

YAMAHA®

AUTHORIZED
PRODUCT MANUAL

REV7

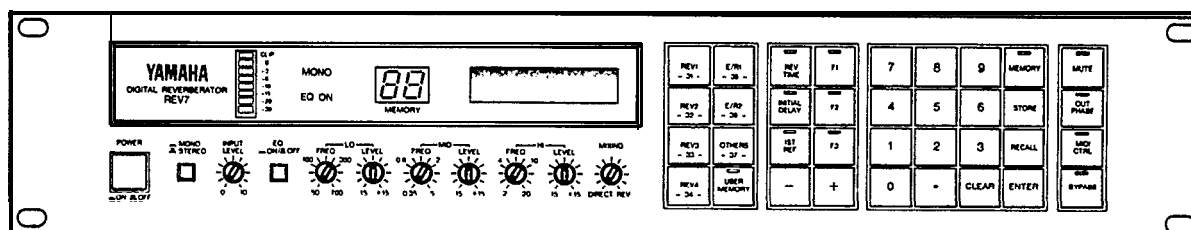
Professional Digital Reverberator

YAMAHA

Professional Digital Reverberator Réverbérateur numérique professionnel Das Digital-Echohallgerät für den Profi

REV7

*Operating Manual
Mode d'emploi
Bedienungsanleitung*



INTRODUCTION

Congratulations on purchasing the Yamaha REV7 Professional Digital Reverberator. You are now the owner of a state-of-the-art sound processing device that is both extremely versatile and easy to operate.

This refined stereo reverberator uses highly complex digital technology to create astonishingly authentic, warm, natural reverberation. A host of superb features makes this unit a unique example of modern, sophisticated sound processing—from Yamaha.

**A wide variety of reverberation, echo, delay, and ambient effects.*

**Special Modulation effects include stereo phasing, flanging, chorus, and tremolo.*

**Totally accurate and independent control of parameters.*

**The 30 factory preset effects may be edited to create up to 60 user programs, which can be stored in the REV7's memory, and instantly recalled at the touch of a button.*

**Remote control unit permits remote selection of all presets and the most commonly used user programs.*

**Effects may be selected from an external MIDI device (e.g., a DX7 synthesizer) enabling automatic selection of a specified reverberation effect for each voice on the synthesizer.*

**Full three-band parametric equalization allows adjustment of the sound of the REV7 to exactly match the acoustic properties of any environment.*

This highly advanced unit offers superb performance in any situation where professional quality reverberation is required: concerts, recording studios, and broadcasting, and will satisfy the highest demands of the contemporary musician and sound engineer. The REV7 Professional Digital Reverberator, designed according to Yamaha's philosophy of making up-to-the-minute advances in computer technology available to you, the discerning user.

The accompanying PROGRAM TABLE BOOKLET lists all the REV7's preset programs, and provides space for you to record the details of your own personally programmed user programs.

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PRECAUTIONS

NOTE: It is vital to read this section before using your REV7 Professional Digital Reverberator. This unit uses state-of-the-art digital technology which, although constructed for years of trouble-free use, requires careful handling.

- **VOLTAGE RATINGS**

Check that the AC supply in your area is appropriate for your REV7.

U.S./Canadian Model: 110V - 120V, 50/60Hz.

General Model: 220V - 240V, 50/60Hz.

- **ENVIRONMENTAL TEMPERATURE**

Do not expose the REV7 to excessive heat. The operating temperature range of this unit is between 0 and 40 degrees Centigrade (32 ~ 104 degrees Fahrenheit).

- **EXTERNAL CLEANING**

DO NOT clean the exterior of the REV7 with solvents such as benzine or paint thinner. Dust, dirt, or finger-marks should simply be removed with a soft, dry cloth. Internal cleaning of the unit should only be done by a qualified technician.

- **XLR TYPE CONNECTORS**

The XLR (Cannon) type Input and Output connectors are wired in the following configuration: Pin 1: GROUND. Pin 2: HOT. Pin 3: COLD. Ensure that all equipment connected to the REV7 matches this wiring.

- **BACKUP BATTERY**

To ensure that User Programs are not lost when the REV7's power is turned off, a built-in Lithium battery acts as a backup. In normal use, this battery lasts 5 years, but it is advisable to change the battery before this time has elapsed. Contact your local Yamaha dealer for details.

NOTE: When you change the battery, the User Programs may be lost. As a safeguard, you can note down the parameters of your User Programs in the USER PROGRAM TABLE accompanying this manual. You can then reprogram the REV7 after the new battery is installed. The preset programs are permanent, and will not be affected by a change of battery.

FCC CERTIFICATION (USA)

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

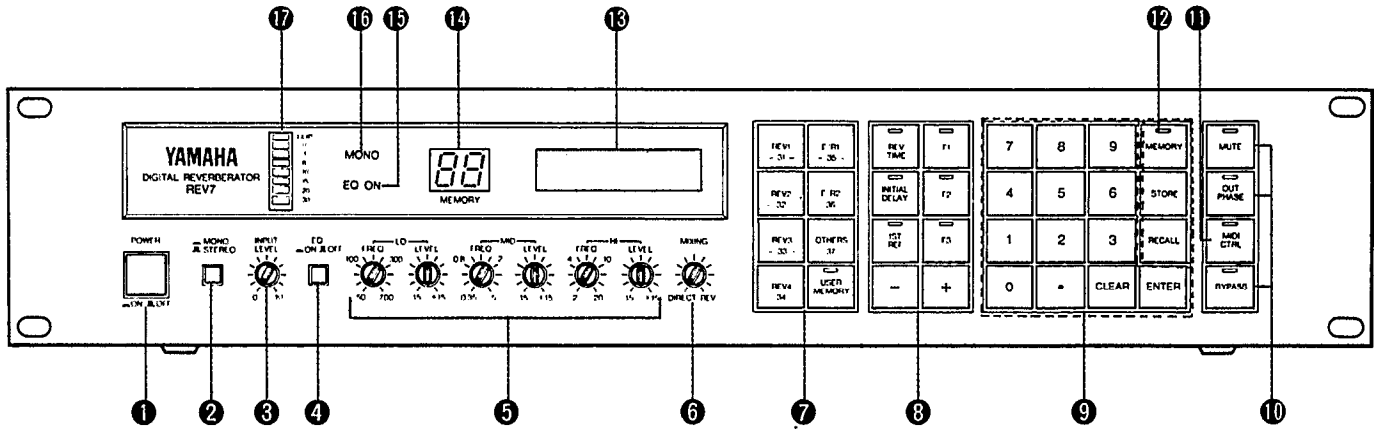
- Reorient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to identify and Resolve Radio-TV interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

FRONT PANEL



1 POWER ON/OFF switch

When the power is turned on, the last program and parameter selected will appear on the LCD.

2 MONO/STEREO switch

The REV7's reverb signal is always output in stereo, whether the input signal is stereo or mono. If a mono signal is received at the Left input only, this switch, when set to MONO, sends the direct signal out of both outputs. With a stereo input, this switch should be turned off. When switched to MONO the MONO LED is illuminated. (See the BLOCK DIAGRAM)

3 INPUT LEVEL control

Varies the level of the input signal, over a range of +10 dB to -90 dB. At position "8" gives nominal gain of +4 dB.

4 EQ ON/OFF switch

Allows you to switch the parametric EQ section ON or OFF, for instant comparison of equalized signal and original signal. When turned ON the EQ ON LED is illuminated.

5 EQUALIZER section

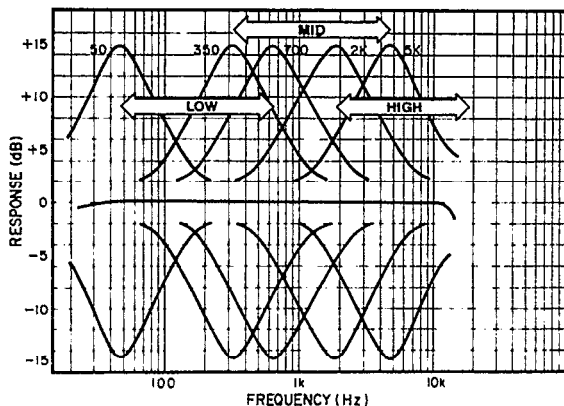
A three-band semi-parametric equalizer that allows you to equalize the input signal prior to being processed into a digital reverb signal. The direct signal is NOT affected.

Each of the three bands has a frequency control and a level control (+/-15 dB). The frequency ranges are as follows:

LO: 50Hz ~ 700Hz

MID: 0.35kHz ~ 5kHz

HI: 2kHz ~ 20kHz



6 MIXING control

Allows you to balance the reverb signal with the direct signal. When turned completely to the left, only the direct signal is heard. When turned completely to the right, only the reverb signal is heard.

7 DIRECT RECALL keys

These keys allow rapid and direct recall of the 30 preset programs and the first 7 user programs, as explained in the DIRECT RECALL section.

8 PARAMETER SELECT and +/-keys

Allows selection of up to 7 programmable parameters relating to each of the preset programs, for editing and creation of new programs. Pressing the +/- keys raises or lowers parameter values and other values (MIDI channel number, program number, etc.) by 1; holding down these keys permits continuous increase or decrease.

9 NUMERIC/EDITING keys

For numerically entering program numbers or parameter values. Includes numbers 0 to 9 and decimal point. The CLEAR key zeros the display. The ENTER key enters the new value, when using the numeric keys for editing parameters.

10 OUTPUT CONTROL keys

The MUTE key cancels the entire output. The OUT PHASE key reverses the polarity of the right output of the reverb signal. The BYPASS key cancels the reverb signal only, for immediate comparison of direct signal/direct signal plus reverb.

11 MIDI CTRL key

Pressing this key puts the REV7 into the MIDI Control Mode, allowing you to set the MIDI Channel on which MIDI signals are received, and then program in pairs of voice numbers and effects numbers so that effects may be automatically selected from a MIDI instrument, by pressing its Voice Select keys. Note that this key must be turned OFF before selection of programs can occur.

12 MEMORY keys

When using the numeric keys to select a program number, first press the MEMORY key. After selecting a memory number with the numeric keys, press the RECALL key to recall a program. The STORE key is used for storing edited data when creating new programs, and for setting the REV7's MIDI Memory.

13 LCD

A Liquid Crystal Display, indicating program names, parameters and their values.

14 MEMORY NUMBER LED

A two digit numeric LED (Light Emitting Diode) indicating program numbers.

15 EQ ON LED

Illuminates when the parametric EQ section is switched ON.

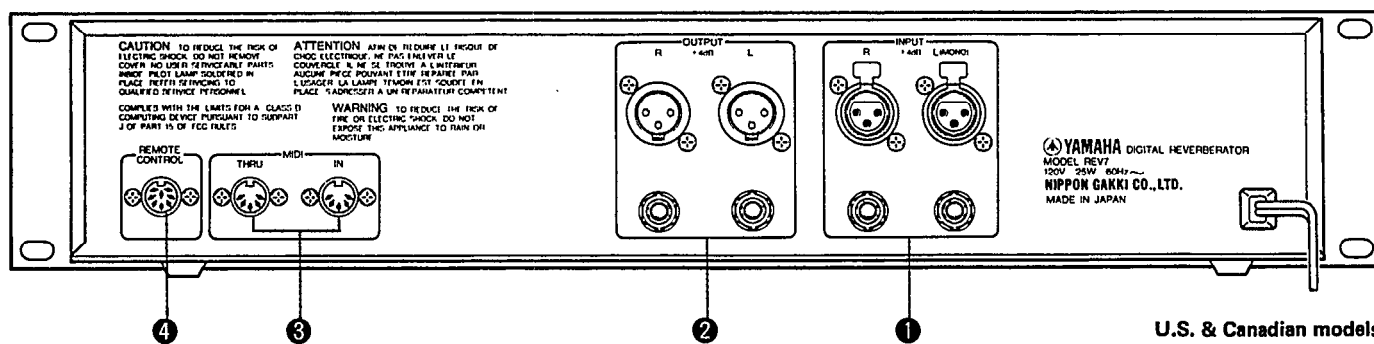
16 MONO LED

Illuminates when the MONO/STEREO switch is switched to MONO.

17 INPUT LEVEL LED

Indicates by an eight point LED the level of the input prior to processing, over a range of -30dB to 0dB.

REAR PANEL



1 Inputs

The REV7 can accept stereo or mono signals for processing. The inputs are balanced line 1/4" TRS (tip-ring-sleeve) jacks (which will also accept standard 1/4" mono phone jacks) and balanced line XLR type connectors, rated at +4dBm nominal level.

When feeding a mono input to the LEFT input only, pressing the MONO/STEREO switch on the front panel (the MONO LED will light) allows you to send the direct signal to both outputs. This places the direct signal in the center of the stereo reverberation. Do not press the MONO/STEREO switch when using a stereo input.

2 Outputs

The REV7's outputs are balanced TRS type phone jacks (also standard mono phone jacks) and balanced line XLR connectors, rated at +4dBm, with a maximum output level of +18dBm. Note that a mono input signal can be processed to create a stereo reverberation output.

3 MIDI IN, MIDI THRU Connectors

To select effects programs from a MIDI device such as a DX7 synthesizer, connect the MIDI output of the external device to the REV7's MIDI IN terminal.

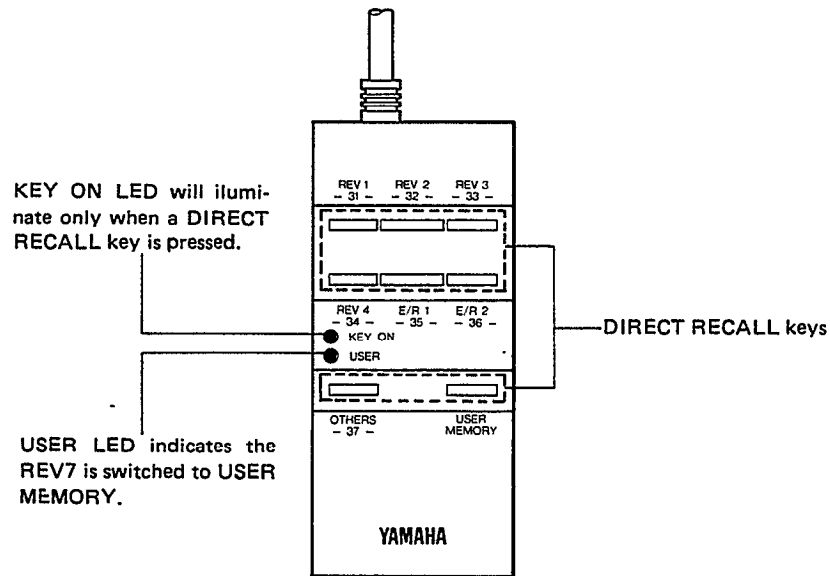
The MIDI CTRL Switch should be turned ON only while setting the REV7's MIDI Memory. For actual selection of programs by MIDI, it should be turned OFF. See the section entitled MIDI SELECTION for more details.

The MIDI THRU connector on the rear panel allows you to send on the MIDI control signal from the external MIDI device, in order to control a third MIDI device (which could well be a second REV7 unit, to provide independent control of Early Reflections and Reverberation).

4 Remote Control Unit

Connect the remote control unit to the terminal on the rear of the REV7, if you wish to select effects by remote control.

RC7 REMOTE CONTROL UNIT



DIRECT RECALL keys. These keys duplicate the functions of the corresponding keys on the front panel of the main unit. They allow rapid and direct recall of all 30 preset programs and the first 7 user programs, as explained in the REMOTE CONTROL RECALL section.

CONNECTIONS

The connections on the REV7 are simple and easy to make. Please be sure to read the PRECAUTIONS chapter prior to making any connections.

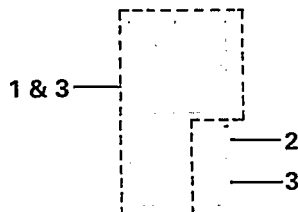
QUICK OPERATING GUIDE

This provides an at-a-glance guide to the recall and editing functions of your REV7. For a full explanation of the functions available on this advanced unit, please familiarize yourself with this entire manual.

● PROGRAM RECALL

There are three ways to recall the REV7 programs (apart from REMOTE CONTROL).

A. DIRECT RECALL Keys. For presets 1 ~ 30, user programs 31 ~ 37.



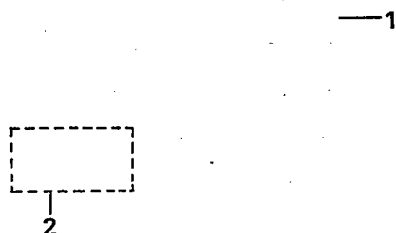
1. Presets 1 ~ 6. Press one of keys REV1 thru REV4, E/R1, E/R2.
2. Presets 7 ~ 30. Press the OTHERS key repeatedly until the desired program is called.
3. User Programs 31 ~ 37. Press the USER MEMORY key, then one of keys 31 ~ 37.

B. NUMERIC KEYS. For all programs.



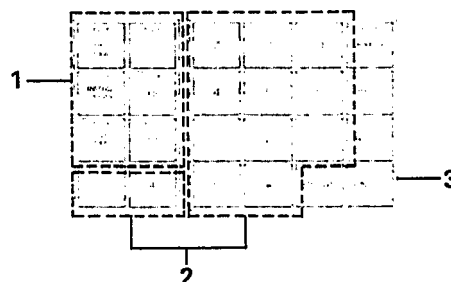
1. Press the MEMORY key.
2. Select program number (1 ~ 90) with Numeric keys.
3. Press the RECALL key.

C. +/-Keys. For all programs.



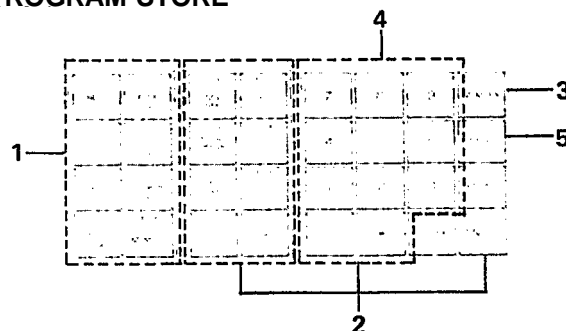
1. Press the MEMORY key.
2. Use the +/- keys to increase or decrease the program number (1 ~ 90).

● PARAMETER CHANGE



1. Select a parameter by pressing the appropriate Parameter Select key.
2. Alter the parameter value by using the Numeric keys or +/- keys.
3. Press the ENTER key (only necessary when Numeric keys have been used).

● PROGRAM STORE



1. Select the desired preset program.
2. Change the parameters as desired.
3. Press the MEMORY key.
4. Select a program number (31 ~ 90) with the Numeric keys.
5. Press the STORE key.

BASIC OPERATIONS

First, a brief explanation of what happens when you use the REV7. (A look at the block diagram in this manual illustrates this in visual form).

When a signal is sent into the REV7 reverberator, it is first EQ'd, then metered, then converted into a digital signal by an Analog/Digital converter. (NOTE: A stereo input is mixed to mono prior to being processed into a reverb signal. The direct signal, however, remains in stereo). The effect is then created within the Digital Signal Processor, the heart of the REV7. The processed digital signal is then converted back into a stereo reverb signal by two Digital/Analog converters, which create slightly different left-channel and right-channel reverberation patterns. This is then mixed with the direct signal using the Mixing Control.

Once you have connected your REV7 to your mixing console, synthesizer, or other external equipment, the following operations should be carried out.

1. Switch power on. It is best to do this before switching on the power of the amplifier or mixer to which the REV7's outputs are connected, to avoid any clicks or bumps.
2. Press the MONO/STEREO switch for mono or stereo input.
3. Send a nominal level signal into the REV7, and adjust the Input Level Control so that it peaks at just under zero on the Input Level LED.
4. Set the Mixing Control to its half way point. This will allow you to hear an "average" mix of the reverb signal and the direct signal. Once you have selected an effect, you can then adjust the Mixing Control to your desired balance.
5. The output control switches should be as follows:
 - MUTE: OFF
 - OUT PHASE: OFF (this can be altered after selecting an effect).
 - MIDI CTRL: OFF
 - BYPASS: OFF

The functions of these controls are explained in the FRONT PANEL section of this manual.

6. The REV7 has a sophisticated three-band parametric equalizer. The three bands have overlapping frequency ranges, so you can alter the frequency characteristics of the reverb sound (NOT the direct sound) in virtually any manner.

Start by setting the level controls of each band at the zero (central) position (the controls have an indent at this position). After selecting an effect, you can equalize the reverb signal to match the acoustic environment, or to create a special effect.

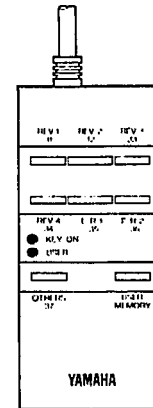
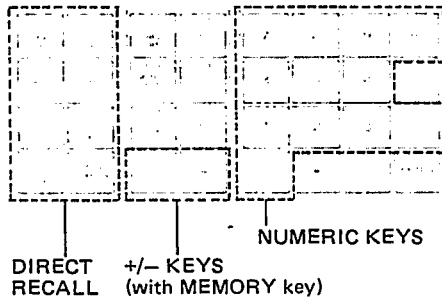
The EQ IN/OUT switch should be ON when adjusting equalization.

NOTE: If you add a large amount of EQ to your signal, this may raise the level of the signal, and you can reduce it to peak at zero by adjusting the Input Level Control.

You are now ready to select an effect on your REV7.

RECALL

This chapter explains in more detail the program selection operations covered in the QUICK OPERATING GUIDE. There are four ways of selecting (recalling) programs on the REV7: Direct Recall Selection, Numeric Key Selection, +/- Key Selection and Remote Control Selection. You can also select programs by an external MIDI device. See the section entitled MIDI SELECTION.



REMOTE CONTROL










DIRECT RECALL

(Presets 1 ~ 30, User programs 31 ~ 37).

The REV7's software program allows you to directly recall all the presets, and the first seven user programs. In fact, instant one-button recall is provided for presets 1 through 6 and user programs 31 through 37. This can be useful in situations where you don't have a lot of time on your hands—for example, a live performance.

To directly recall presets, this is what you do:

1. First ensure that the USER PROGRAM key is OFF (its LED should not be illuminated).
2. The Direct Recall keys are printed with both a name and a number. The names refer to the presets. Pressing keys REV1 thru 4 will instantly recall presets 1 thru 4 respectively. The Memory LED will indicate the preset number, and the LCD will show the name of the preset and one of its parameters.
3. Pressing keys E/R1 and E/R2 will recall presets 5 and 6.
4. Pressing the OTHERS key allows you to recall presets 7 thru 30. When you press this key the Memory LED and LCD will indicate that the last preset selected by this button has been recalled. Repeated pressings of this key will increment the memory up to preset 30, then begin again at 7.

	 not illuminated Preset Programs	 illuminated User Programs
	1. LARGE HALL	Program number 31.
	2. SMALL HALL	Program number 32.
	3. VOCAL PLATE	Program number 33.
	4. PERCUSSION PLATE	Program number 34.
	5. EARLY REFLECTION 1	Program number 35.
	6. EARLY REFLECTION 2	Program number 36.
	7. DELAY L, R ↓ 30. LIVE REFERENCE (Repeated pressings)	Program number 37.

To recall the first seven user programs:

1. Press the USER MEMORY key. Its LED will light.
2. The Direct Recall keys are printed with both a name and a number. The numbers refer to the User Program numbers. Pressing keys 31 thru 37 will instantly recall user program 31 thru 37 respectively. The Memory LED will indicate the program number, and the LCD will show the name of the program and one of its parameters. Note that in this case the OTHERS key calls only program number 37—it is not a multi-action key as with the presets.

NUMERIC KEY RECALL

(All programs)

Selection of programs by the numeric keys is also rapid and efficient, and the advantage is that exactly the same operation is required for all programs, both presets and user programs.

1. Press the MEMORY key located to the right of the numeric keys (its LED will light).
2. Use the numeric keys to select a number from 1 to 90 (the number will flash on the Memory LED, and if you have entered a wrong number, press the CLEAR key to zero the LED, then select another number).
3. Press the RECALL key. The Memory LED will stop flashing, and the selected program will be displayed on the LCD.
4. If you have selected a user program number (31 ~ 90) that does not contain any data, the Memory LED will continue flashing. Press the CLEAR key to zero the LED, then select another number, and press RECALL.

+/- KEY RECALL

(All programs)

The +/- keys enable you to "scroll" through all 90 programs, in either direction. This can be useful if, for example, you don't have your ROM Preset Chart or User Memory Chart handy, and you want to search for a particular program.

1. Press the MEMORY key (its LED will light).
2. Press the + key to "scroll through" the REV7's memory in an upward direction until you reach the desired program. You can hold the key down for continuous scrolling, or press and release, to increase the program number by 1. The scrolling will stop when it reaches program number 90.
3. Press the - key to "scroll through" the REV7's memory in a downward direction until you reach the desired program. You can hold the key down for continuous scrolling, or press and release, to decrease the program number by 1. The scrolling will stop when it reaches program number 1.

NOTE: When scrolling continuously through the user programs (numbers 31 ~ 90) scrolling will halt at any program number that does not contain any data, and the Memory LED will flash at that number. Continue scrolling by releasing the + or - key and pressing again.

REMOTE CONTROL RECALL

(Presets 1 ~ 30, User programs 31 ~ 37)

The RC7 remote control unit exactly reproduces the functions of the Direct Recall keys marked REV1 thru 4, E/R1, E/R2, and OTHERS. The USER MEMORY key performs a similar function to the front panel USER MEMORY key.

Pressing this key switches the REV7 between preset programs and user programs, indicated by the LED's on the remote control unit. Of course, while the remote control unit is connected to the REV7, the front panel controls on the main unit may still be operated in the normal way. (Note that the remote control's LED's will be activated by corresponding controls on the REV7's front panel).

The remote control unit is, therefore, a direct recall device, and may be used for recalling the 30 presets and the first 7 user programs, as previously explained in the DIRECT RECALL section. So if you plan to use the remote control unit, it's advisable to store your most needed user programs in memory numbers 31 through 37.

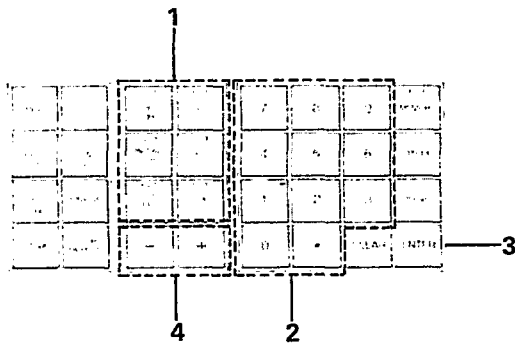
You'll also need to set the Input Level, Parametric EQ Controls, Mixing Control and Output Controls to your desired setting, so that you don't need to touch the front panel again during your performance or session.

A simple way to use the Remote Control Unit as a bypass switch is by selecting an appropriate effect-one where the level of the effect can be set at zero-and setting the relevant parameter levels to zero so that you create a new program that does not in fact alter the input signal. For example, select preset 7 (DELAY L, R) and set the delay level to 0%. Store this edited program in a convenient memory number, say 31. Then, when you select program 31 with your Remote Control Unit, any previous reverb effect will be cancelled and you will hear only your direct signal.

EDIT & STORE

After recalling a preset from the REV7's memory, you can instantly edit the parameters to create new effects. This editing is only temporary, however, unless you store the new data into the User Program Memory (numbers 31 thru 90). If you do not store the data, the parameters of the preset will be initialized to their original values as soon as you recall another program.

EDITING PARAMETERS



1. Press any PARAMETER SELECT key. Note that certain presets have fewer parameters than others, as indicated in the MEMORY (ROM) CONTENTS CHART at the end of this manual. If you press a key that does not refer to a programmable parameter, the LCD will not change, and the previous parameter will remain.

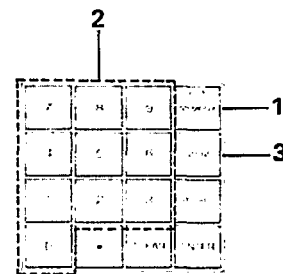
NOTE: The 1ST REF key is a double action key. Each time you press this key, it alternates between "1ST DLY" and "1ST LEVEL" (as displayed on the LCD), allowing you to set the values of the delay and level of the first reflection.

2. Press numeric keys to type in the new value of the parameter. The new value will flash on the LCD. If you make a mistake, press the CLEAR key to zero the LCD, and type in new data.
3. Press ENTER to enter the new data. The LCD will stop flashing. If you have tried to enter a value that is higher than the maximum possible value of the parameter, the maximum value will be automatically entered. You can also use the +/- keys to alter parameter values. Press once to increment or decrement the value, or hold down for rapid and continuous change.

NOTE: When using the +/- keys to change parameter values, there is no need to press the ENTER key to enter the new value.

Having edited a parameter, you can now select another parameter and continue editing, or store the new data.

STORING PROGRAMS



NOTE: Keep a record of your stored programs (on a copy of the USER PROGRAM CHART accompanying this manual) to avoid losing important programs when storing new data.

1. Having completed the editing process, press MEMORY.
2. Use the numeric keys to type in the number of the destination of the new data (range: 31~90). This number will flash on the Memory LED. If you have typed in a wrong number, press CLEAR to zero the LED, and type in another number.

3. Press STORE to store the edited data. The LED will stop flashing, indicating that storage has taken place.

NOTE: If you have tried to store data in the preset programs (numbers 1 thru 30) the LED will continue flashing, as these programs are protected. Press CLEAR and type in a new number.

PERFORMANCE NOTE: The Direct Recall Keys and the remote control unit allow you to select only the first 7 User Programs. It is advisable, therefore, to store the programs you use most frequently in numbers 31 thru 37.

You can move programs about within the User Program memory simply by recalling the program you wish to move, then carrying out the storage procedure. Note that when you store a program, any program previously stored in that user program memory will be erased.

EXPLANATION OF PARAMETERS

The preset programs in the REV7 fall into the following types: REV (Reverb), E/R (Early Reflection), Delay, Echo, and MOD (Modulation Type, including Phase, Chorus, and Flange type effects). Each of these program types has a specific selection of programmable parameters.

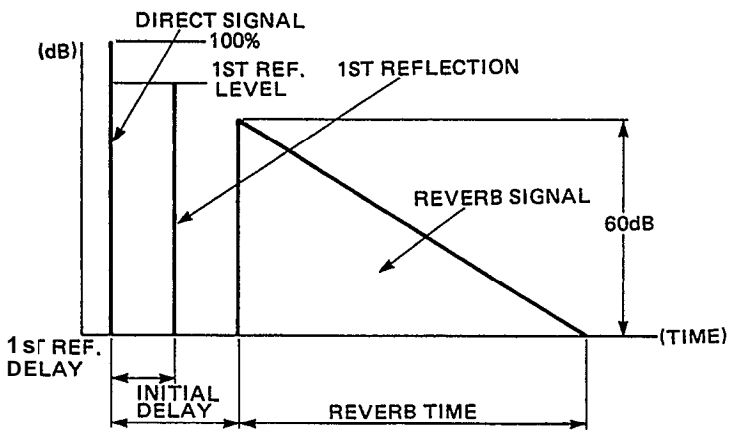
“Parameters” indicates the separate, individual functions that make up each effect. There are two types of parameters in the REV7: “invisible” parameters (non-programmable, fixed value parameters) and programmable parameters (the ones that you can edit, or modify). You can set the parameters of two different presets to the same values, and the resulting effect may not be the same, due to the non-programmable parameters.

Each preset has up to 7 programmable parameters. They are listed, with their preset values, in the MEMORY (ROM) CONTENTS CHART at the end of this manual. In this section we’ll explain these parameters and list their individual value ranges. The front panel key which calls up each parameter will also be noted. These include R/T (Reverb Time-may be used for other parameters), INITIAL DELAY, 1ST REF (First Reflection: a double-action key for setting level and delay of first reflection), and Function Keys F1, F2, F3 (for a variety of functions, depending on preset selected).

All presets include the 1st Reflection feature, explained below. The level of the 1st Reflection is usually preset at zero, so that you can program in just the amount of 1st Reflection that you need.

REV TYPE

Reverberation effects. Presets 1 through 4, 16 through 18, 22, and 29.



1. REVERBERATION TIME (R/T). Range: 0.3 ~ 10.0 sec. Key: REV TIME.

The length of the time it takes for the level of reverberation at 1 kHz to decrease by 60 dB-virtually to silence. In a live setting, this depends on several factors: room size, room shape, type of reflective surfaces, among others.

2. INITIAL DELAY. Range: 0.1 ~ 100 msec. Key: INITIAL DELAY.

For a listener in a concert hall, there is a time delay between the direct sound of the instrument, and the first of the many reflected sounds that together are known as reverberation. On the REV7, this is known as the INITIAL DELAY time.

3. 1ST REFLECTION Delay. Range: 0.1 ~ 100 msec.

4. 1ST REFLECTION Level. Range: 0 ~ 100% of direct signal level. Key: 1ST REF.

A common phenomenon in a concert hall is a single reflection immediately after the direct sound. The 1ST REFLECTION feature enables you to accurately simulate this effect. Both the delay and the level of the reflection are adjustable. This is also useful for A.D.T. (Auto-

matic Double Tracking) effects, or for “thickening” the sound of an instrument. The 1st Reflection is always a mono signal, and appears in the center of the stereo image. With all presets, the 1ST REF parameters are preset at the minimum (0% level, 0.1 msec delay time) so that you can program in exactly the amount of 1st Reflection you need.

NOTE: The 1ST REF key is a double action key. Each time you press this key, it alternates between “1ST DLY” and “1ST LEVEL” (as displayed on the LCD), allowing you to set the values of the delay and level of the first reflection.

5. HI REVERB TIME. Range: 0.1 ~ 1.0 x MID R/T. Key: F1.

6. LOW REVERB TIME. Range: 0.1 ~ 2.4 x MID R/T. Key: F2.

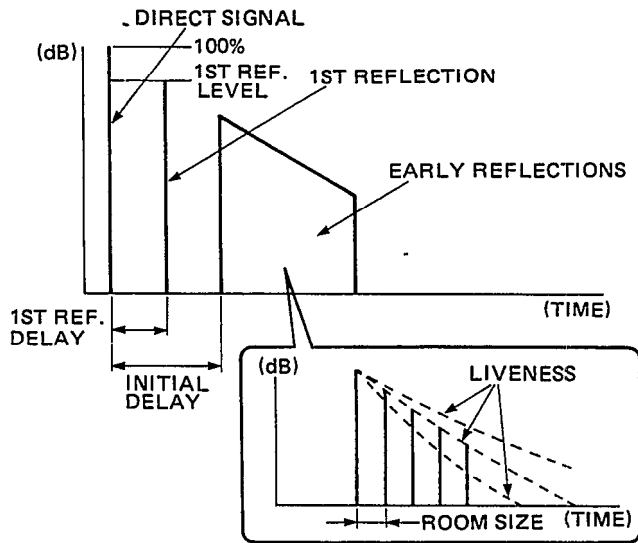
Natural reverberation varies according to the frequency of the sound-the higher the frequency, the more the sound tends to be absorbed by walls, furnishings, and even by air. These two parameters permit you to alter the reverberation times of the high frequency and low frequency portions of the signal, as a proportion of the mid frequency reverb time.

7. DIFFUSION. Range: 0 ~ 10. Key: F3.

Reverberation is caused by multiple reflections that increase rapidly in complexity, according to the shape of the hall and any furniture or fittings therein. This rate of increase is known as DIFFUSION on the REV7. Setting the Diffusion parameter at 0 gives a less complex, clearer reverb effect, as in a regularly shaped room with simple, flat reflective surfaces. As you increase the setting, the sound becomes fuller, richer, and more expansive, giving the impression of a room that is not necessarily bigger, but has an irregular shape and contains many corners and fittings to multiply reflections, as in a theater with Proscenium, seats, orchestra pit, balconies, etc.

E / R1 AND E / R2 TYPE

"Early Reflection" effects. Presets 5, 6, 19 through 21, 23 through 28, and 30.



1. INITIAL DELAY. Range: 0.1 ~ 100 msec. Key: INITIAL DELAY.

The time delay between the direct sound of the instrument, and the first of the early reflections.

2. 1ST REFLECTION DELAY. Range: 0.1 ~ 100 msec. Key: 1ST REF.

3. 1ST REFLECTION LEVEL. Range: 0 ~ 100% of direct signal level. Key: 1ST REF.

Same as for REV type presets.

4. LIVENESS. Range: 0 ~ 10. Key: REV TIME.

Refers to the rate at which the reflected sounds fade. Set this parameter at zero to simulate an acoustically "dead" room, with absorbent surfaces to "soak up" the reflected sounds. As you increase the setting, the room appears to contain more "live" surfaces, with the reflected sounds fading more slowly, as they reflect from wall to wall, until at the maximum setting the effect is of an intensely reflective environment, containing many highly polished surfaces (tiles, glass, etc).

5. ROOM SIZE. Range: 0.1 ~ 10 x preset setting. Key: F2.

In the REV7, the ROOM SIZE parameter indicates the time gaps between the early reflections-directly proportional to the size of the room. The effect of this parameter also depends on which early reflection Mode has been selected. A Room Size Chart can be found later in this manual.

6. DIFFUSION. Range: 0 ~ 10. Key: F3.

Same as for REV type presets.

7. MODE. Range: 1~ 6. Key: F1.

This is a rather special case. All "Early Reflection" presets are switchable between 6 different Mode types. These are 1: SMALL HALL (a typical grouping of early reflections that would occur in a small performing environment), 2: LARGE HALL (a typical grouping of early reflections that would occur in a large performing environment), 3: RANDOM (an irregular series of reflections that could not occur naturally), 4: REVERSE (a series of reflections that increase in level, like the effect produced by playing a recorded echo backwards), 5: PLATE (a typical grouping of early reflections that would occur in a plate echo unit) and 6: SPRING (a typical grouping of early reflections that would occur in a spring reverberation unit). A slightly different early reflection for the left and right outputs creates a natural stereo effect.

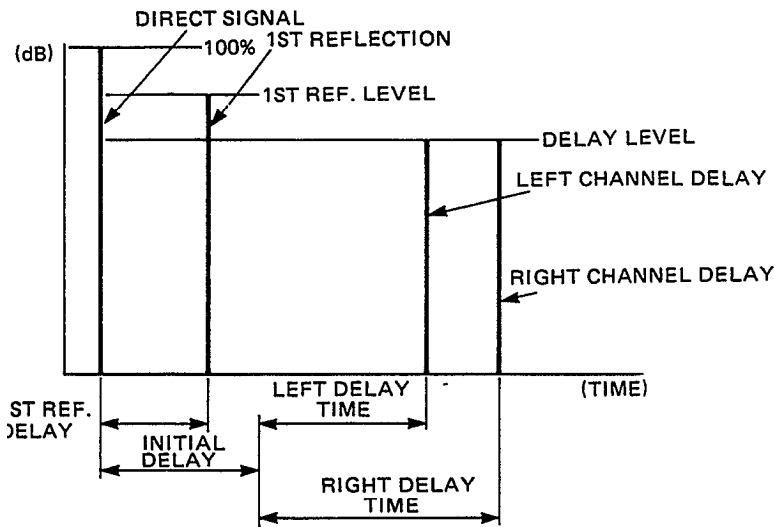
Although the name of each mode suggests a typical environment or effect, note that only the first group of reflections are generated, and they are not multiplied to produce the sound you might expect. Also, each of the E/R type presets has "invisible" parameters that further affect the sound, so the best course is to actually listen to the presets and their different modes, to get the full effect of each mode and appreciate the enormous creativity they provide.

An Early Reflection Mode Chart can be found later in this manual.

The REV7 produces 18 early reflections for each channel. It is possible to add a 1st reflection to these early reflections, in the center of the stereo image.

*For the REVERB type effects, 3 early reflections are programmed for each channel.

DELAY TYPE



1. INITIAL DELAY. Range: 0.1 ~ 100 msec. Key: INITIAL DELAY.

Allows you to program in an additional delay time which equally affects both output channels. This brings the total possible delay time up to 1 full second.

2. 1ST REFLECTION DELAY. Range: 0.1 ~ 100 msec. Key: 1ST REF.

3. 1ST REFLECTION LEVEL. Range: 0 ~ 100% of direct signal level. Key: 1ST REF.

Same as for REV type presets.

4. LEFT CHANNEL DELAY TIME. Range: 0.1 ~ 900 msec. Key: F1.

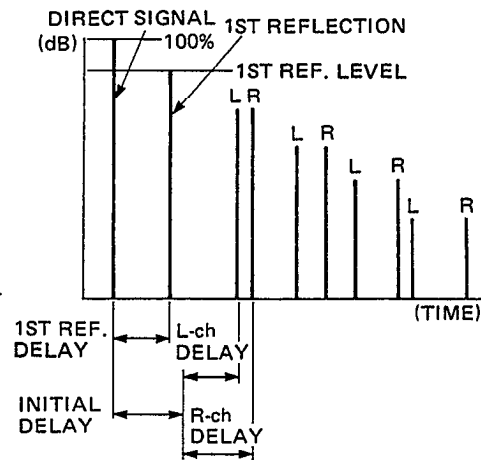
5. RIGHT CHANNEL DELAY TIME. Range: 0.1 ~ 900 msec. Key: F2.

Permits highly accurate independent setting of the left and right delays. Note that the Initial Delay time is added onto these delay times.

6. DELAY LEVEL. Range: 0 ~ 100% of direct signal level. Key: F3.

Permits simultaneous setting of left and right delay level, as a proportion of direct signal level.

ECHO TYPE



1. INITIAL DELAY. Range: 0.1 ~ 100 msec. Key: INITIAL DELAY.

Allows you to program in an additional delay time which equally affects both output channels. The first echo will not appear until this delay time and the echo delay time have elapsed.

2. 1ST REFLECTION DELAY. Range: 0.1 ~ 100 msec. Key: 1ST REF.

3. 1ST REFLECTION LEVEL. Range: 0 ~ 100% of direct signal level. Key: 1ST REF.

Same as for REV type presets.

4. LEFT CHANNEL DELAY TIME. Range: 0.1 ~ 450 msec. Key: F1.

5. RIGHT CHANNEL DELAY TIME. Range: 0.1 ~ 450 msec. Key: F2.

Permits highly accurate independent setting of the left and right delays. After this delay time has elapsed (plus the Initial Delay time) the first echo will appear. Subsequent echoes will appear at the same time interval, the number of echoes depending on how the Feedback Gain parameter is set.

6. FEEDBACK GAIN. Range: 0 ~ 99%. Key: REV TIME.

This parameter permits adjustment of the number of echoes that follow the direct signal, from zero to a virtually infinite repeat at the maximum setting. The overall decay time of the effect is proportional to the Feedback Gain setting.

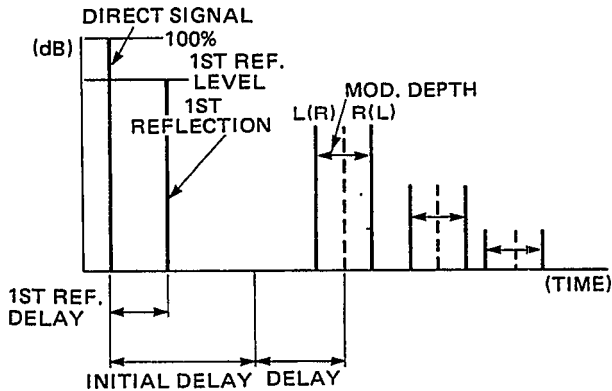
7. HIGH DAMP. Range: 0 ~ 10. Key: F3.

This effect is produced by inserting a low-pass filter in the REV7 feedback loop. This causes a gradual suppression of the high frequency content at each echo. Effectively, this means that the high frequency reverb time becomes shorter in relation to the midrange reverb time. A bright, unfiltered direct signal blended with a more muted echo can often create an authentic and pleasing acoustic effect.

MOD TYPE

"Modulation" effects. Presets 9 through 15. We'll explain the programmable parameters for each preset of this type.

● STEREO FLANGE

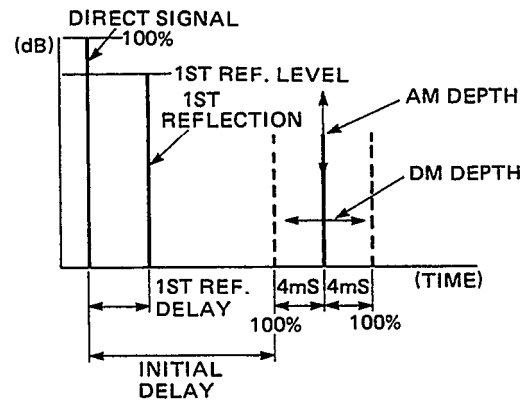


1. **INITIAL DELAY.** Range: 0.1 ~ 100 msec. Key: INITIAL DELAY.
Allows you to program in an additional delay time. The flanged signal will not appear until this delay time has elapsed.
2. **1ST REFLECTION DELAY.** Range: 0.1 ~ 100 msec. Key: 1ST REF.
3. **1ST REFLECTION LEVEL.** Range: 0 ~ 100% of direct signal level. Key: 1ST REF.
Same as for REV type presets.
4. **DELAY.** Range: 0.1 ~ 100 msec. Key: F3.
This sets the basic delay time of the flange effect. This delay time is then modulated periodically by the LFO (a Low Frequency Oscillator, with adjustable frequency, built in to the REV7 specifically for varying delay times periodically in order to produce a variety of modulation effects). This also sets the delay time between each repeat.
5. **MODULATION DEPTH.** Range: 0 ~ 100%. Key: F2.
This sets the amount by which the LFO varies the delay time. At the maximum setting, the delay time is varied by +/- 4 msec.
6. **MODULATION FREQUENCY.** Range: 0.1 ~ 20 Hz. Key: F1.
Sets the speed of the LFO, and hence the rate at which the delay time is modulated.
7. **FEEDBACK GAIN.** Range: 0 ~ 99%. Key: REV TIME.
Sets the amount of flange signal which is fed back into the circuit for further modulation. This controls the complexity of the effect, the number of repeats, and its overall decay time.

● REVERB FLANGE

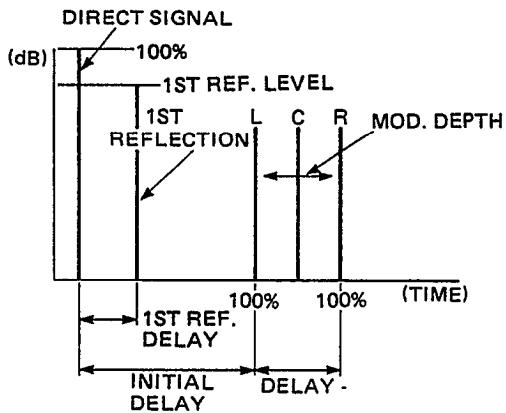
Identical to the STEREO FLANGE Preset, except for the FEEDBACK GAIN parameter, which is replaced by a REVERB TIME parameter, range 0.3 ~ 10 secs, called by pressing the REV TIME key. The feedback gain of this preset is fixed at 30%.

● CHORUS A AND CHORUS B



1. **INITIAL DELAY.** Range: 0.1 ~ 100 msec. Key: INITIAL DELAY.
Allows you to program in an additional delay time. The chorus signal will not appear until this delay time has elapsed.
2. **1ST REFLECTION DELAY.** Range: 0.1 ~ 100 msec. Key: 1ST REF.
3. **1ST REFLECTION LEVEL.** Range: 0 ~ 100% of direct signal level. Key: 1ST REF.
Same as for REV type presets.
4. **AMPLITUDE MODULATION DEPTH.** Range: 0 ~ 100%. Key: F3.
This sets the amount by which the LFO varies the amplitude (level) of the input signal.
5. **DELAY MODULATION DEPTH.** Range: 0 ~ 100%. Key: F2.
This sets the amount by which the LFO varies the delay time. At the maximum setting, the delay time is varied by +/- 4 msec.
6. **MODULATION FREQUENCY.** Range: 0.1 ~ 20 Hz. Key: F1.
Sets the speed of the LFO, and hence the rate at which the delay time and amplitude are modulated.

● STEREO PHASING



1. INITIAL DELAY. Range: 0.1 ~ 100 msec. Key: INITIAL DELAY.

Allows you to program in an additional delay time. The phased signal will not appear until this delay time has elapsed.

2. 1ST REFLECTION DELAY. Range: 0.1 ~ 100 msec. Key: 1ST REF.

3. 1ST REFLECTION LEVEL. Range: 0 ~ 100% of direct signal level. Key: 1ST REF.

Same as for REV type presets.

4. DELAY. Range: 0.1 ~ 8 msec. Key: F3.

This sets the basic delay time of the phasing effect. The delay time of the left and right channels remains fixed at this setting, while the center signal's delay time is modulated periodically by the LFO.

5. MODULATION DEPTH. Range: 0 ~ 100%. Key: F2.

This sets the amount by which the LFO varies the delay time of the center signal. At the maximum setting, the delay time is varied by +/- 4 msec.

6. MODULATION FREQUENCY. Range: 0.1 ~ 20 Hz. Key: F1.

Sets the speed of the LFO, and hence the rate at which the center signal's delay time is modulated.

● TREMOLO

The programmable parameters for this preset are identical to those for the Stereo Flange preset, omitting FEEDBACK GAIN and DELAY.

● SYMPHONIC

The programmable parameters for this preset are identical to those for the Stereo Flange preset, omitting FEEDBACK GAIN and DELAY.

DESCRIPTION OF PRESETS

This chapter aims to give a brief description of the presets, as a general introduction to the tremendous power and versatility of the REV7. The presets fall into several different types, which are noted in the MEMORY (ROM) CONTENTS CHART at the end of this manual, and if you study the EXPLANATION OF PARAMETERS chapter, you'll gain a greater understanding of these program types.

Several presets are designed to add an acoustic richness to specific instruments such as strings or electric bass, but bear in mind that they may be used for any application. Once you have become familiar with the REV7's presets, you can experiment with them and find any number of uses for every preset.

1. LARGE HALL

The first of the REV7's highly natural reverberation effects, created by a multitude of delays (reflections) that increase in complexity, just as reflected sound does, in a natural setting. This gives an impressive stereo simulation of the acoustics of a large concert hall, eminently usable for all applications. Can turn a dry drum machine into a powerhouse of percussive grandeur, or add lyrical spaciousness to a soft acoustic guitar.

2. SMALL HALL

A more "compact" version of the previous effect, with shorter reverb time and initial delay time, giving a stunningly realistic small hall or clubroom type reverb effect.

3. VOCAL PLATE

Particularly suited for adding roundness and depth to vocals. This program reproduces exactly the effect of a high-quality plate echo device.

4. PERCUSSION PLATE

A second echo plate program, with a slightly brighter effect, more suitable for adding crispness and ambience to drums and percussion instruments.

5. EARLY REFLECTION 1

The Early Reflection presets have a carefully plotted group of reflections to create a specific effect. The E/R1 type presets, of which this is the first, provide a subtle ambient effect, that is ideal for adding a liveness and roundness to the sound of any instrument. Similar to the acoustic effect of a "live" drum booth in a professional recording studio. As with all the Early Reflection presets, the "Mode" of this preset (the grouping of the early reflections) can be switched to provide six effects: SMALL HALL, LARGE HALL, RANDOM, REVERSE, PLATE, and SPRING. The "Room Size" parameter varies the distance between individual reflections, creating an accurate simulation of a variety of performance environments.

6. EARLY REFLECTION 2

The E/R2 type presets contain more reflections than the E/R1 type, and give a brighter, more "live" quality. This preset provides a tight, vibrant "kickback" that is meant to sound like an electronic effect rather than a natural reverb.

7. DELAY L, R

A crystal clear stereo digital delay effect, with left and right delays independently variable up to a full 900 milliseconds. You can even add a third delay by programming in the "1st Reflection", which is available on all preset programs.

8. STEREO ECHO

A "tape echo" type effect, but without any of the accompanying noise or delay length limitations. Left and right multiple delays can be independently and precisely set from 0.1 to 450 milliseconds, and the "foldback gain" (number of repeats) can be set from 1 to virtually infinite repeat, with no signal deterioration. You can also widely vary the high frequency content of the echo signal.

9. STEREO FLANGE A

The first of the Modulation type effects, this rich, stereo flanging effect is programmed for a fairly fast, "watery" effect, though of course the effect can be widely varied. You can also add a delay so that the flanged signal is heard after the direct signal (this applies to all the Modulation presets). Flanging is great for keyboards that need some "thickening", and for those impressive "tube" or "aircraft" effects favored by many guitarists.

With the Stereo Flange effect, the direct signal is delayed by a short delay time, which you can adjust. This delay time is varied periodically with the built-in LFO (Low Frequency Oscillator) so that the delayed signal moves in relation to the direct signal, producing the characteristic flanging effect. The stereo effect is created by splitting the delayed signal into left and right signals, and increasing the left channel delay time while decreasing the right channel delay time, and vice versa. More pronounced flanging is created by feeding the flange signal back on itself, producing a series of rapid repeats, each one of which is modulated further.

10. REVERB FLANGE

Combines the effect of the STEREO FLANGE preset with a reverberation effect. The reverb time is widely variable. The feedback gain is not variable with this preset.

11. CHORUS A

The chorus program actually makes a single instrument such as a violin sound like a well co-ordinated ensemble, with its slow "sweep". The effect is rather like the slowly rotating baffle in a Leslie organ speaker. It's a complex effect, produced in the following manner.

The input signal is split up into three signals, with their phase set at 0 degrees, 120 degrees and 240 degrees. These signals are located center, left and right respectively in the stereo image, and delayed by 4 milliseconds. Each signal then has its delay time modulated (in the same manner as the Stereo Flange preset) and its amplitude (level) modulated, by the LFO. In this way, a highly subtle, rich effect is generated from the simplest input signal.

12. CHORUS B

Produced in an identical manner to Chorus A, this preset has slightly different "invisible" parameters, creating a modulation that has less "movement" than Chorus A. It provides the means to enrich and thicken the input signal, to generally add smoothness and depth to any sound.

13. STEREO PHASING

This effect is variable from an almost imperceptible slow-moving phase shift, to a rapid pulsation. The effect is created as follows.

The input signal is split up into right and left signals. The right channel is delayed very slightly in relation to the left channel. A third signal, placed in the center of the stereo image, has its delay time modulated between zero and the right channel delay time setting, by the LFO. This means that the center signal will periodically "approach" and "meet" the left and right channels alternately, causing phase changes as it does so. This is a totally controllable digital version of the original phasing method: playing back the same signal on two tape decks whose minute fluctuations in speed caused phase changes—a rather haphazard method. The timing differences need to be very small, and on the REV7 can be set as low as 0.1 msec.

14. TREMOLO

The tremolo preset is adjustable from a slow once-every-ten-seconds roll to a twenty-times-a-second vibrato. It is produced in virtually the same manner as the Chorus preset, with the amplitude modulation emphasized (for a deeper, more rapid modulation). Most conventional tremolo effects use amplitude modulation and nothing more. The other parameters of this preset add extra richness and dimension, for a really modern, sophisticated sound.

15. SYMPHONIC

Another effect based on the same modulation system as the Chorus preset. This time, the delay time modulation is more rapid and deeper, giving the effect more movement and more width, to create an expansive, spacious effect from any input signal.

16. SPRING

Spring reverb, featured in many low-price reverberation devices, and often built into combo amplifiers or organs, can add a pleasing, bright ambient quality to high register instruments (lead guitar, flute) as well as vocals.

17. ECHO ROOM

The authentic sound of the original echo device—the Echo Room, where the sound was transmitted from one end of a specially reflective room, and picked at the other end by a mike. A long, rich reverb effect versatile enough for all instruments.

18. STRINGS

The first of several preset effects specifically designed for use on named instruments, though of course they can be used for any purpose. They all feature the six "modes" described in preset 5, above. For a string orchestra, the most natural reverb is found in older, "medium" size concert halls, and this reverb type program accurately simulates this environment.

19. ELECTRIC BASS A

This E/R1 type preset actually creates the fullness and depth of a large reflex speaker cabinet of the type used for amplifying a bass guitar. So with a "direct injection" bass guitar you can achieve a rich deep sound without the inherent problems caused by miking up speaker cabinets. With this widely variable preset you can simulate a variety of tube amplifiers and speaker enclosures.

20. ELECTRIC BASS B

This E/R2 type program is more "live" than the previous effect, and can add brilliance and "spice" to complex, funky bass riffs.

21. KICK

Superfast delays in this E/R1 type preset actively boost the sound of a bass drum, adding a vivid, yet solid presence, ideal for hard and heavy rock.

22. SNARE

With this reverb type preset, you can transform an ordinary snare drum into a classic "wall of sound" effect used in many rock recordings.

23. GATE REVERB

A common studio effect on contemporary recordings is produced by linking up various effects units—reverberator, digital delay, noise gate, compressor—so that a powerful reverb is produced, which suddenly cuts off, instead of fading gradually. This E/R1 type program reproduces that effect, and is nothing short of astounding when used on drums, creating an enormous sound that does not overhang and cloud up the overall sound of the band.

24. REVERSE GATE

Closely related to the GATE REVERB preset, this program actually gives the impression of a reverse reverb effect. The reverb builds in intensity before cutting off sharply and dramatically.

25. PIANO

The impressive sound of a concert grand piano in an ideal room setting can be created from virtually any piano, by the judicious use of this E/R2 type effect.

26. ORGAN

With this E/R1 type preset it is possible to give an electronic organ the expansive, mellow sound of an old "tube" organ with its large wooden speaker cabinets.

27. BRASS

Another useful E/R1 type effect, the BRASS preset enables you to add punch and "sizzle" to brass instruments, retaining their brilliance while expanding their harmonic qualities.

28. GUITAR

An E/R2 type preset providing a mellow ambience that will delicately enhance the tone of any fine acoustic guitar.

29. HANDCLAPS

This short, sharp reverberation type effect adds an almost metallic presence and fullness to handclaps, for a truly contemporary sound.

30. LIVE REFERENCE

This E/R2 type preset simulates a "standard" live atmosphere. The effect is of a small, yet live, resonant room, elevating the tonal quality of any instrument or vocal to a brilliant, powerfully ambient timbre.

MIDI SELECTION

Using a set up like the MIDI Performance System shown in the APPLICATIONS chapter, it is possible to select any effect in the REV7 memory simply by pressing a Voice Select key on a MIDI keyboard. This allows you to have a different reverberation, echo, or other effect for each voice. This is highly desirable, as a keyboard such as the Yamaha DX7 Programmable Algorithm Synthesizer can create a virtually endless variety of voices-strings, clavinet, synth brass, percussion, banjo, etc., each of which requires a different type of reverberation.

MIDI MEMORY SETTING

The procedure for setting which effects are selected to go with the voices on your MIDI keyboard is as follows:

1. Press the MIDI CTRL key. Its LED will light. The LCD will show the following display:

```
MIDI CONTROL
RCV CH = nn
```

NOTE: When in the MIDI Control mode, the only keys that function on the REV7 are the ones used for setting the MIDI Memory. All other keys will be ineffective, and reverb effects will not be available while in this mode.

2. You now have to set the MIDI Channel number. MIDI information can be received on channels 1 through 16, or the REV7 can be set to OMNI, in which mode it will receive information on all channels. (Note: A DX7 transmits on MIDI channel 1 automatically. You may be able to set other keyboards to any channel). Enter the channel number by pressing the numeric keys (1 to 16, or 0 for Omni). The number you have selected will flash on the LCD. If you make a mistake, press the CLEAR key to clear the display, and enter the number again. Then press ENTER to enter the channel number you have selected. The channel number will stop flashing, and be displayed continuously on the LCD. You can also change the MIDI channel number by using the +/- keys. In this case, there is no need to press the ENTER key after the new number appears.

3. Press the MEMORY key. The LCD display will now switch to:

```
- + : n STO
PGMnnn = MEMnn
```

The next step is to enter the program number (voice number) of the voice on your MIDI keyboard. This is done by using the +/- keys on the REV7. The range available is 1 to 128. Pressing a + or - key will increment or decrement the program number; holding a key down will continuously increase or decrease the voice number. This number will appear next to the "PGM" section on the LCD.

Use the numeric keys to input the number of the effect (MEM) you wish to use with the program you have selected. The range available is 1 to 90-this covers the 30 presets and the 60 user programs. This number will flash next to the "MEM" section on the LCD. **NOTE:** You can set the REV7 to the BYPASS mode (no reverb effect: direct signal output only) by setting the memory number to zero.

Remember that at any time you can clear the "MEM" display by pressing the CLEAR key, and input another number.

Finally, press the STORE key to store the program number plus memory number into the REV7. The memory number will stop flashing, and be displayed continuously on the LCD.

4. You now have three options:

- (a) You can continue storing pairs of program/memory numbers, by repeating operation 3.
- (b) You can change the MIDI channel receive number. Press the MEMORY key, and the LCD will revert to the "RCV ch" display, and you can repeat operation 2. **NOTE:** Pressing the MEMORY key alternates the REV7 between MIDI channel set and program/memory set, when the REV7 is in the MIDI Control mode.
- (c) You can switch the REV7 out of the MIDI control mode, by simply pressing the MIDI CTRL key. Its LED will go out. You can now select effects from your MIDI keyboard (or, of course, in the normal way, using the front panel keys or remote control unit). Connect the MIDI OUT of your keyboard to the MIDI IN of the REV7. Your keyboard should be set to transmit voice number information. In the case of a Yamaha DX7 synthesizer, for example, it should be set to "SYSTEM INFO AVAILABLE". When you press a program select (voice select) key on your keyboard (provided, of course, you have programmed this voice number into the REV7) the REV7 will switch automatically to the corresponding effect, and this will be displayed on the LCD.

CHECKING MIDI MEMORY

It's a good idea to keep a written record of your voice/effect settings. However, you can easily check the REV's MIDI memory without having to connect up your keyboard, in the following manner:

1. Press the REV7's MIDI CTRL key. Its LED will light.
2. Press the MEMORY key in order to call up the "PGM/MEM" display on the LCD.
3. You can now "scroll through" the REV7's MIDI memory, by using the +/- keys. The PGM number will change, and if a program number has a corresponding memory number, it will appear on the LCD, next to the "MEM" section. This will indicate the effect that has been selected to go with the voice indicated in the "PGM" section of the LCD.
4. To check the parameter values of this effect, look it up in the MEMORY (ROM) CONTENTS or USER PROGRAM Chart, as appropriate. Or you can check it on the REV7 by pressing MIDI CTRL again, so that its LED goes out, and the REV7 is in its normal operating mode. Then select the effect in the usual way, and proceed to select parameters.

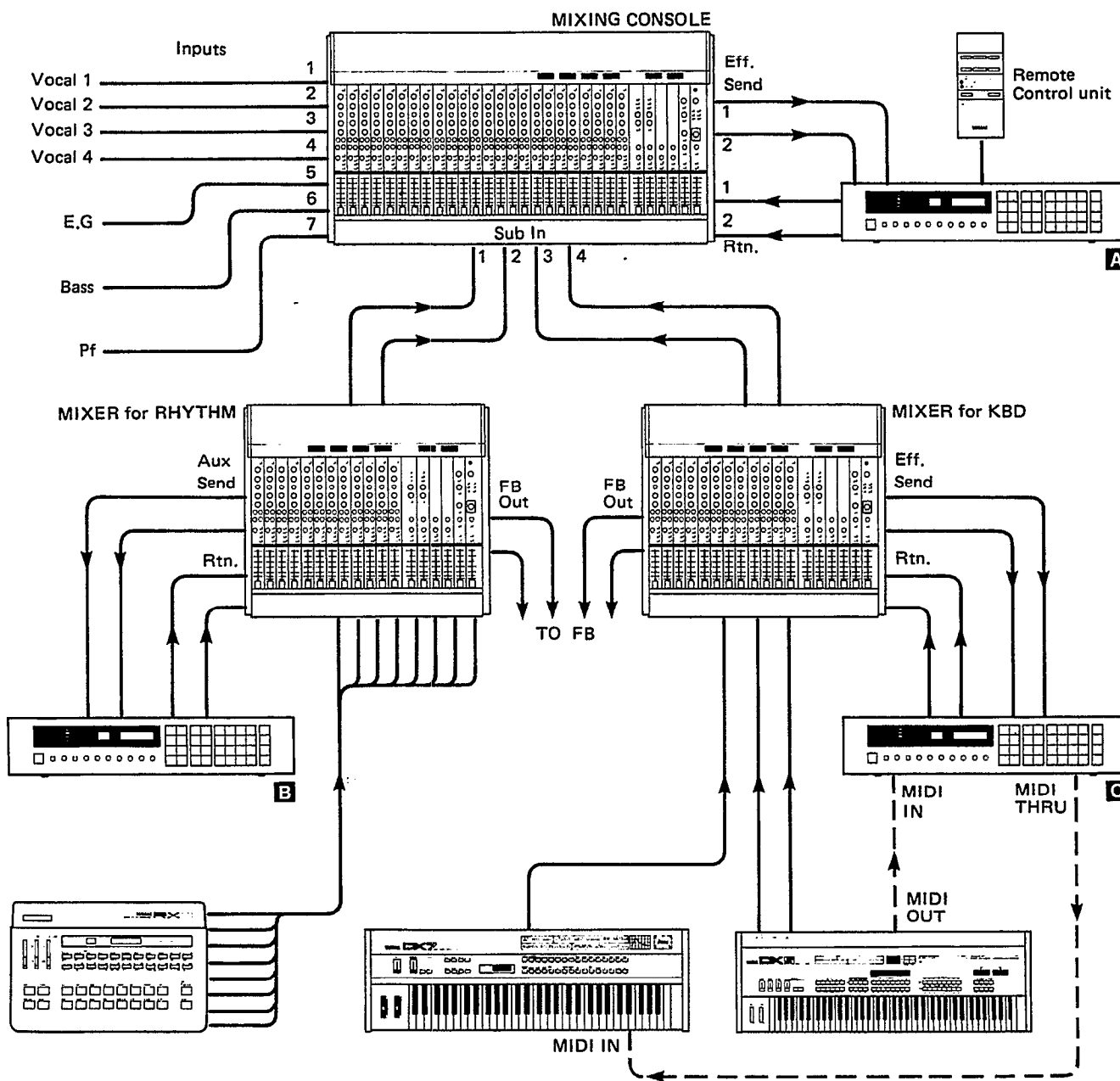
CLEARING MIDI MEMORY

NOTE: These clearing operations affect ONLY the voice-plus-effect couplings stored in the REV7's MIDI memory, NOT the presets or edited user programs.

1. Press the REV7's MIDI CTRL key. Its LED will light.
2. Press the MEMORY key in order to call up the "PGM/MEM" display on the LCD.
3. To clear a single voice/effect memory. Press CLEAR followed by STORE.
4. To clear the entire voice/effect memory. Press CLEAR and STORE together.
5. You can now proceed to input further data into the MIDI Memory, as previously described, or return the REV7 to its normal operating mode by pressing the MIDI CTRL key.

APPLICATION EXAMPLES

The extraordinarily broad versatility of the REV7 makes it the perfect reverberator for use in a wide range of applications-for sound reinforcement, recording, A/V production, theatrical productions, etc. The system diagram below shows three REV7 units being used in three completely different ways within a large concert sound reinforcement or recording system.



A Main Reverb Unit

One REV7 is connected into the effect loop of the main system mixing console. In this case the mixing console provides a stereo effects loop: the left and right effects sends are fed to the corresponding REV7 stereo inputs, while the REV7 outputs are fed back to the corresponding effects return inputs. The effects return level controls on the mixer are used to mix the appropriate amount of effect signal back into the program, so the REV7 is set up to output only the reverb signal (no direct signal). This permits application of any REV7 effect to the entire stereo program which is fed to the main house speakers or recording equipment.

B Effects for a Specific Source

In this system a separate mixer is used to mix the independent drum outputs from the RX11 Digital Rhythm Programmer, and add appropriate equalization to the individual drum sounds. A REV7 is patched into the drum mixer's auxiliary send/return loop permitting the application of effects like Gate Reverb to the drum signal only. Since the REV7 is directly inserted into the mixing console's main program buss, the desired mixture of direct and effect sound must be set using the REV7 mixing control.

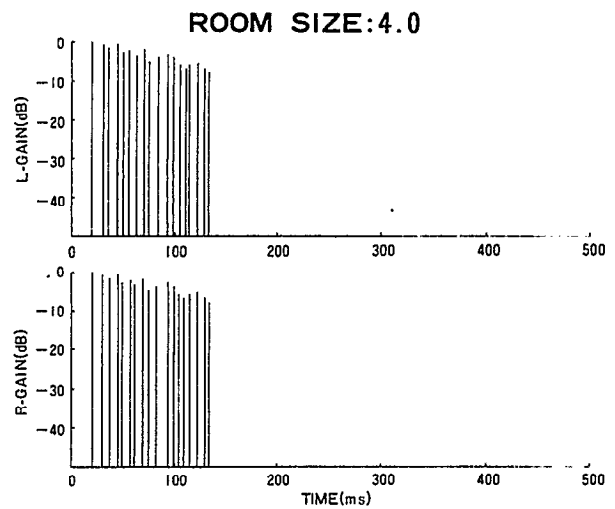
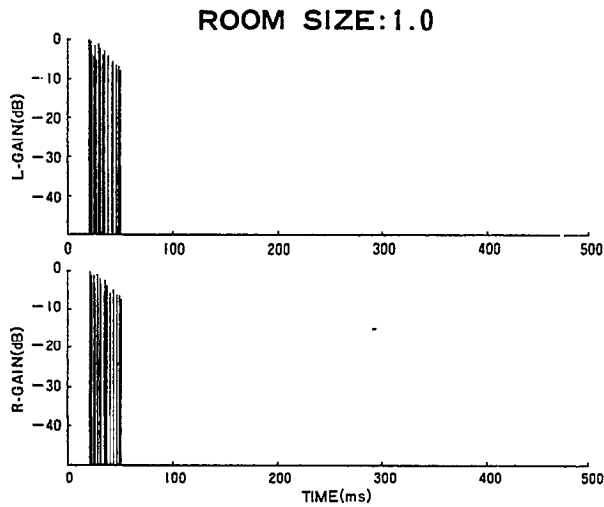
C Keyboard Effects with MIDI Control

The third REV7 in this system is patched into the stereo effects loop of the keyboard mixer. The REV7 is programmed to select pre-determined effects when it receives specific "program change" data from a MIDI keyboard. That is, if the performer selects voice 5 on his keyboard, the corresponding effect is automatically called on the REV7. For MIDI control, the MIDI OUT from a DX5 Digital Programmable Algorithm Synthesizer is fed to the MIDI IN terminal of the REV7, and the MIDI THRU of the REV7 sends the same MIDI control signals on to a DX7 Digital Programmable Algorithm Synthesizer. In this way, selecting a voice on the DX5 not only selects the corresponding effect on the REV7, but also the corresponding voice number on the DX7.

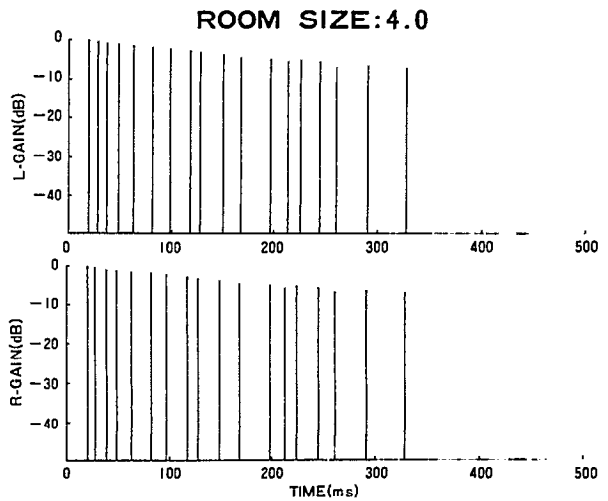
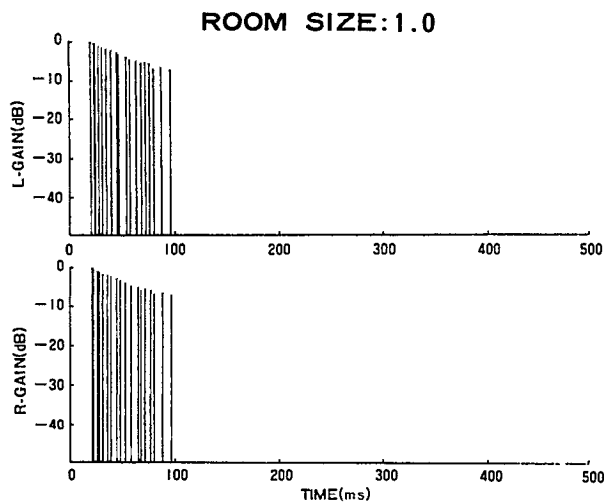
EARLY REFLECTION MODE CHART

This chart shows the exact number and type of reflections created by the REV7 for each mode selected with E/R type programs. Room Size set at 1.0 and 4.0 for these graphs.

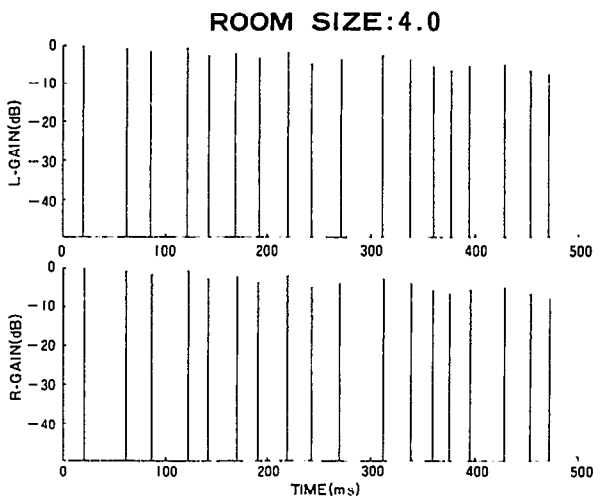
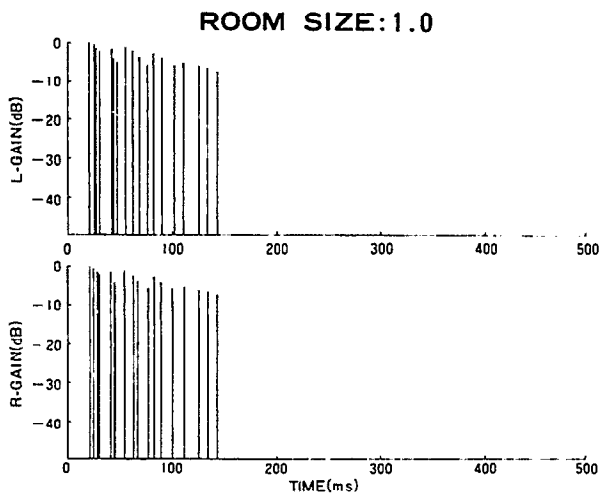
MODE 1 (SMALL HALL)



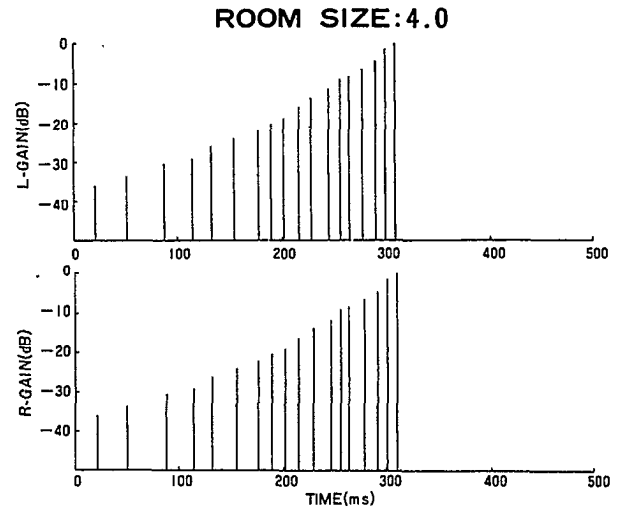
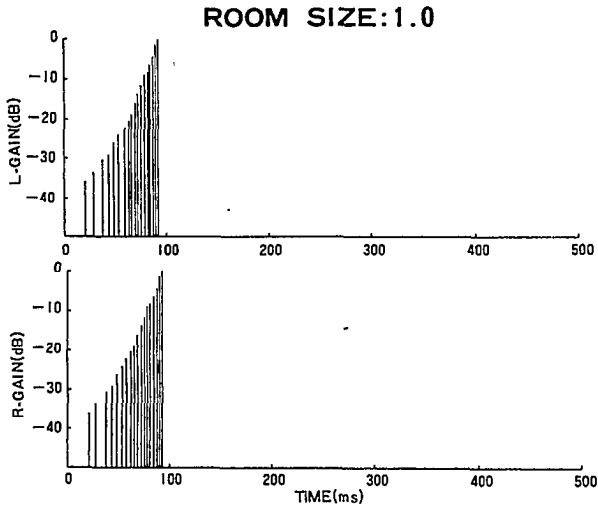
MODE 2 (LARGE HALL)



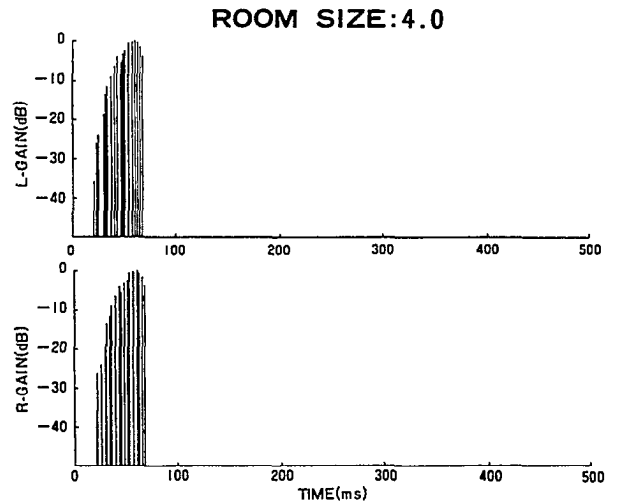
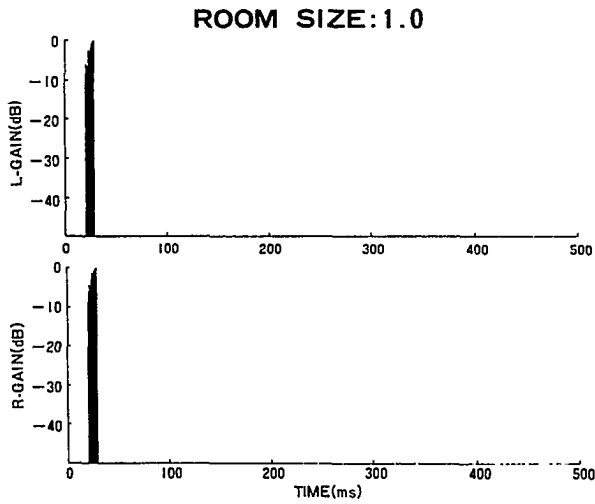
MODE 3 (RANDOM)



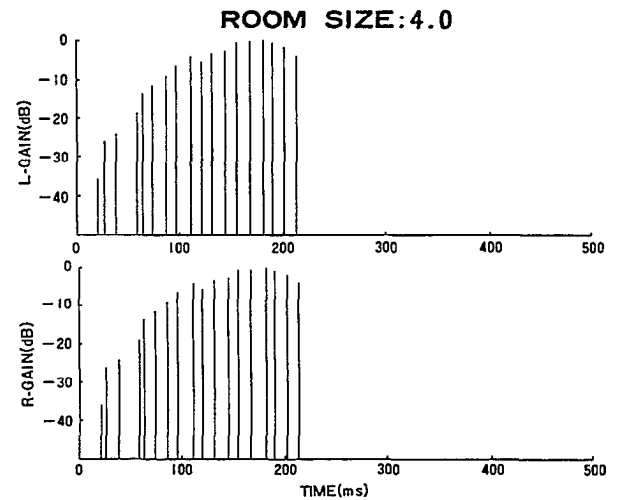
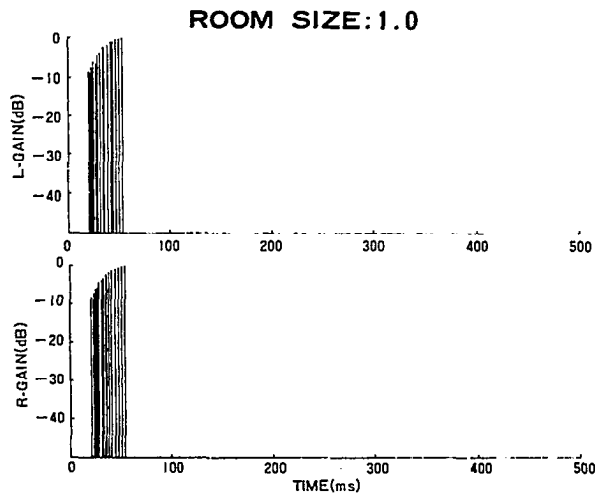
MODE 4 (REVERSE)



MODE 5 (PLATE)

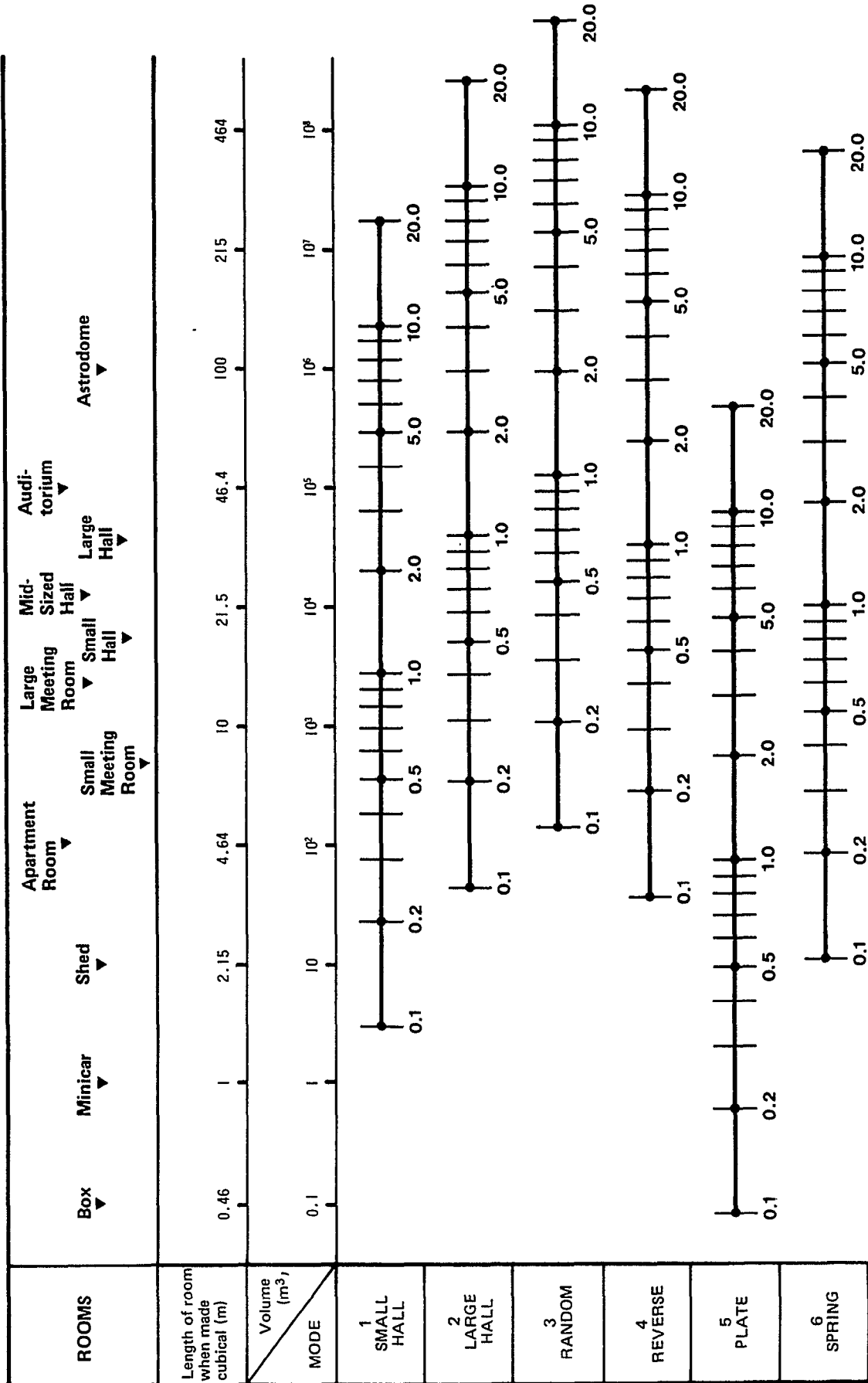


MODE 6 (SPRING)



ROOM SIZE CHART

This chart shows the relationship between the Room Size parameter for each mode selected with E/R type programs, and the size of actual rooms.



USER PROGRAMMING TABLE

This table is designed to help you create your own original effects programs, by editing preset programs. It lists all the programmable parameters (up to 7 can be programmed for each program). Enter the new parameters in this table, and once you've completed editing to get the effect you want, you can enter the new parameter values in the "PROGRAM CHART" booklet. (You can make copies of this table for multiple use.) See the MEMORY (ROM) CONTENTS CHART for the parameters relating to each preset, and read the chapter entitled EXPLANATION OF PARAMETERS for further information.

Program No. _____

Original Preset Name _____ **Type** _____

Parameters	Range	New Value	Parameters	Range	New Value
REV TIME	0.3 ~ 10.0 Sec		Lch DELAY	0.1 ~ 900.0 ms	
INITIAL DELAY	0.1 ~ 100.0 ms		Rch DELAY	0.1 ~ 900.0 ms	
1ST REF. DELAY	0.1 ~ 100.0 ms		LEVEL (for DELAY)	0 ~ 100%	
1ST REF. LEVEL	0 ~ 100%		F.B. GAIN	0 ~ 99%	
HIGH REV TIME	X 0.1 ~ X 1.0		HIGH DUMP (for ECHO)	X 0 ~ X 10	
LOW REV TIME	X 0.1 ~ X 2.4		MOD FREQ.	0.1 ~ 20.0Hz	
DIFFUSION	0 ~ 10		MOD DEPTH	0 ~ 100%	
LIVENESS	0 ~ 10		DELAY TIME	0.1 ~ 100.0 ms (0.1 ~ 8.0 ms)	
MODE	1 ~ 6		DM DEPTH (for CHORUS)	0 ~ 100%	
ROOM SIZE	X 0.1 ~ X 20.0		AM DEPTH (for CHORUS)	0 ~ 100%	

Remarks

Note: Up to 7 parameters can be controlled in each program.
Study the MEMORY (ROM) CONTENTS CHART.

Program No. _____

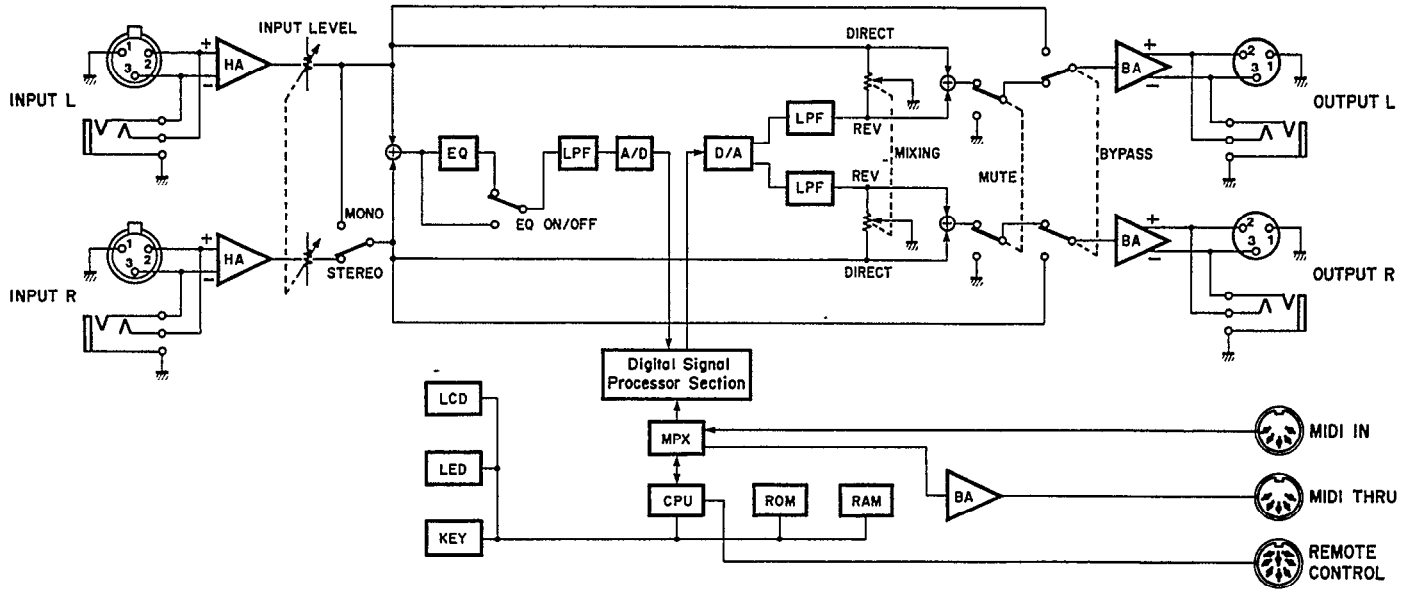
Original Preset Name _____ **Type** _____

Parameters	Range	New Value	Parameters	Range	New Value
REV TIME	0.3 ~ 10.0 Sec		Lch DELAY	0.1 ~ 900.0 ms	
INITIAL DELAY	0.1 ~ 100.0 ms		Rch DELAY	0.1 ~ 900.0 ms	
1ST REF. DELAY	0.1 ~ 100.0 ms		LEVEL (for DELAY)	0 ~ 100%	
1ST REF. LEVEL	0 ~ 100%		F.B. GAIN	0 ~ 99%	
HIGH REV TIME	X 0.1 ~ X 1.0		HIGH DUMP (for ECHO)	X 0 ~ X 10	
LOW REV TIME	X 0.1 ~ X 2.4		MOD FREQ.	0.1 ~ 20.0Hz	
DIFFUSION	0 ~ 10		MOD DEPTH	0 ~ 100%	
LIVENESS	0 ~ 10		DELAY TIME	0.1 ~ 100.0 ms (0.1 ~ 8.0 ms)	
MODE	1 ~ 6		DM DEPTH (for CHORUS)	0 ~ 100%	
ROOM SIZE	X 0.1 ~ X 20.0		AM DEPTH (for CHORUS)	0 ~ 100%	

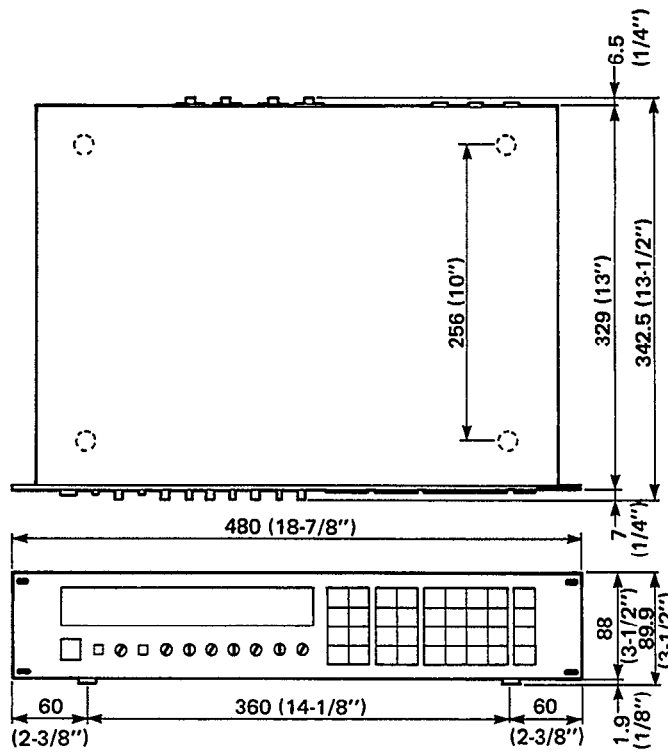
Remarks

Note: Up to 7 parameters can be controlled in each program.
Study the MEMORY (ROM) CONTENTS CHART.

BLOCK DIAGRAM



DIMENSIONS



Unit : mm (Inch)

MEMORY(ROM) CONTENTS AND CONTROLLABLE PARAMETERS

This chart lists all the programmable parameters of the REV7's 30 presets. It includes the complete value ranges of each parameter, for quick reference when editing. The EXPLANATION OF PARAMETERS chapter should be studied, for a full understanding of this chart.

NOTE **PARAMETER RANGE PRESET VALUE**

MEM. No.	PROGRAM NAME	TYPE	CONTROLLABLE PARAMETERS & PRESET VALUE						
			REV TIME	INITIAL DELAY	1ST REF		F1	F2	F3
1	LARGE HALL	REV	REV TIME 0.3-10.0s 2.6s	INITIAL DELAY 0.1-100.0ms 30.0ms	1ST DELAY 0.1-100.0ms 10.0ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.3	LOW x0.1-x2.4 x1.2	DIFFUSION 0-10 5
2	SMALL HALL	REV	REV TIME 0.3-10.0s 2.0s	INITIAL DELAY 0.1-100.0ms 20.0ms	1ST DELAY 0.1-100.0ms 10.0ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.4	LOW x0.1-x2.4 x1.0	DIFFUSION 0-10 5
3	VOCAL PLATE	REV	REV TIME 0.3-10.0s 2.4s	INITIAL DELAY 0.1-100.0ms 45.0ms	1ST DELAY 0.1-100.0ms 10.0ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.3	LOW x0.1-x2.4 x1.0	DIFFUSION 0-10 5
4	PERCUSSION PLATE	REV	REV TIME 0.3-10.0s 2.0s	INITIAL DELAY 0.1-100.0ms 10.0ms	1ST DELAY 0.1-100.0ms 10.0ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.5	LOW x0.1-x2.4 x1.2	DIFFUSION 0-10 5
5	EARLY REFLECTION 1	E/R 1	LIVENESS 0-10 5	INITIAL DELAY 0.1-100.0ms 10.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MODE 1-6 1	ROOM SIZE x0.1-x20.0 x2.0	DIFFUSION 0-10 5
6	EARLY REFLECTION 2	E/R 2	LIVENESS 0-10 5	INITIAL DELAY 0.1-100.0ms 10.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MODE 1-6 1	ROOM SIZE x0.1-x20.0 x2.0	DIFFUSION 0-10 5
7	DELAY L, R	DELAY	/	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	Lch DELAY 0.1-900.0ms 100.0ms	Rch DELAY 0.1-900.0ms 200.0ms	LEVEL 0-100% 100%
8	STEREO ECHO	ECHO	F.B. GAIN 0-99% 60%	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	Lch DELAY 0.1-450.0ms 170.0ms	Rch DELAY 0.1-450.0ms 178.0ms	HIGH x0-x10 x9
9	STEREO FLANGE	MOD.	F.B. GAIN 0-99% 35%	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MOD FREQ. 0.1-20.0Hz 2.5Hz	MOD DEPTH 0-100% 50%	DELAY TIME 0.1-100.0ms 1.2ms
10	REVERB FLANGE	MOD.	REV TIME 0.3-10.0s 2.5s	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MOD FREQ. 0.1-20.0Hz 1.1Hz	MOD DEPTH 0-100% 80%	DELAY TIME 0.1-30.0ms 1.2ms
11	CHORUS A	MOD.	/	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MOD FREQ. 0.1-20.0Hz 0.2Hz	DM DEPTH 0-100% 50%	AM DEPTH 0-100% 40%
12	CHORUS B	MOD.	/	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MOD FREQ. 0.1-20.0Hz 0.6Hz	DM DEPTH 0-100% 50%	AM DEPTH 0-100% 10%
13	STEREO PHASING	MOD.	/	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MOD FREQ. 0.1-20.0Hz 1.1Hz	MOD DEPTH 0-100% 100%	DELAY TIME 0.1-8.0ms 3.0ms
14	TREMOLO	MOD.	/	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MOD FREQ. 0.1-20.0Hz 6.0Hz	MOD DEPTH 0-100% 50%	/
15	SYMPHONIC	MOD.	/	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MOD FREQ. 0.1-20.0Hz 0.7Hz	MOD DEPTH 0-100% 50%	/
16	SPRING	REV	REV TIME 0.3-10.0s 2.6s	INITIAL DELAY 0.1-100.0ms 25.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.2	LOW x0.1-x2.4 x1.2	DIFFUSION 0-10 5
17	ECHO ROOM	REV	REV TIME 0.3-10.0s 3.2s	INITIAL DELAY 0.1-100.0ms 16.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.3	LOW x0.1-x2.4 x1.2	DIFFUSION 0-10 5
18	STRINGS	REV	REV TIME 0.3-10.0s 3.0s	INITIAL DELAY 0.1-100.0ms 13.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.3	LOW x0.1-x2.4 x1.0	DIFFUSION 0-10 5
19	ELECTRIC BASS A	E/R 1	LIVENESS 0-10 1	INITIAL DELAY 0.1-100.0ms 12.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 65%	MODE 1-6 5	ROOM SIZE x0.1-x20.0 x0.3	DIFFUSION 0-10 5
20	ELECTRIC BASS B	E/R 2	LIVENESS 0-10 3	INITIAL DELAY 0.1-100.0ms 12.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 68%	MODE 1-6 5	ROOM SIZE x0.1-x20.0 x0.4	DIFFUSION 0-10 7
21	KICK	E/R 1	LIVENESS 0-10 1	INITIAL DELAY 0.1-100.0ms 12.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 87%	MODE 1-6 5	ROOM SIZE x0.1-x20.0 x0.3	DIFFUSION 0-10 7
22	SNARE	REV	REV TIME 0.3-10.0s 1.2	INITIAL DELAY 0.1-100.0ms 10.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.8	LOW x0.1-x2.4 x0.8	DIFFUSION 0-10 5
23	GATE REVERB	E/R 2	LIVENESS 0-10 5	INITIAL DELAY 0.1-100.0ms 20.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MODE 1-6 3	ROOM SIZE x0.1-x20.0 x1.6	DIFFUSION 0-10 5
24	REVERSE GATE	E/R 2	LIVENESS 0-10 5	INITIAL DELAY 0.1-100.0ms 25.0ms	1ST DELAY 0-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MODE 1-6 4	ROOM SIZE x0.1-x20.0 x2.4	DIFFUSION 0-10 5
25	PIANO	E/R 2	LIVENESS 0-10 3	INITIAL DELAY 0.1-100.0ms 12.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 72%	MODE 1-6 6	ROOM SIZE x0.1-x20.0 x1.0	DIFFUSION 0-10 6
26	ORGAN	E/R 1	LIVENESS 0-10 4	INITIAL DELAY 0.1-100.0ms 10.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 61%	MODE 1-6 1	ROOM SIZE x0.1-20.0 x3.5	DIFFUSION 0-10 7
27	BRASS	E/R 1	LIVENESS 0-10 4	INITIAL DELAY 0.1-100.0ms 12.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 61%	MODE 1-6 3	ROOM SIZE x0.1-x20.0 x0.9	DIFFUSION 0-10 5
28	GUITAR	E/R 2	LIVENESS 0-10 5	INITIAL DELAY 0.1-100.0ms 5.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 69%	MODE 1-6 6	ROOM SIZE x0.1-20.0 x1.5	DIFFUSION 0-10 5
29	HANDCLAPS	REV	REV TIME 0.3-10.0s 0.4s	INITIAL DELAY 0.1-100.0ms 0.1ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	HIGH x0.1-x1.0 x0.1	LOW x0.1-x2.4 x2.0	DIFFUSION 0-10 5
30	LIVE REFERENCE	E/R 2	LIVENESS 0-10 5	INITIAL DELAY 0.1-100.0ms 20.0ms	1ST DELAY 0.1-100.0ms 0.1ms	1ST LEVEL 0-100% 0%	MODE 1-6 2	ROOM SIZE x0.1-x20.0 x2.5	DIFFUSION 0-10 5

The following abbreviations are used: REV TIME = REVERB TIME; HIGH = HIGH FREQUENCY REVERB TIME; LOW = LOW FREQUENCY REVERB TIME; Lch DELAY = LEFT CHANNEL DELAY TIME; Rch DELAY = RIGHT CHANNEL DELAY TIME; LEVEL = DELAY LEVEL; F.B. GAIN = FEEDBACK GAIN; HIGH = HIGH DUMP; MOD FREQ. = MODULATION FREQUENCY; MOD DEPTH = MODULATION DEPTH.

SPECIFICATIONS

INPUT

Number of Channels	Electronically Balanced x 2 (Phone Jack) Electronically Balanced x 2 (XLR type)
Nominal Level	+4 dBm
Impedance	10Kohms
Level Control	Volume, Gain +10 dB — -90dB
Mono/Stereo SW.	Mono — Ch.L + R Activated. Stereo — Ch.L & R Activated.
Mixing	In Stereo mode, Ch.L & R are mixed and sent to A/D converter.
Parametric EQ	Low: 50 ~ 700Hz ± 15, Mid: 350 ~ 7kHz ± 15, High: 2k ~ 20kHz ±15 3 bands.
Level Monitor	8 points LED (pre - A/D)

A/D CONVERSION

Sampling Freq.	31.25kHz
Quantization	Linear 16 Bit
Band Width	20Hz to 12kHz
Number of Channels	1

SIGNAL PROCESSING

Functions	Reverb-1 — LARGE HALL Reverb-2 — SMALL HALL Reverb-3 — VOCAL PLATE Reverb-4 — PERCUSSION PLATE E/R - 1 — EARLY REFLECTION-1 E/R - 2 — EARLY REFLECTION-2 OTHERS — DELAY (Number 7) to LIVE REFERENCE (Number 30)
Factory Presets (30)	
Reverb Time (RT)	0.3 to 10.0 sec, on Mid. band
Initial Delay	0.1 to 100.0 msec.
1st Reflection	Delay Time (0 to 100.0 msec) & Level (0 ~ 100%)
High Freq. RT (F1)	Mid. RT x (0.1 ~ 1.0)
Low Freq. RT (F2)	Mid. RT x (0.1 ~ 2.4)
Diffusion	Diffusion (10 steps)

D/A CONVERSION

Number of Channels	2
Sampling Freq.	31.25 kHz
Quantization	Linear 16 Bit
Band Width	20 Hz to 12 kHz

OUTPUT

Number of Channels	Electronically Balanced x 2 (Phone Jack) Electronically Balanced x 2 (XLR type)
Nominal Level	+4dBm
Impedance	600ohms
Maximum Level	+ 18dBm
Mixing	Direct Signal, Reverb Signal
Bypass	ON/OFF
Out phase	Ch.R (Reverb Signal) can be alternated
Mute	ON/OFF

MEMORY

Presets (ROM)	1 ~ 30
User Memory (RAM)	31 ~ 90 (Non Volatile) All parameters except Input Level and parametric EQ, can be memorized

MIDI CONTROL

MIDI Channel, Program Number

FRONT PANEL

Display	16 character 2 lines LCD x 1 2 digits numeric LED for Memory No. 8 points level meter LED Input Level Volume Parametric EQ (Low, Mid, High) Function Keys
Knobs	Numeric and +/- Keys Direct and BYPASS ON/OFF Keys
Keys	MUTE, MIDI

ELECTRIC CHARACTERISTICS

Dynamic Range	Reverb : more than 78dB Delay : more than 84dB
Distortion	Direct Signal 0.03% Reverb Signal 0.1%
Band Width	Direct Signal 20 to 20kHz Reverb Signal 20 to 12kHz
Residual Noise Level	Reverb mode : less than — 60dBm Delay mode : less than — 66dBm

DIMENSIONS

(W x H x D) 480 x 89.9 x 342.5mm
(18-7/8" x 3-1/2" x 13-1/2")

WEIGHT

5.3 kg (11.7 lbs)

POWER SUPPLY

U.S./Canadian Model 110V — 120V, 50/60Hz
General Model 220V — 240V, 50/60Hz

REMOTE CONTROL

REV 1 E/R 1
REV 2 E/R 2
REV 3 OTHERS
REV 4 USER MEMORY

* **NOTE:** Since natural sounding reverberation is mixed with the direct sound, and hence does not constitute 100% of the sound, the effective dynamic range will nearly always exceed 90 dB.

** 0 dBu is 0.775 volts RMS. This value represents voltage across a high impedance input. dBu is the equivalent of dBm if specified across a 600 ohm load.

Function...	Recognized	Remarks
Basic Default	: 1 - 1 6	: memorized
Channel Changed	: 1 - 1 6	
Mode Default	: OMNI OFF/OMNI ON	: memorized
Mode Messages	: x	
Mode Altered	: x	
Note	: x	
Number : True voice	: x	
Velocity Note ON	: x	
Velocity Note OFF	: x	
After Key's	: x	
Touch Ch's	: x	
Pitch Bender	: x	
	: x	
Control		
Change		
Prog Change : True #	: 0 0 - 1 2 7 *1	
System Exclusive	: x	
System : Song Pos	: x	
System : Song Sel	: x	
Common : Tune	: x	
System : Clock	: x	
Real Time : Commands	: x	
Aux : Local ON/OFF	: x	
Aux : All Notes OFF	: x	
Mes- : Active Sense	: x	
sages:Reset	: x	
Notes	: *1 For program 1 - 128, memory #1 - #90 is selected.	

SERVICE

The REV7 is supported by Yamaha's worldwide network of factory trained and qualified dealer service personnel. In the event of a problem, contact your nearest Yamaha dealer.

SERVICE

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