	—	.	/	0	1	2	3	4	5	6	7
8	9	:	;	<	=	>	?	∂	A	B	C
D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	[
¥	]	^	_	`	a	b	c	d	e	f	g
h	i	j	k	l	m	n	o	p	q	r	s
t	u	v	w	x	y	z	{	|	}	→	←

Once you select a character, use the CURSOR keys to move the cursor to the next space and select a character as described above. Do this until you have finished entering the name of your choice.

JOB #07: MULTI EFFECT

FUNCTION

To set a variety of parameters for the six available MULTI EFFECTS. These are: MANUAL DELAY, LONG DELAY, SHORT DELAY, DOUBLING, FLANGER, and CHORUS. All MULTI EFFECTS except MANUAL DELAY have preset parameter values. However, the parameter values of all MULTI EFFECTS can be changed at any time, and stored for individual programs.

PARAMETERS

There are six different MULTI EFFECTS, each with different sets of parameters. When you select job #07, the cursor will appear at the MULTI EFFECT name. While the cursor is in this position, you can select the MULTI EFFECT you wish to add to your program. After you select a MULTI EFFECT, its parameters will be displayed on the LCD.

• MANUAL DELAY

```
MULTI EFFECT   TIME  FB  MFRQ MINT LEVEL
07 MANUAL DLY  720.+14  12    0   15
```

TIME: The delay time.
RANGE: 0.04 — 850 msec.

FB: Feedback, to produce repeated delays. The higher the setting, the more repeats. Negative settings produce phase-reversed repeats, for a clearer, brighter sound.
RANGE: +/− 15.

MFRQ: Modulation Frequency. Delay time can be modulated, to add vibrato effects to delays; this parameter sets the vibrato rate.
RANGE: 0 — 31.

MINT: Modulation Intensity. Sets the vibrato depth of the delay time modulation.
RANGE: 0 — 31.

LEVEL: Sets the volume of the delays.
RANGE 0 — 15.

• LONG DELAY

```
MULTI EFFECT    TIME  FB         LEVEL
07 LONG DLY     450. +13          14
```

TIME: The delay time.
RANGE: 105 — 720 msec.
FB, LEVEL: These parameters are identical to the corresponding MANUAL DELAY parameters.

• SHORT DELAY

```
MULTI EFFECT    TIME  FB         LEVEL
07 SHORT DLY    40.0  0           14
```

TIME: The delay time.
RANGE: 20.0 — 88.0 msec.
FB, LEVEL: These parameters are identical to the corresponding MANUAL DELAY parameters.

• DOUBLING

```
MULTI EFFECT    TIME             LEVEL
07 DOUBLING     20.0              14
```

TIME: The delay time.
RANGE: 10.0 — 40.0 msec.
LEVEL: This parameter is identical to the corresponding MANUAL DELAY parameter.

• FLANGER

```
MULTI EFFECT    MANU  FB  SPED DPTH LEVEL
07 FLANGER      1.00 +14   15   31   14
```

MANU: Manual. Sets the delay time between the direct and the flanged signals.
RANGE: 0.04 — 5.50 msec.
FB: Feedback. Sets how much the flanged signal is fed back into itself (i.e., the intensity of the effect). Negative settings produce phase-reversed flanging, for a clearer, brighter sound.
RANGE: +/− 15.
SPED: Flanger modulation speed. Sets the flanging rate, from slow sweep to fast flutter.
RANGE: 0 — 24.
DPTH: Flanger modulation depth. Sets the flanger modulation depth, from zero (no effect) to a highly modulated sound.
RANGE: 0 — 31.
LEVEL: Sets the overall level of the flanged signal.
RANGE 0 — 15.

• CHORUS

```
MULTI EFFECT    MANU       SPED DPTH LEVEL
07 CHORUS       10.0        18   26   14
```

MANU: Manual. Sets the delay time between the direct and the chorus signals.
RANGE: 5.0 — 32.0 msec.
SPED: Chorus modulation speed. Sets the rate of chorus, from slow sweep to fast flutter.
RANGE: 0 — 31.
DPTH: Chorus modulation depth. Sets the chorus modulation depth, from zero (no effect) to a highly modulated sound.
RANGE: 0 — 31.
LEVEL: Sets the volume of the chorus signal.
RANGE: 0 — 31.

THE COMBI PARAMETER MODE

This chapter describes, in detail, the jobs and parameters available in the Combi Parameter mode. (See the CREATING PROGRAMS AND COMBINATIONS chapter for descriptions of the procedures used for selecting and editing jobs and parameters. Any exceptions to these procedures will be described in this chapter.)

The Combi Parameter mode is selected by pressing COMBI PARAMETER, after first selecting the combination you wish to edit, and the combination keyboard mode (either LAYER, DOUBLE or MULTI).

Newly edited combinations should be stored, or they will be lost as soon as another combination or program is selected. (See STORING AN EDITED PROGRAM OR COMBINATION in the CREATING PROGRAMS AND COMBINATIONS chapter.)

Not all jobs in the Combi Parameter mode can be called for all keyboard modes, as shown in the following chart. "O" indicates that a job can be called. "X" indicates that a job cannot be called.

JOB	SINGLE	LAYER	DOUBLE	MULTI
#0: CONTROLLER	x	O	O	O
#1: MODULATION GENERATOR	x	O	O	O
#2: MULTI EFFECT	x	O	O	O
#3: MULTI EFFECT IN/OUT	x	O	O	O
#4: INTERVAL/DETUNE	x	O	O	x
#5: KEY SPLIT/OCT SHIFT	x	x	O	x
#6: NO. OF VOICES	x	x	O	O
#7: RECEIVE CHANNEL	x	x	x	O
#8: PAN	x	O	O	O

NOTE:

If you try to call a Combi Parameter job that cannot be called from the current keyboard mode, the LCD will show "UNAVAIL IN THIS KBD MODE". Select the correct keyboard mode, press COMBI PARAMETER and try again.

Parameter selection will only be described for one keyboard mode in each job. For example, job #6 (NO. OF VOICES) can be selected in either the DOUBLE or MULTI mode, but instructions will be given only for selecting the number of voices in the DOUBLE mode. Operation is exactly the same for the MULTI mode, except that eight groups are available instead of two.

Jobs available in the Combi Parameter mode are as follows:

JOB #0: CONTROLLER

KEYBOARD MODE: LAYER, DOUBLE, MULTI

FUNCTIONS

1. To select which group's controllers will be used to control the combination. Controllers include JOYSTICK, AFTERTOUCH, DAMPER, ASSIGNABLE SWITCH, ASSIGNABLE PEDAL. The program assigned to the selected ("source") group contains the controller parameter settings.
2. To select which groups in a combination will receive controller signals.

PARAMETERS

This type of LCD display appears when the LAYER mode is selected.

```
CNTRL   SOURCE  1:0 N 2:OFF
0        _1
```

SOURCE: Select which group's controllers control the combination.
RANGE: Groups 1 — 2 (LAYER, DOUBLE modes), Groups 1 — 8 (MULTI mode).

In the MULTI mode. MIDI data received from joysticks or after touch is received at the channel by the group selected here. All groups are influenced by this data.
The LCD also shows the group numbers (1 and 2 in the example shown, 1 thru 8 for the MULTI mode). You can set the controller effect either ON or OFF for each group.

JOB #1: MODULATION GENERATOR

KEYBOARD MODE: LAYER, DOUBLE, MULTI

FUNCTIONS

1. To select which group's Modulation Generator will control the combination. The program assigned to the selected ("source") group contains the Modulation Generator settings.
2. To select which groups in a combination will receive Modulation Generator signals.

PARAMETERS

This type of LCD display appears when the LAYER mode is selected.

```
MG      SOURCE  1:0 N 2:0 N
1        _1
```

SOURCE: Select which group's Modulation Generator will control the combination.
RANGE: Groups 1 — 2 (LAYER, DOUBLE modes), Groups 1 — 8 (MULTI mode).

The LCD also shows the group numbers (1 and 2 in the example shown, 1 thru 8 for the MULTI mode). You can set the Modulation Generator effect either ON or OFF for each group.

JOB #2: MULTI EFFECT

```
|  KEYBOARD MODE: LAYER, DOUBLE, MULTI  |
```

FUNCTION

To select which group's MULTI EFFECT setting will be used by the combination. The program assigned to the selected ("source") group contains the MULTI EFFECT settings.
You can also select the MULTI EFFECT to be used by the combination.

PARAMETERS

This type of LCD display appears when the LAYER mode is selected.

```
M.EFFECT      SOURCE  MODE
2               _1    MANUAL
```

SOURCE: Select which group's MULTI EFFECT setting will be used by the combination.
RANGE: Groups 1 — 2 (LAYER, DOUBLE modes), Groups 1 — 8 (MULTI mode).
MODE: Shows the MULTI EFFECT assigned to the selected source.

NOTE:

For the SOURCE, you can also select COMBI. This allows you to move the cursor to the MODE display and select a MULTI EFFECT.

JOB #3: MULTI EFFECT IN/OUT

```
|  KEYBOARD MODE: LAYER, DOUBLE, MULTI  |
```

FUNCTIONS

This function is retated to job #8, PAN, in which each group is assigned to output A and/or output B.

1. MULTI EFFECT IN: To select groups assigned to output A, B, or both outputs, for processing by the MULTI EFFECT selected in job #2.
2. MULTI EFFECT OUT: To assign the signal processed by the MULTI EFFECT to output A, B, or both.

MULTI EFFECT IN/OUT BLOCK DIAGRAM
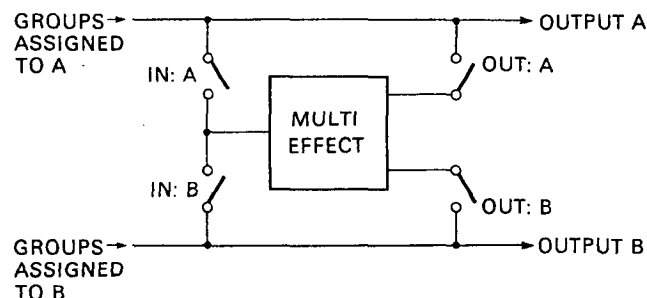
PARAMETERS

```
M.EFFECT       I N    OUT
3              A+B     A
```

IN: Select which groups will will be processed by the Multi Effect.
· RANGE: A, B, A + B.
OUT: Select to which outputs the processed sound will be sent.
RANGE: A, B, A + B.

JOB #4: INTERVAL/DETUNE

```
|       KEYBOARD MODE: LAYER, DOUBLE       |
```

FUNCTIONS

1. To raise the pitch of Group 2 in semitone steps up to 12 semitones (1 octave).
2. To detune Group 2 (slightly alter its pitch) by up to $+/-$ 25 cents (1 cent = 1/100th of a semitone).

PARAMETERS

```
          INTERVAL   DETUNE
4            _0         2
```

INTERVAL: The amount that Group 2's pitch is raised.
RANGE: 0 — 12 semitones.
DETUNE: The amount that Group 2 is detuned.
RANGE: -31 — $+32$.

JOB #5: KEY SPLIT/OCTAVE SHIFT

```
|         KEYBOARD MODE: DOUBLE         |
```

FUNCTIONS

1. To assign the two groups to different sections of the keyboard. Group 1 can be assigned to the lower part of the keyboard, and its upper note limit set. Group 2 can be assigned to the upper part of the keyboard, and its lower note limit set.

NOTE:

The range of the DS-8 keyboard is C1 — C6. For controlling external MIDI devices, note limits can be set up to C8. Bar graphs on the LCD provide a visual representation of the note range, from C1 to C8 (one block indicates one octave).

2. To alter the pitch of either or both of the two groups, by one or two octaves.

PARAMETERS

```
KEY SPLIT 1:B 3 ▨        OCT SHIFT 1: 0
5         2:C 4    ▨                2:-1
```

KEY SPLIT 1: Set the upper note limit of Group 1.
RANGE: C1 — C8.

KEY SPLIT 2: Set the lower note limit of Group 2.
RANGE: C1 — C8.

OCT SHIFT 1: Raise the pitch of Group 1 by one or two octaves.
RANGE: 0, +1, +2.

OCT SHIFT 2: Lower the pitch of Group 2 by one or two octaves.
RANGE: 0, −1, −2.

JOB #6: NO. OF VOICES

KEYBOARD MODE: DOUBLE, MULTI

FUNCTION

To assign the number of voices to each group. The DS-8 has a limit of 8 voices.

PARAMETERS

This type of LCD display appears when the DOUBLE mode is selected.

```
NO. OF VOICES  1:_2  2: 6
6
```

Assign voices to each group (group numbers are 1: and 2: in the DOUBLE mode, 1: thru 8: in the MULTI mode). Total number of voices available: 8.

RANGE: 0 — 8.

JOB #7: RECEIVE CHANNEL

KEYBOARD MODE: MULTI

FUNCTION

To assign MIDI channels to each of the eight groups, so they can be individually controlled by MIDI data from an external MIDI device.

PARAMETERS

```
RECEIVE CH.    1:_1  2: 1  3: 2  4: 2
7              5: 2  6: 3  7: 4  8: 4
```

Groups are numbered 1: thru 8:. Set the MIDI Receive Channel for each group.

RANGE: 1 — 16.

JOB #8: PAN

KEYBOARD MODE: LAYER, DOUBLE, MULTI

FUNCTION

To assign each group to one or both of the DS-8's outputs. If output A is monitored on the left, and output B on the right, this would allow you to hear the group in the left (A), right (B), or center (A + B) position in the stereo image.

PARAMETERS

This type of LCD display appears when the LAYER mode is selected.

```
PAN            1:A  2:B
8
```

Groups are numbered 1: and 2: (LAYER, DOUBLE modes) or 1: thru 8: (MULTI mode). Set the PAN for each group.

RANGE: A, B, A + B.

THE FUNCTION MODE

Settings in this mode are made the same way as in the Voice Parameter mode (see the CREATING PROGRAMS AND COMBINATIONS chapter). However, Function mode settings do not need to be stored — they are remembered by the DS-8 as soon as they are set.

Press FUNCTION to enter the Function mode. After setting functions, press FUNCTION again to return to where you were.

Jobs available in the Function mode are as follows:

JOB #0: MASTER TUNE
FUNCTION

To tune the pitch of the DS-8 (in order to match the pitch of accompanying instruments).

DISPLAY

```
┌─────────────────────────────────┐
│ MASTER TUNE        ┃            │
│ 0 ♭                ┃         ♯  │
└─────────────────────────────────┘
```

Move the cursor to the left to flatten (lower) the pitch, or to the right to sharpen (raise) the pitch. When the cursor is centered, the DS-8 is at standard Concert Pitch (A = 440 Hz).

RANGE: +/- 50 cents.

JOB #1: TRANSPOSE
FUNCTION

To alter the pitch of the DS-8, in semitone steps, for automatic transposing to any key.

DISPLAY

```
┌─────────────────────────────────┐
│ TRANSPOSE              ┃        │
│ 1   CENTER C = C  -    ┃     +  │
└─────────────────────────────────┘
```

Move the cursor to the left to flatten (lower) the pitch, or to the right to sharpen (raise) the pitch. When the cursor is centered the DS-8 is at normal pitch. The note display near the center of the LCD indicates the amount of key change.

RANGE: +/- 12 semitones (1 octave).

JOB #2: FOOT SWITCH ASSIGN
FUNCTION

To assign an optional foot switch (such as the KORG PS-1 Pedal Switch) to execute Program Down, or any one of five PERFORMANCE EDITOR functions.

DISPLAY

```
┌─────────────────────────────────┐
│ FOOT SW ASSIGN                  │
│ 2            PROG DOWN          │
└─────────────────────────────────┘
```

The foot switch can be assigned to one of the following functions:

PROGRAM DOWN: Pressing the footswitch changes the DS-8's program in reverse order.

NOTE:

For Program Up changes, use a foot switch connected to the Program Up jack.

OSC. SWITCH, VELOCITY OFF/ON, MULTI EFFECT OFF/ON, AFTER TOUCH OFF/ON, PORTAMENTO OFF/ON. These functions are the same as their counterparts in the PERFORMANCE EDITOR section of the DS-8's front panel.

JOB #3: PEDAL ASSIGN
FUNCTION

To assign an optional foot pedal (such as the KORG EXP-002 Expression Pedal) to control Volume, Timbre, Vibrato or Wah-wah.

DISPLAY

```
┌─────────────────────────────────┐
│ PEDAL ASSIGN                    │
│ 3            VOLUME             │
└─────────────────────────────────┘
```

The pedal can be assigned to one of the following functions:
VOLUME: MIDI Volume.
TIMBRE: The timbre of the DS-8 (same as the 0 — BRIGHT range of the TIMBRE slider on the front panel).
PITCH MG: Pitch Modulation Generator (depth of vibrato). Same as moving the joystick up.
TIMB MG: Timbre Modulation Generator (depth of wah-wah). Same as moving the joystick down.

JOB #4: MEMORY PROTECT
FUNCTION

To set a Memory Protect function for the internal memory or external memory (RAM card). When turned ON, this prevents new programs or combinations from being stored.

DISPLAY

```
┌─────────────────────────────────┐
│ MEMORY PROTECT      INT  EXT    │
│ 4                   OFF  O N    │
└─────────────────────────────────┘
```

INT: Internal memory. Set to ON or OFF.
EXT: External memory (RAM card). Set to ON or OFF.

JOB #5: SAVE TO RAM CARD

FUNCTION

To save a complete "bank" of 100 programs and 10 combinations to a KORG RAM card. Once saved, the data can be loaded back into the DS-8 at any time (see job #6).

Three types of KORG RAM cards are available: MCR-01, MCR-02 and MCR-03. These can save 1, 2, and 4 banks of data respectively.

NOTE:

1) When data is saved into a bank, all data currently in the bank will be erased.
2) Single programs and combinations can also be saved to RAM card (see STORING AN EDITED PROGRAM OR COMBINATION in the CREATING PROGRAMS AND COMBINATIONS chapter). Single programs and combinations will ALWAYS be saved on Bank #1 of any RAM card that can store more than one Bank.

DISPLAY

The following display will appear if an MCR-03 card is used.

```
SAVE TO RAM CARD
5        SELECT BANK   1  2  3  4
```

The SAVE operation is executed as follows:

1. Move the cursor to the required bank (you only need to do this if the RAM card can store more than one bank).
2. Press UP/YES. The LCD will show "ARE YOU SURE?". At this point you can cancel the SAVE operation by pressing DOWN/NO.
3. To save the data, press UP/YES again. The LCD will show "SAVE COMPLETED".

CARD ERROR MESSAGES

The LCD will show the following messages, to warn of errors in the SAVE operation.

"NO CARD INSERTED".

You need to insert a RAM card before executing the SAVE operation.

"MEMORY PROTECTED".

You need to turn OFF the external memory protect before executing the SAVE operation (see job #4).

"WRITE IMPOSSIBLE ROM/PROTECTED RAM CARD".

1. You are trying to save data to a ROM card. Remove the ROM card and insert a RAM card.
2. The RAM card's own memory protect function is turned on. Remove the RAM card, turn its memory protect off, and put it back in the DS-8's card slot, and try saving data again.

"RAM CARD BATTERY LOW".

The battery in the RAM card is running low, and there is a danger that data may not be saved correctly. Replace the battery before trying to save data.

"ADDITION TO THE FUNCTION SAVE TO RAM CARD"

Formatting of the RAM card can also be done here. When function parameter 5, SAVE TO RAM CARD, is selected after inserting the unformatted RAM card, formatting will begin automatically.

```
RAM CARD FORMATING
        DO YOU NEED FORMAT ?
```

When the UP/YES key is pressed after the above message is displayed on the LCD, the LCD will change to the following:

```
RAM CARD FORMATING
        ARE YOU SURE ?
```

Formatting will begin when the UP/YES key is pressed. The following will be displayed on the LCD when formatting is completed:

```
RAM CARD FORMATING
        FORMAT COMPLETED
```

Also, contents of the entire memory is written in all banks of the RAM card during formatting.

JOB #6: LOAD FROM CARD

FUNCTION

To load a complete "bank" of 100 programs and 10 combinations into the DS-8's internal memory from a KORG RAM card or ROM card.

NOTE:

1) When data is loaded, all programs and combinations already in the DS-8 will be erased.
2) Single programs and combinations can also be loaded from a card into the DS-8 by first selecting an external program or combination and then carrying out the store operation (see STORING AN EDITED PROGRAM OR COMBINATION in the CREATING PROGRAMS AND COMBINATIONS chapter).

DISPLAY

The following display will appear if an MCR-03 card is used.

```
LOAD FROM CARD
6        SELECT BANK   1  2  3  4
```

The LOAD operation is executed as follows:

1. Move the cursor to the required bank (you only need to do this if the card contains more than one bank of data).
2. Press UP/YES. The LCD will show "ARE YOU SURE?". At this point you can cancel the LOAD operation by pressing DOWN/NO.

3. To load the data, press UP/YES again. The LCD will show "LOAD COMPLETED".

CARD ERROR MESSAGES

In addition to the card error messages explained in job #5, the following message may appear when you select the LOAD function:

"NO DATA IN CARD".

1. The card contains no data (for example, a new RAM card). Replace it with a card that contains data.
2. The data on the card is not DS-8 data. Replace it with a card that contains DS-8 data.

JOB #7: MIDI CH/OMNI/LOCAL

FUNCTIONS

1. To select the MIDI channel on which the DS-8 receives and transmits all MIDI data. This should be the same MIDI channel as any external MIDI equipment connected to the DS-8.

NOTE:

In the MULTI keyboard mode, you can set each of the eight groups to a different MIDI channel. See COMBI PARAMETER job #7.

2. To turn the OMNI mode either ON or OFF. When the DS-8 is set to OMNI it will receive MIDI data on all 16 MIDI channels.
3. To turn the LOCAL mode either ON or OFF. For normal use this should be ON. When turned OFF, the DS-8's keyboard and joystick will control only external MIDI devices connected to the DS-8's MIDI OUT; the DS-8's own oscillators will not be controlled, and no sound will be output from the DS-8.

DISPLAY

MIDI	CHANNEL	OMNI	LOCAL
7	1	OFF	O N

CHANNEL: MIDI channel.
RANGE: 1 — 16.
OMNI: Set to ON or OFF.
LOCAL: Set to ON or OFF.·

JOB #8: MIDI FILTERING/EXCLUSIVE

FUNCTION

Allows you to select which types of MIDI data will be received and transmitted by the DS-8. These are:

1. ACTIVE SENSING: A safety function which automatically cuts the MIDI connection between the DS-8 and any external MIDI device, if MIDI data transmission faults occur. This function checks the MIDI signal every 300 msecs.
2. PROGRAM CHANGE: Transmission and reception of MIDI program change messages.

3. CONTROL: Transmission and reception of all MIDI controller data, including JOYSTICK functions, VELOCITY and AFTER TOUCH.
4. EXCLUSIVE: Transmission and reception of MIDI SYSTEM EXCLUSIVE data. This should be turned ON when executing the MIDI Data Transfer operation (see job #9).

NOTE:

When the SYSTEM EXCLUSIVE function is turned ON and you select a Program on the DS-8, all the parameter data of the selected program will be transmitted via the DS-8's MIDI OUT connector. However, a program change message will not be sent.

DISPLAY

MIDI	ACT	PROG	CNTRL	EXCLUSIVE
8	O N	O N	O N	OFF

The following four MIDI functions can be set to either ON or OFF.

ACT: Active sensing.
PROG: Program change.
CNTRL: Controller data.
EXCLUSIVE: SYSTEM EXCLUSIVE data (for MIDI data transfer).

JOB #9: MIDI DATA TRANSFER

FUNCTION

To transfer the data of all 100 programs and 10 combinations to another DS-8. The MIDI OUT of the transmitting DS-8 should be connected to the MIDI IN of the receiving DS-8. Both DS-8's should be set to SYSTEM EXCLUSIVE ON (see job #8).

DISPLAY

DATA TRANSFER	
9	ARE YOU SURE ?

After selecting this function, press UP/YES to execute the Data transfer. (If the transmitting DS-8's SYSTEM EXCLUSIVE function is turned off, the LCD will show "MIDI EXCLUSIVE OFF!" and you should turn this function ON using job #8.)

NOTE:

You can enter the FUNCTION mode from any other mode. However, when you leave the FUNCTION mode, you automatically return to the previous mode. For example, if you enter FUNCTION from PROGRAM, you can return to PROGRAM either by pressing the PROGRAM key or by pressing the FUNCTION key again.

MIDI APPLICATIONS

The DS-8 is fully compatible with MIDI. MIDI stands for Musical Instrument Digital Interface, and is now the standard "language" by which digital musical instruments can communicate with each other.

This chapter details three possible applications of MIDI.

APPLICATION #1: DUAL KEYBOARD SYSTEM
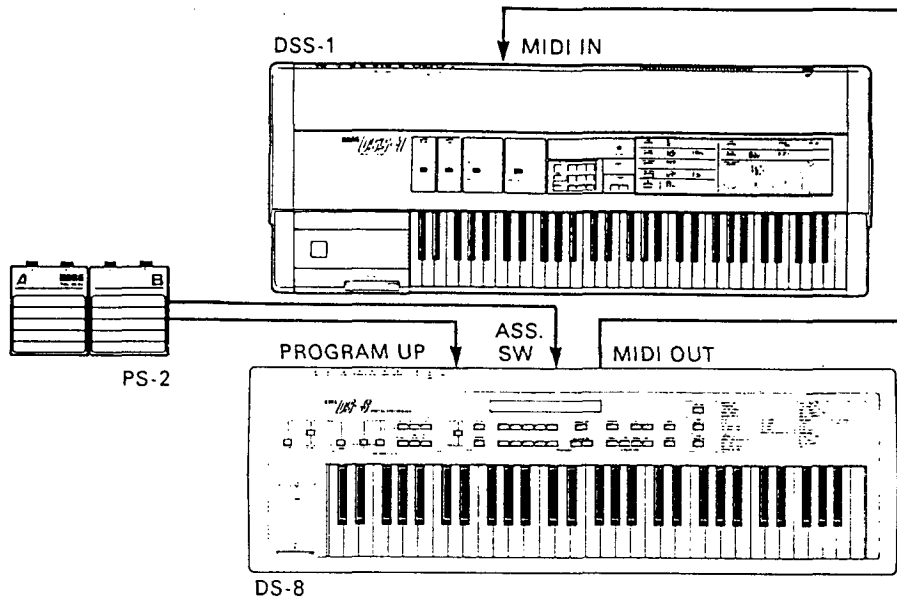
Many synthesizer players like to combine two instruments: a digital synthesizer like the DS-8, for rich digital sounds, and a sampling keyboard such as the KORG DSS-1, which opens up unlimited possibilities by allowing you to sample and play literally any sound. In this setup, the DS-8 "plays" the DSS-1 with full touch sensitivity and after touch. A KORG PS-2 dual pedal switch is used for PROGRAM UP and PROGRAM DOWN functions on the DS-8, which sends program change messages to the DSS-1.

● Settings for this MIDI application:

1. Use FUNCTION job #7 to set the DS-8's basic MIDI channel to match the MIDI receive channel of the DSS-1.
2. Use FUNCTION job #2 to assign the pedal switch connected to the ASS. SW connector to PROGRAM DOWN.

APPLICATION #2: MIDI SEQUENCER SYSTEM
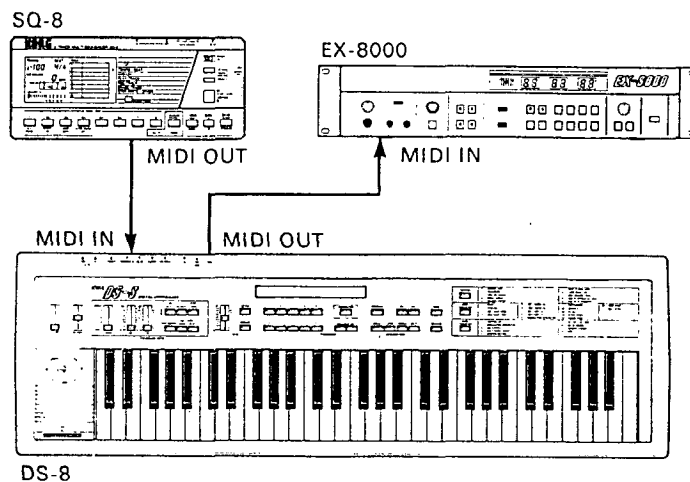
When the DS-8 is set to MULTI mode, it interfaces perfectly with a MIDI sequencer like the KORG SQ-8, a compact yet versatile 8-track device. Each track of the SQ-8 can be transmitted over a different MIDI channel, to control individual groups in the DS-8.

For example, you could record a monophonic line on each of the SQ-8's tracks. Then, on playback, assign each of the DS-8's groups to a different MIDI channel. Result: a MIDI "orchestra" of eight digital instruments.

Many variations are possible: track 1 on the SQ-8 could play a 5-note piano part over MIDI channel 1, while track 2 plays a three-note string part over MIDI channel 2. You would then assign DS-8 groups 1 thru 5 to MIDI Receive Channel 1, and groups 6 thru 8 to MIDI Receive Channel 2. Result: a five-voice piano part plus a rich three-voice string part.

In our application example, the DS-8 is also controlling an EX-8000 Programmable Polyphonic Synthe Module, which features the same powerful digital voices as the DW-8000 Programmable Digital Waveform Synthesizer. While the SQ-8 plays up to eight parts of music using the DS-8 as a sound source, the DS-8's keyboard can be used to play the EX-8000, allowing you to add improvisations to the music stored in the SQ-8.

● Settings for this MIDI application:

1. Use COMBI PARAMETER job #7 to set the MIDI receive channel of each group in the DS-8 to match the MIDI channels of the corresponding tracks on the SQ-8.
2. Use FUNCTION job #7 to set the DS-8's basic MIDI channel to match the MIDI receive channel of the EX-8000. This job also lets you set the "LOCAL" function to OFF, so that the DS-8's keyboard plays only the EX-8000, not the DS-8's internal oscillators.

APPLICATION #3: DIGITAL MUSIC SYSTEM
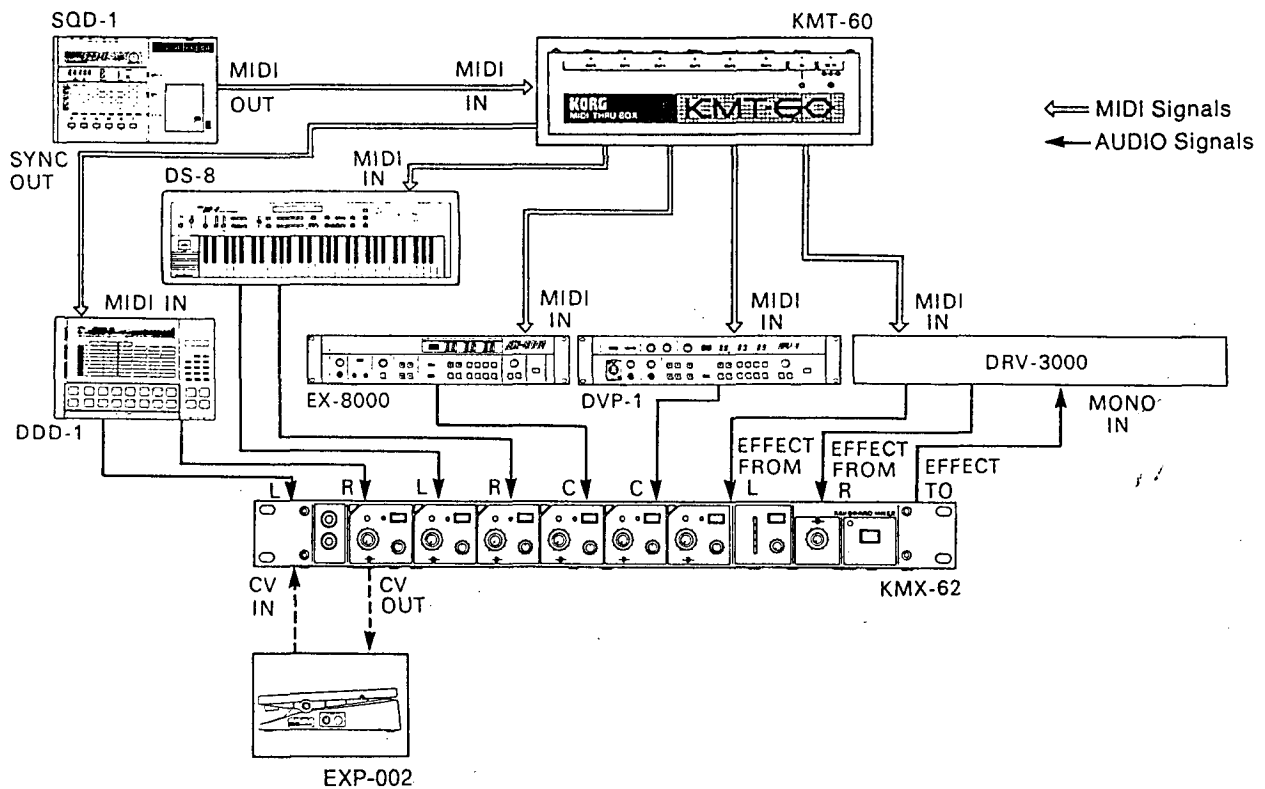
The DS-8 can function as part of an advanced digital music system utilizing KORG MIDI devices, for a really sophisticated and powerful setup. In this application, the SQD-1 MIDI Recorder sends music data on separate MIDI channels, via the KMT-60 MIDI Thru Box, to the DS-8, the EX-8000 Programmable Polyphonic Synthe Module, and the DVP-1 Digital Voice Processor (which digitally creates realistic vocal sounds). The SQD-1 transmits MIDI sync signals to control the playback and tempo of the DDD-1 Dynamic Digital Drums (which provide natural drum and percussion sounds). The SQD-1 also sends program change information to the DRV-3000 Dual Digital Effect Processor, which adds effects to all the instruments (the DRV-3000 lets you combine any two of its effects: for example, REVERB & PITCH SHIFT). All sounds are routed into a KMX-62 Keyboard Mixer, for balancing and panning. A KVP-002 Volume Pedal allows you to adjust overall level or selected individual channel levels.

When you play a sequence on the SQD-1, it will send full MIDI information (music data, program changes and controller data) to the DS-8. If you want, you can set the DS-8 to ignore MIDI program change or controller data transmitted from the SQD-1. In this way you could play the same music, but experiment with different programs and controllers on the DS-8.

● Settings for this MIDI application:

1. Use FUNCTION job #7 to set the DS-8's basic MIDI channel to match the MIDI channel over which the SQD-01 is sending data to the DS-8.

2. Use FUNCTION job #8 to turn OFF reception of MIDI Program or Control data from the SQD-1.

■ **Resetting MIDI**

If the DW8000 is being used in a MIDI connected system and starts producing erratic results (making a continuous sound, going out of tune, producing erratic modulation, etc.) press the front panel COMPARE key. This resets the circuitry.

MIDI IMPLEMENTATION

1. TRANSMITTED DATA

1-1. CHANNEL MESSAGES

STATUS	SECOND	THIRD	DESCRIPTION	ENA
1000 nnnn	0kkk kkkk	0100 0000	Note Off k k k k k k k =24~108 (61key+Transpose)	A
1001 nnnn	0kkk kkkk	0vvv vvvv	Note On k k k k k k k =24~108 (61key+Transpose) v v v v v v v =16~127	A
1011 nnnn	0000 0001	0vvv vvvv	Pitch Modulation (Joy Stick (+Y)) v v v v v v v =00~127	C
1011 nnnn	0000 0010	0vvv vvvv	Timbre Modulation (Joy Stick (−Y)) v v v v v v v =00~127	C
1011 nnnn	0000 0110	0vvv vvvv	Data Entry v v v v v v =00~127	E
1011 nnnn	0000 0111	0vvv vvvv	Volume (Volume Pedal) v v v v v v v =00~127	C
1011 nnnn	0100 0000	0000 0000	Damper Off (Damper Pedal)	C
1011 nnnn	0100 0000	0111 1111	Damper On (Damper Pedal)	C
1011 nnnn	0100 0001	0000 0000	Portamento Off	C
1011 nnnn	0100 0001	0111 1111	Portamento On	C
1011 nnnn	0110 0000	0000 0000	Data increment	E
1011 nnnn	0110 0001	0000 0000	Data Decrement	E
1100 nnnn	0ppp pppp		Program Change p p p p p p p =00~99	P
1011 nnnn	0vvv vvvv		Channel Pressure (After Touch) v v v v v v v =00~127	C
1100 nnnn	0000 0000	0bbb bbbb	Bender Cange (Joy Stick (X)) Note 1 b b b b b b b =00~64~127	C
1110 nnnn	0111 1111	0111 1111	Bender Cange (Max) (J.S (X)) Note 1	C

Remark: n n n n : MIDI Channel Number (0~15)

     ENA   : Trans Enable Mode
- A=Always Enable
- C=Control On Mode
- P=P.Change On Mode
- E=Exclusive On Mode

Note 1: Normally, the upper 8 bits change and the lower 8 bits are fixed at 00. However, the lower 8 bits many change to 127 when the maximum data is input (in 128 steps).

    0000H →   4000H →   7F7FH
    (Min)   (Center)   (Max)

1-2. SYSTEM REAL TIME MESSAGES

STATUS	DESCRIPTION
1111 1110	Active Sensing

* Trans Enable at ACT ON.

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1-3. SYSTEM EXCLUSIVE MESSAGES

(1) 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
1 1 1 1 0 1 1 1	EOX

(2) 1 VOICE DUMP

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 0 0 0 0	1 Voice Dump 4oH
0 d d d d d d d	
⋮	1 Voice Data (80 bytes)
0 d d d d d d d	
1 1 1 1 0 1 1 1	EOX

(3) ALL VOICE DUMP

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 1 0 0	All Voice Dump 4cH
0 d d d d d d d	
⋮	All Voice Data (7544 bytes)
0 d d d d d d d	
1 1 1 1 0 1 1 1	EOX

(4) 1 COMBI DUMP

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 0 0 1	1 Combi Dump 49H
0 d d d d d d d	
⋮	1 Combi Data (56 bytes)
0 d d d d d d d	
1 1 1 1 0 1 1 1	EOX

(5) ALL COMBI DUMP

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 1 0 1	All Combi Dump 4DH
0 d d d d d d d	
⋮	All Combi Dump (4344 bytes)
0 d d d d d d d	
1 1 1 1 0 1 1 1	EOX

(6) PANEL MODE

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 0 0 1 0	Panel Mode 42H
0 0 0 0 0 d d d	Panel Mode Data d d d= 0 0 0 : Program
1 1 1 1 0 1 1 1	EOX 0 0 1 : Voice Parm
	0 1 0 : Combi Parm
	0 1 1 : Function
	1 0 0 : Combi

(7) PANEL MODE CHANGE

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 1 1 0	Panel Mode Change 4EH
0 0 0 0 0 d d d	Panel Mode Data d d d= 0 0 0 : Program
1 1 1 1 0 1 1 1	EOX 0 0 1 : Voice Parm
	0 1 0 : Combi Parm
	0 1 1 : Function
	1 0 0 : Combi

(8) KEYBOARD MODE

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 0 1 1	Keyboard Mode 4BH
0 0 0 0 0 0 d d	Keyboard Mode Data d d= 0 0 : Single
1 1 1 1 0 1 1 1	EOX 0 1 : Layer
	1 0 : Double
	1 1 : Multi

(9) KEYBOARD MODE CHANGE

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 0 1 0	Keyboard Mode Change 4AH
0 0 0 0 0 0 d d	Keyboard Mode Data d d= 0 0 : Single
1 1 1 1 0 1 1 1	EOX 0 1 : Layer
	1 0 : Double
	1 1 : Multi

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(10) PARAMETER CHANGE

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 0 0 1 0	Paramater Change 41H
0 d d d d d d d	Paramater No.
0 d d d d d d d	Parameter Value LSB
0 0 0 0 0 0 0 d	Parameter Value MSB
1 1 1 1 0 1 1 1	EOX

(11) DATA LOAD COMPLETED

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 1 0 0 0 1 1	Data Load Completed 23H
1 1 1 1 0 1 1 1	EOX

(12) DATA LOAD 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 1 0 0 1 0 0	Data Load Error 24H
1 1 1 1 0 1 1 1	EOX

(13) WRITE COMPLETED

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 1 0 0 0 0 1	Write Completed 21H
1 1 1 1 0 1 1 1	EOX

(14) WRITE 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 1 0 0 0 1 0	Write Error 22H
1 1 1 1 0 1 1 1	EOX

* Trans Enable at Exclusive ON.

2. RECOGNIZED RECEIVED DATA

2-1. CHANNEL MESSAGES

STATUS	SECOND	THIRD	DESCRIPTION	ENA
1000 nnnn	0kkk kkkk	0xxx xxxx	Note Off Note 2	A
1001 nnnn	0kkk kkkk	0000 0000	Note Off Note 2	A
1001 nnnn	0kkk kkkk	0vvv vvvv	Note On Note 2	A
			v v v v v v = 1 ~ 127	
1011 nnnn	0000 0001	0vvv vvvv	Pitch Modulation	C
1011 nnnn	0000 0010	0vvv vvvv	Timbre Modulation	C
1011 nnnn	0000 0110	0vvv vvvv	Data Entry v v v v v v v=00~127	E
1011 nnnn	0000 0111	0vvv vvvv	Volume	C
1011 nnnn	0000 1010	000x xxxx	Panpot (A)	C
1011 nnnn	0000 1010	001x xxxx	Panpot (A + B)	C
1011 nnnn	0000 1010	010x xxxx	Panpot (A + B)	C
1011 nnnn	0000 1010	011x xxxx	Panpot (B)	C
1011 nnnn	0100 0000	0000 0000	Damper Off	C
1011 nnnn	0100 0000	0111 1111	Damper On	C
1011 nnnn	0100 0001	0000 0000	Portamento Off	C
1011 nnnn	0100 0001	0111 1111	Portamento On	C
1011 nnnn	0110 0000	0000 0000	Data Increment	E
1011 nnnn	0110 0001	0000 0000	Data Decrement	E
1011 nnnn	0111 1010	0000 0000	Local Off	A
1011 nnnn	0111 1010	0111 1111	Local On	A
1011 nnnn	0111 1011	0000 0000	All Notes Off	A
1011 nnnn	0111 1100	0000 0000	OMNI Off (A.N. Off)	A
1011 nnnn	0111 1101	0000 0000	OMNI On (A.N. Off)	A
1011 nnnn	0111 1110	0xxx xxxx	(All Notes Off)	A
1011 nnnn	0111 1111	0000 0000	(All Notes Off)	A
1100 nnnn	0ppp pppp		Program Change Note 3	P
1101 nnnn	0vvv vvvv		After Touch	C
1110 nnnn	0xxx xxxx	0bbb bbbb	Bender Change	C

Remark: n n n n : MIDI Channel Number (0 ~15)

x x x x : Don't Care

ENA : Receive Enable Mode

A=Always Enable

C=Control On Mode

P=P. Change On Mode

E=Exclusive On Mode

Note 2: Data of notes 24~108 will accepted as they are. Data outside the range (0~23, 109~127) will be shifted an octave at a time until the data falls in the range.

Note 3: PROGRAM modes can be selected from numbers 00 to 99. 0 to 9 can be used to select COMBINATION PROGRAM modes. However, when three digit numbers are entered into the PROGRAM mode, only the last two digits are valid (for example, 100 is received as 00; 127 is received as 27). If two digit numbers are entered into the COMBINATION PROGRAM mode, only the final digit is valid (for example, 10 is received as 0; 127 is received as 7).

2-2. SYSTEM REAL TIME MESSAGE

STATUS	DESCRIPTION
1111 1110	Active Sensing

* Receive Enable at ACT ON.

3. SYSTEM EXCLUSIVE MESSAGE REFERENCE

(1) 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 n n n n	Format ID 4nH (n=ch)
1 1 1 1 0 1 1 1	EOX

(2) 1 VOICE 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 0 1 0 0 0 0	1 Voice Dump Request 10H
1 1 1 1 0 1 1 1	EOX

(3) 1 VOICE DUMP

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 0 0 0 0	1 Voice Dump 40H
0 d d d d d d d	
⋮	1 Voice Data (80 bytes)
0 d d d d d d d	
1 1 1 1 0 1 1 1	EOX

(4) ALL VOICE 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 0 1 1 1 0 0	All Voice Dump Request 1CH
1 1 1 1 0 1 1 1	EOX

(5) ALL VOICE DUMP

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 1 0 0	All Voice Dump 4CH
0 d d d d d d d	
⋮	All Voice Data (7544 bytes)
0 d d d d d d d	
1 1 1 1 0 1 1 1	EOX

* Receive Enable at Exclusive ON.

(6) 1 COMBI 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 0 1 1 0 0 1	1 Combi Dump Request 19H
1 1 1 1 0 1 1 1	EOX

(7) 1 COMBI DUMP

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 0 0 1	1 Combi Dump 49H
0 d d d d d d d	
⋮	1 Combi Data (56 bytes)
0 d d d d d d d	
1 1 1 1 0 1 1 1	EOX

(8) ALL COMBI DUMP REQUEST

BYTE	DESCRIPTION
1 1 1 1 0 0 0 0	Exclusiue Status
0 1 0 0 0 0 1 0	KORG ID 42H
0 0 1 1 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 0 1 1 1 0 1	All Combi Dump Request 1DH
1 1 1 1 0 1 1 1	EOX

(9) ALL COMBI DUMP

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 n n n n	Formati ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 1 0 1	All Combi Dump 4DH
0 d d d d d d d	
⋮	All Combi Dump (4344 bytes)
0 d d d d d d d	
1 1 1 1 0 1 1 1	EOX

(10) PANEL MODE 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 0 1 0 0 1 0	Panel Mode Request 12H
1 1 1 1 0 0 0 0	EOX

(11) PANEL MODE CHANGE

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 1 1 0	Panel Mode Change 4EH
0 0 0 0 0 d d d	Panel Mode Data d d d= 0 0 0 : Program
1 1 1 1 0 1 1 1	EOX 0 0 1 : Voice Parm
	0 1 0 : Combi Parm
	0 1 1 : Function
	1 0 0 : Combi

(12) KEYBOARD MODE 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 0 1 1 0 1 1	Keyboard Mode Request 1BH
1 1 1 1 0 1 1 1	EOX

(13) KEYBOARD MODE CHANGE

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 1 0 1 0	Keyboard Mode Change 4AH
0 0 0 0 0 0 d d	Keyboard Mode Data d d= 0 0 : Single
1 1 1 1 0 1 1 1	EOX 0 1 : Layer
	1 0 : Double
	1 1 : Multi

(14) PARAMETER CHANGE

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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 1 0 0 0 0 1 0	Paramater Change 41H
0 d d d d d d d	Parameter No.
0 d d d d d d d	Paramerer Value LSB
0 0 0 0 0 0 0 d	// MSB
1 1 1 1 0 1 1 1	EOX

(15) VOICE WRITE 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 0 0 1 1	DS-8 ID 13H
0 0 0 1 0 0 0 1	Voice Write Request 11H
0 d d d d d d d	Program No. 00~63H
1 1 1 1 0 1 1 1	EOX

(16) COMBI WRITE 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 n n n n	Format ID 3nH (n=ch)
0 0 0 1 1 0 1 1	DS-8 ID 13H
0 0 0 1 1 0 1 0	Combi Write Request 1AH
0 d d d d d d d	Combi Program No. 00～09H
1 1 1 1 0 1 1 1	EOX

* Receive Enable at Exclusive ON.

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
BASIC CHANNEL				
Power ON		1--16	1--16	Memorized
Setting Range		1--16	1--16	
MODE				
Power ON		1	1	Ignore
Message default		×	OMNI=ON/OFF	
NOTE NUMBER		24--108	0--127	
Actual Notes		--------	24--108	
VELOCITY				
Note On		O	O	9n, v=1 -- 127
Note Off		×		
AFTERTOUCH				
Keys		×	×	
Channels		O	O	
PITCH BENDER		O	O	
	1	O	O	Pitch MG*
	2	O	O	Timbre MG*
	6	O	O	Data entry***
	7	O	O	Volume*
CONTROL	10	×	O	Panpot*
CHANGE	64	O	O	Damper pedal*
	65	O	O	Porta switch*
	96	O	O	Data increment***
	99	O	O	Data decrement***
PROGRAM CHANGE**		0--99	0-- 99	
Actual number		--------	0--127	
EXCLUSIVE***		O	O	Voice dump,etc.
COMMON				
Song position		×	×	
Song select		×	×	
Tune		×	×	
REAL TIME				
Clock		×	×	
Command		×	×	
AUXILIARY				
Local ON/OFF		×	O	
All Note OFF		×	O	123--127
Active Sensing****		O	O	
Reset		×	×	

NOTES :*Transmit/Receive if CNTRL is On in FUNCTION
      :**Transmit/Receive if PROG is On in FUNCTION
      :***Transmit/Receive if EXCLUSIVE is On in FUNCTION
      :****Transmit/Receive if ACT is On in FUNCTION

MODE 1 : OMNI ON, POLY.   MODE 3 : OMNI ON, MONO   O=YES, ×=NO
MODE 2 : OMNI OFF, POLY.   MODE 4 : OMNI OFF, MONO

SPECIFICATIONS

Keyboard	:	61 keys (C — C), Initial Touch, Aftertouch.
Voice	:	8 voices simultaneously (Single Mode).

Program   :

DS-8:	100 Programs, 10 Combinations.
MCR-01 RAM Card:	1 Bank (100 Programs, 10 Combinations).
MCR-02 RAM Card:	2 Banks (200 Programs, 20 Combinations).
MCR-03 RAM Card:	4 Banks (400 Programs, 40 Combinations).

Function Mode   :

Master Tune:	+ / − 50 cents.
Transpose:	+ / − 12 semitones.
Foot Switch Assign:	Program Down, OSC select, Velocity, Multi Effect, Aftertouch, Portamento.
Pedal Assign:	Volume, Timbre, Pitch Modulation Generator, Timbre Modulation Generator.
Memory Protect:	Internal Off/On, External Off/On.
Save to RAM Card.	
Load from RAM Card.	
MIDI:	Transmit/Receive Channel, Omni Off/On, Local Off/On.
MIDI Filtering:	Active Sensing Off/On, Program Change Off/On, Control Change Off/On, Exclusive Off/On. Data Transfer.

Voice Parameter Mode   :

Pitch:	OSC 1, OSC 2, Detune.
Pitch EG:	Start Level, Attack, Attack Level, Decay, Release, Release Level.
OSC 1 Waveform:	Type, Spectrum, Ring, Limit, Keyboard Track.
OSC 2 Waveform:	Type, Spectrum, Ring, Limit, Keyboard Track.
OSC 1 Timbre EG:	Timbre, EG Intensity, Attack, Decay, Sustain, Release, Keyboard Track.
OSC 2 Timbre EG:	Timbre, EG Intensity, Attack, Decay, Sustain, Release, Keyboard Track.
OSC 1 Ampl. EG:	Level, Attack, Decay, Sustain, Release, Keyboard Track.
OSC 2 Ampl. EG:	Level, Attack, Decay, Sustain, Release, Keyboard Track.
Modulation Generator:	Waveform (Triangle, Sawtooth, Square, Sample & Hold), Frequency, Delay Time, Pitch Intensity, Timbre/Ampl. Intensity, Timbre Select (Off, OSC 1, OSC 2, OSC 1 + 2), Ampl. Select (Off, OSC 1, OSC 2, OSC 1 + 2).
Portamento:	Mode, Time.
Joystick:	Bend Pitch (+ /- 1 octave max.), Bend Timbre, Modulation Speed.
Velocity:	OSC 1 Timbre EG, OSC 2 Timbre EG, OSC 1 Ampl. EG, OSC 2 Ampl. EG.
Aftertouch:	Pitch MG, Timbre, OSC 1 Ampl. Level, OSC 2 Ampl. Level.
Assign Mode:	Poly/Unison, Trigger (Single/Multi: in Unison Mode only), Detune (in Unison Mode only).
Voice Name:	Max. 10 characters.
Multi Effect:	Mode (Manual Delay, Long Delay, Short Delay, Doubling, Flanger, Chorus), Time, Feedback, Speed/Modulation Frequency, Modulation Intensity, Effect Level.

Combi Parameter Mode   :

Controller:	Source, Group 1 — 8 Off/On.
Modulation Generator:	Source, Group 1 — 8 Off/On.
Multi Effect:	Source, Mode (Manual Delay, Long Delay, Short Delay, Doubling, Flanger, Chorus; only when source is Combination).
Multi Effect In/Out:	In (A, B, A + B), Out (A, B, A + B).
Interval/Detune:	Interval (0 — 12 semitones), Detune (+ / − 25 cents).
Key Split/Octave Shift:	Key Split Group 1 (C1 — C8), Key Split Group 2 (C1 — C8), Octave Shift Group 1 (+ 1, + 2 octaves), Octave Shift Group 2 (-1, -2 octaves).
No. of Voices:	Group 1 — 8 (max. 8 voices).
MIDI Receive Channel:	Group 1 — 8 (MIDI Channel 1 — 16).
Pan:	Group 1 — 8 (A, B, A + B).

Panel Mode Switches	:	Program, Combination, Function Mode, Voice Parameter Mode, Combi Parameter Mode.
Keyboard Mode Switches	:	Single, Layer, Double, Multi.
Programmer Controls	:	Numeric keys (0 — 9), Int, Ext, Cursor keys (<, >),Write, Compare, Value slider, Up/Yes, Down/No.
Performance Editor Controls	:	Timbre slider, EG1 slider, EG2 slider, OSC Select (1, 2, 1 + 2), Velocity (Off/On), Aftertouch (Off/On), Portamento (Off/On), Multi Effect (Off/On), Multi Effect Select (Manual Delay, Long Delay, Short Delay, Doubling, Flanger, Chorus).
Balance Slider	:	A — A + B — B.
Volume Slider	:	0 — Max.
Display	:	LCD (Liquid Crystal Display), Backlit, 40 Characters × 2 Rows.
Card Slot	:	1
Input Jacks	:	Damper, Program Up, Assignable Pedal, Assignable Switch.
Output Jacks	:	Output (A/Mono, B), Phones.
MIDI Jacks	:	IN, OUT, THRU.
Power Consumption	:	16W.
Power Supply	:	Local Voltage.
Weight	:	10 kg (21 lbs 16 oz.).
Dimensions (W × H × D)	:	1024 × 94 × 317mm (40.3″ × 3.7″ × 12.5″).
Supplied Accessories	:	AC Power Cord, Connection Cable.

＊Specifications and exterior appearance are subject to change without notice due to product improvement.

DS-8 VOICE NAME CHART

No.	VOICE NAME	No.	VOICE NAME	No.	VOICE NAME
00	Piano 1	34	Synth Bass 2	68	Syncry 1
01	Piano 2	35	Solo String	69	Syncry 2
02	Piano 3	36	Hi Strings	70	Mr. Mean E
03	Electric Piano 1	37	Low Strings	71	Flutter Bell
04	Electric Piano 2	38	Warm Strings	72	Jingle Keys
05	Electric Piano 3	39	Pizzicato	73	Tiny Guitar
06	Electric Piano 4	40	Trombone	74	East Pond
07	Lead Piano	41	Trumpet	75	Synth Sweep
08	Clav 1	42	French Horn	76	Synth 1
09	Clav 2	43	Brass Ensemble	77	Synth 2
10	Organ 1	44	Synth Brass	78	Synth 3
11	Organ 2	45	Flute	79	Synth 4
12	Organ 3	46	Clarinet	80	Round Keys
13	Organ 4	47	Reed 1	81	Fallen Angel
14	Organ 5	48	Reed 2	82	Scratching
15	Pipe organ 1	49	Sax	83	Lead It Up
16	Pipe organ 2	50	Analog Pad 1	84	Agogo Bell
17	Harpsichord	51	Analog Pad 2	85	Cabasa Nubo
18	Celeste	52	Analog Pad 3	86	Synth Claps
19	Harp	53	Analog Pad 4	87	Whistle
20	Vibes	54	Square Wave Pad 1	88	Hit Me
21	Marimba	55	Square Wave Pad 2	89	Clang Keys
22	Steel Drum	56	Square Wave Pad 3	90	Wind
23	12 String Guitar	57	Square Wave Pad 4	91	Rumble
24	Jazz Guitar 1	58	India	92	Rain
25	Jazz Guitar 2	59	Square Fuzz	93	Water Drops
26	Bells 1	60	Synth Lead 1	94	Birds
27	Bells 2	61	Synth Lead 2	95	Steam + Fry
28	Synth Vocal 1	62	Synth Lead 3	96	'Cycles
29	Synth Vocal 2	63	Synth Lead 4	97	Chopper
30	Slap Bass	64	Synth Lead 5	98	Don't Hold
31	Round Bass	65	E.Piano + Strings	99	Initial
32	Acoustic Bass	66	Bell + Brass		
33	Synth Bass 1	67	Mallet + Pad		

No.	COMBINATIONS	No.	COMBINATIONS	No.	COMBINATIONS
0	(30) Slap Bass + (01) Piano 1 [Double]	3	(18) Celeste + (38) Warm Strings [Layer]	7	Sequencer Combination 3
1	(30) Slap Bass + (10) Organ 1 [Double]	4	(08) Clav 1 + (60) Synth Lead 1 [Double]	8	Sequencer Combination 4
2	(67) Mallet / Pad + (65) Rhodestrings [Layer]	5	Sequencer Combination 1	9	Sequencer Combination 5
		6	Sequencer Combination 2		