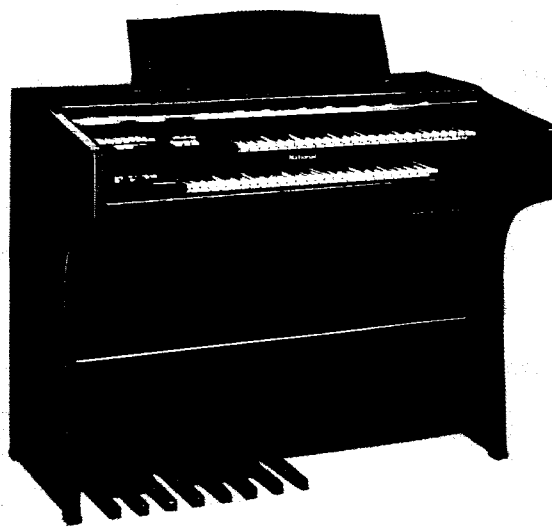


# Operating Instructions

Electronic Organ  
**SX-2500R**



 **National**

Before operating this set, please read these instructions completely.



# THE NATIONAL ELECTRONIC ORGAN OPERATING INSTRUCTIONS

Thank you very much for selecting the National Electronic Organ. We are sure you will enjoy many happy hours of entertainment from this excellent musical instrument.

This organ is a unique musical instrument designed for performance of the simplest and the most complicated music, and can be easily played by anyone, from the beginner to the most competent musician.

Read this booklet carefully for the proper use of your National Electronic Organ.

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# INTRODUCTION TO THE ELECTRONIC ORGAN



The diagram on the opposite page will help you to identify the various controls of the National Electronic Organ. The controls are fully explained in the following pages, but you set them as shown. This will enable you at once to produce musical sounds from the Electronic Organ.

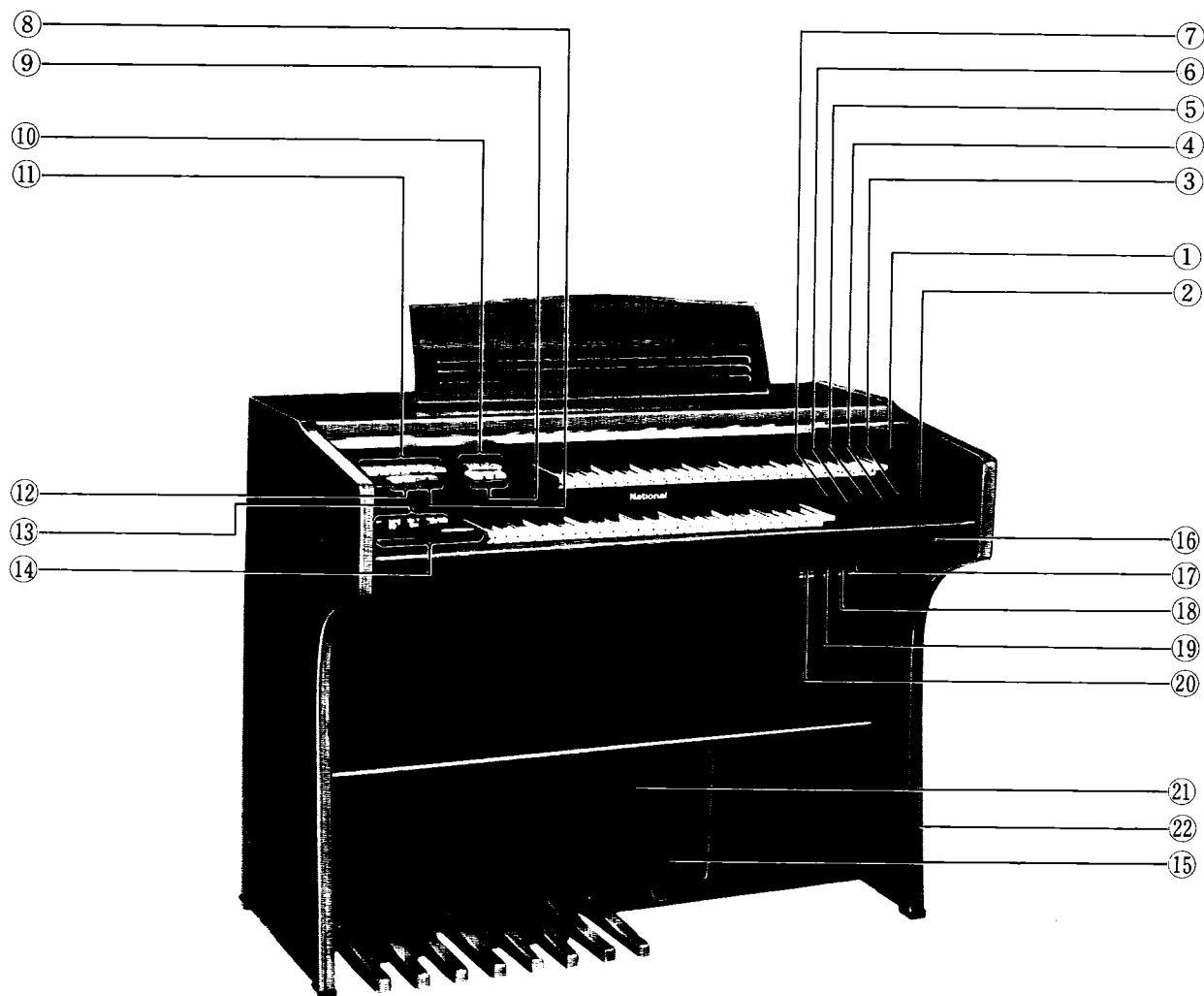
If you have any knowledge of music and can perhaps play the piano even moderately well, it is possible for you to play the National Electronic Organ in its simplest form. Even if, on the other hand, you have no musical knowledge, you will become a good player after referring to the following pages which explain, step by step, how to play the Electronic Organ in its special musical effects.

1. Power Switch & Volume Control  
This is turned to the right (clockwise) and set with the pointer upright.
2. Pedal Volume Lever  
This is set to the "2nd" position.
3. Brilliance Lever  
This is set to the center point.
4. Mandolin Speed Lever  
This is set to the center point.
5. Reverberation Select Lever  
This is set to the center point.
6. Manual Balance Lever  
This is set to the center point.
7. Reverberation Lever  
This is set to the "3rd" position.
8. Pedal Sustain Tabs  
The tab marked ON is depressed at the bottom.
9. Lower Manual Tone Tabs  
The tab marked FLUTE is depressed at the bottom.
10. Vibrato Tabs  
The tab marked ON is depressed at the bottom.
11. Upper Manual Tone Tabs  
The tab marked FLUTE 8' is depressed at the bottom.
12. Pedal Keyboard Tone Tabs  
The tab marked BASS is depressed at the bottom.
13. Auto-Play-Chord Buttons  
These are left as they are. (Instructions on the following pages will explain how to use them.)
14. Automatic Rhythm Controls  
These are left as they are. (Instructions on the following pages will explain how to use them.)
15. Expression Pedal  
This is depressed forward with the toe of the right foot. (Instructions on the following pages will explain how to use it.)

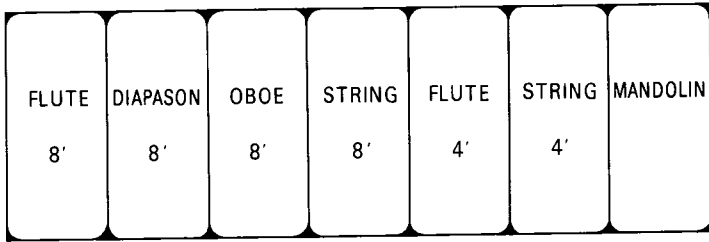
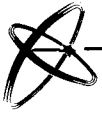
# NAMES OF PARTS



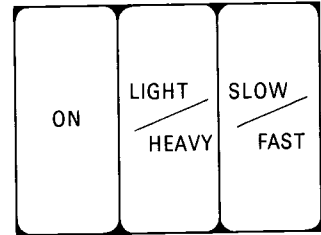
- |                                  |                                   |
|----------------------------------|-----------------------------------|
| 1. POWER SWITCH & VOLUME CONTROL | 12. PEDAL KEYBOARD TONE TABS      |
| 2. PEDAL VOLUME LEVER            | 13. AUTO-PLAY-CHORD BUTTONS       |
| 3. BRILLIANCE LEVER              | 14. AUTOMATIC RHYTHM CONTROLS     |
| 4. MANDOLIN SPEED LEVER          | 15. EXPRESSION PEDAL              |
| 5. REVERBERATION SELECT LEVER    | 16. PILOT LAMP                    |
| 6. MANUAL BALANCE LEVER          | 17. HEADPHONE JACK                |
| 7. REVERBERATION LEVER           | 18. INPUT TERMINAL                |
| 8. PEDAL SUSTAIN TABS            | 19. MIC. JACK                     |
| 9. LOWER MANUAL TONE TABS        | 20. MIC. VOLUME                   |
| 10. VIBRATO TABS                 | 21. GILDE CONTROL SWITCH          |
| 11. UPPER MANUAL TONE TABS       | 22. OUTPUT TERMINAL (At the rear) |



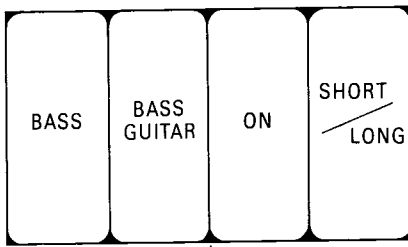
# NAMES OF CONTROLS



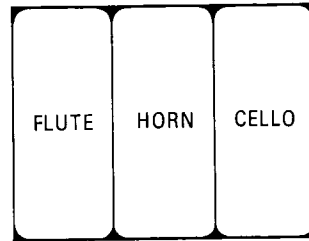
UPPER



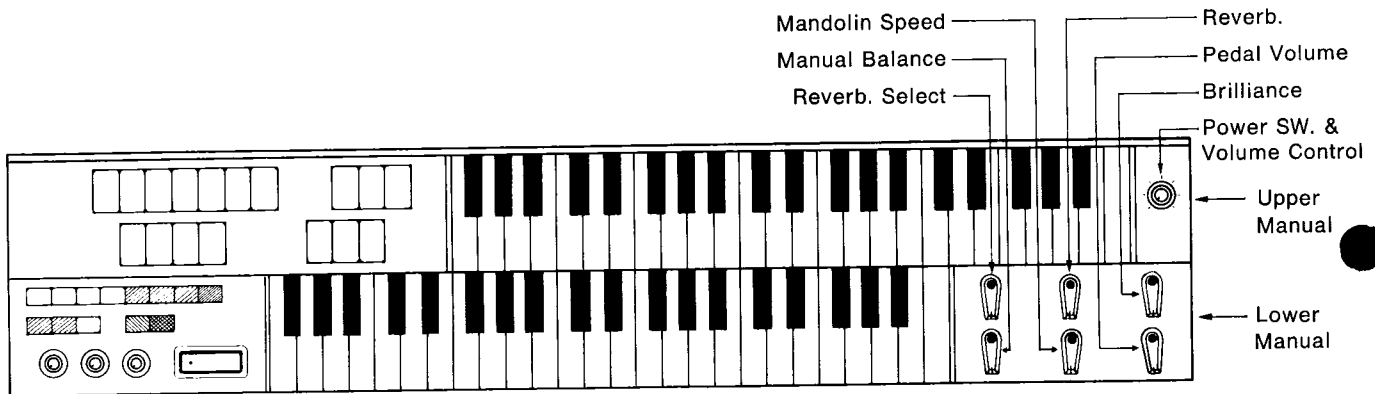
VIBRATO



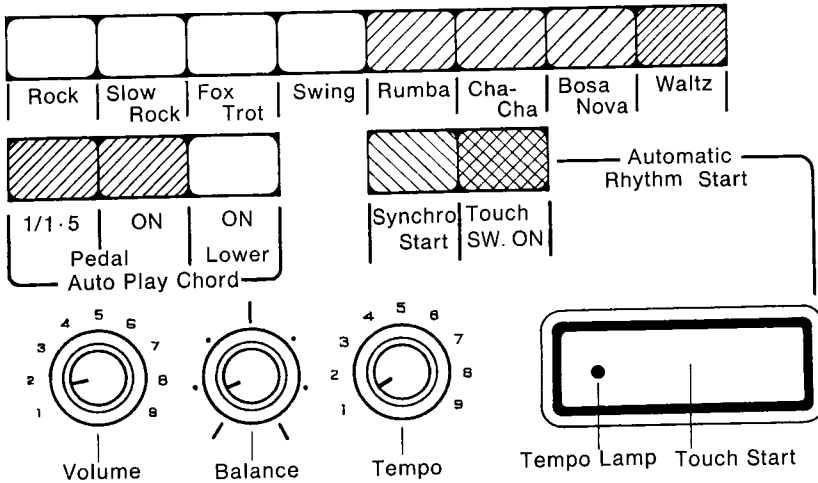
PEDAL  
SUSTAIN



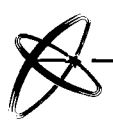
LOWER



## Automatic Rhythm & Auto Play Chord



# KEYBOARDS & COMPASS CHART



## Keyboards

There are three keyboards—UPPER MANUAL, LOWER MANUAL and PEDAL KEYBOARD.

The UPPER MANUAL keys are depressed (with the right fingers) mainly for melodies; the LOWER MANUAL keys (with the left fingers) mainly for accompaniments; and the PEDAL keys (with the toe of the left foot) mainly for bass.

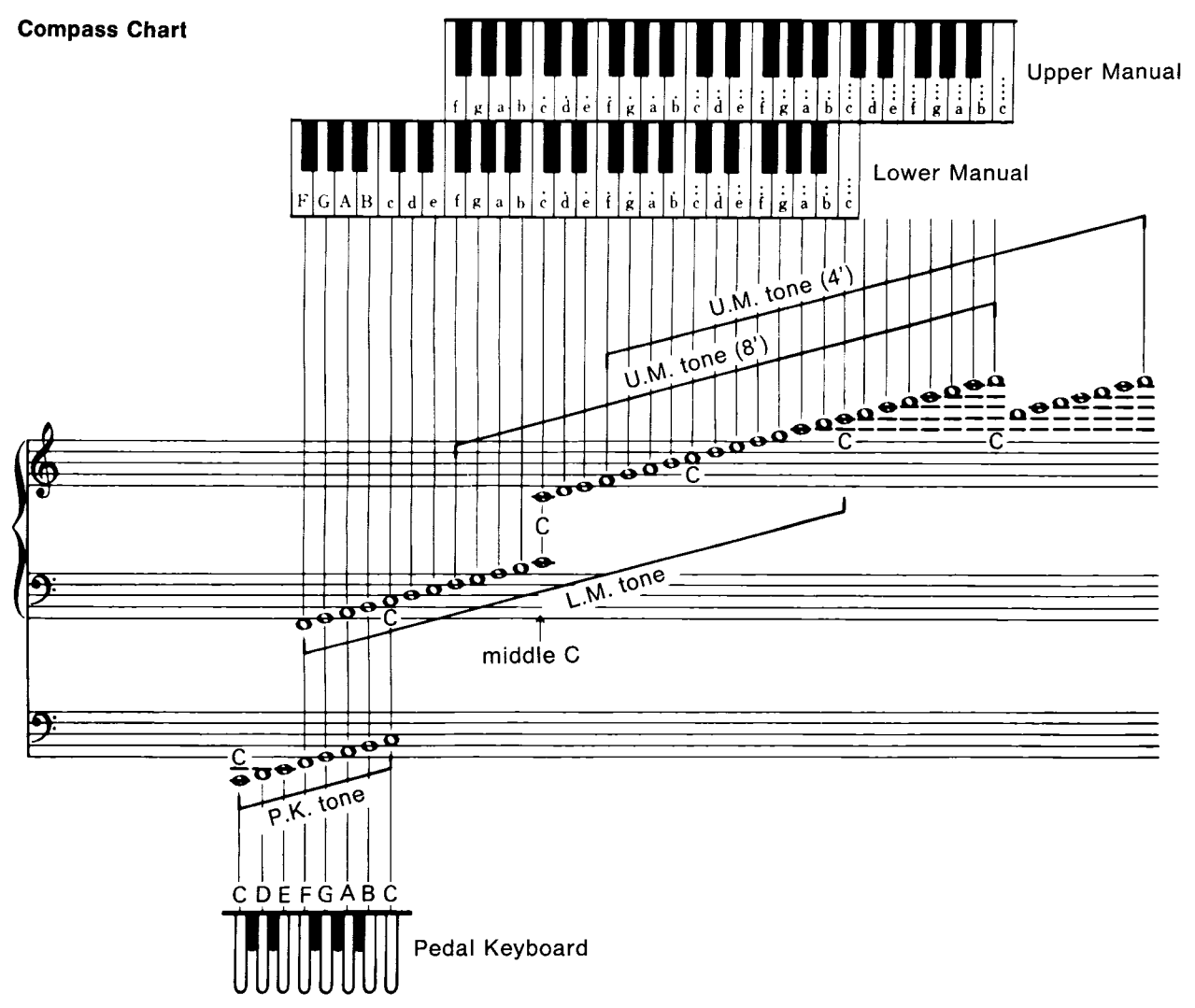
## Range

UPPER MANUAL	Extends from f to ċ 44 keys, 3½ octaves (medium to high-pitched tones)
LOWER MANUAL	Extends from F to ċ 44 keys, 3½ octaves (low to medium-pitched tones)
PEDAL KEYBOARD	Extends from C to c 13 keys, 1 octave (bass tones)

## Touch

Unlike the piano, the touch on the Electronic Organ keys does not change the volume or quality of sounds produced. You do not need to change your touch nor to learn a difficult finger technique, you may sounds produced. You do not need to change your touch nor to learn a difficult finger technique, you may play the keys with minimum of pressure.

## Compass Chart



## MAIN FEATURES



### Auto-Play-Chord

The Auto-Play-Chord is a new function which makes the rhythm accompaniment by the left hand and left foot much easier and automatic. This elementary step in playing has been considered very difficult. The organist can play the melody on the upper manual and the rhythm accompaniment can be automatically played with a selected rhythm, such as Rumba or Rock, by simply pressing the accompanying chord, which corresponds to that melody, on the lower manual and the pedal keyboard, if the organist becomes very proficient, he can have automatic play using only the lower manual or only the pedal keyboard.

Regarding the pedal keyboard, the bass accompaniment of only the sound from the depressed key can be automatically played or the sound from the depressed key and its 5th tone above (for example, the tone G for the sound C) can be automatically played without moving your foot.

### Automatic Rhythm

The Automatic Rhythm offers several types of rhythm, such as Rock and Bossa Nova with the sounds of many musical instruments, such as cymbals and maracas. Eight types of rhythm can be selected, and by using two or more rhythm buttons or by using the rhythm balance lever, many different rhythms can be created.

The Automatic Rhythm can be used together with the Auto-Play-Chord, and by using the synchronous start and the touch start switches to start the rhythm, a full variety of rhythm play can be easily obtained.

### Glide Control Effect

With a switch inside the expression pedal, the tone of the keyboard glides down a half-tone. And when the switch is turned off, portamento is added and the sound is returned to normal. This effect produces an effect like a steel guitar and the portamento produces an effect like a trombone.

## TONE TABS



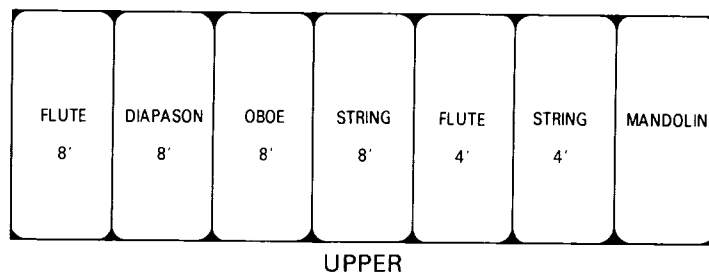
Before we start explaining the Organ in detail, it is important to examine the make-up of an organ in order that you may fully understand what is meant by Tones, Manuals, Footages, etc.

First, an organ obtains its 'big sound' from the various pitch levels, which can be produced by depressing one key. For example, when you depress a note, say middle C, on a piano, the sound produced in musical terms is one note only in one pitch. If you depress the same note on an organ and select for example, a 8' and 4' tone tab, the sound produced by that one key is in fact two octaves or two C notes.

On the SX-2500R, you can reproduce two pitch levels: 8' and 4'. The footage classification, by the way, stems from the pipe organ; i.e., the length of pipe required to produce a particular frequency or note. A 4' pipe would produce the sound an octave higher than an 8' pipe, simply because it is half length. Each tone tab on a National Organ has a corresponding pitch level.



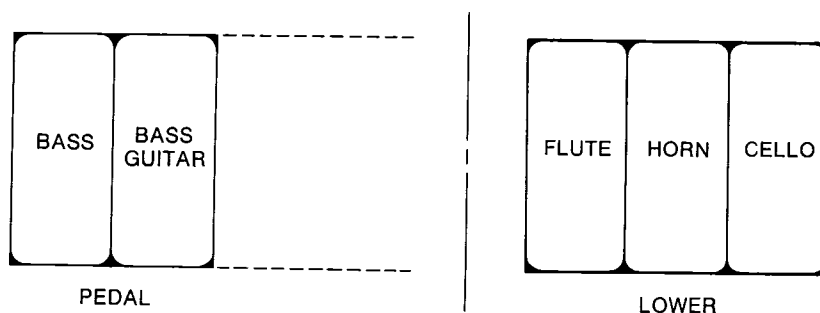
### Upper Manual Tone Tabs



The upper manual provides four 8' tones, two 4' tones and one special effect tone: FLUTE 8', DIAPASON 8', OBOE 8', STRING 8', FLUTE 4', STRING 4', and MANDOLIN.

Tones on the organ are not necessarily designed to imitate the instruments of the orchestra. They are there to indicate to you the player what sound you are likely to hear when depressing the various tone tabs. There are three basic families of tones: Flute, Reed and String. There is a fourth, Diapason, is a combination of all three families of tone having some Flute, a little Reed and a little String in it's harmonic make-up.

The Mandolin tone is a repeated percussive voice that can be used solo or with other tones.



### Lower Manual Tone Tabs

The lower manual provides three tones: FLUTE, HORN and CELLO.

These tones can be played as solo voices, but are usually combined to provide suitable accompaniment to upper manual voices.

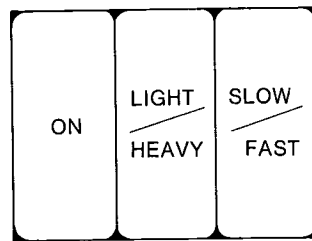
### Pedal Keyboard Tone Tabs

The pedal keyboard provides BASS and BASS GUITAR.

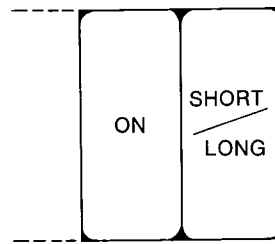
The BASS with sustain is similar to that of a string bass.

The BASS GUITAR Tone with initial attack resembles the modern bass guitar in character when used with sustain. Without sustain, the combination of pedal tones produces a brass bass sound which is heard in a military or brass band.

# EFFECT TABS



VIBRATO



PEDAL

## Vibrato Tabs

The three vibrato tabs give the vibrato effect and change the depth and speed of vibrato.

### VIBRATO ON-OFF

The VIBRATO ON-OFF tab gives vibrato to the music when depressed at the bottom and eliminates it when depressed at the top. The other two tabs (Vibrato Heavy-Light & Vibrato Fast-Slow) can change the degree of vibrato. When you adjust the degree of vibrato to suit the tune to be played, you can produce or eliminate the vibrato effect instantly by operating the VIBRATO ON-OFF tab even while playing.

### VIBRATO HEAVY-LIGHT

The VIBRATO HEAVY-LIGHT tab can change the depth of vibrato by making vibrato heavier (when depressed at the bottom) or lighter (when depressed at the top).

Note that Vibrato Heavy-Light and Vibrato Fast-Slow tabs operate only when the Vibrato On-Off tab is in the ON position.

### VIBRATO FAST-SLOW

The VIBRATO FAST-SLOW tab can change the speed of vibrato by making vibrato faster (when depressed at the bottom) or slower (when depressed at the top.)

Though the combinations of these vibrato tabs are at the discretion of the player, Light and Slow Vibrato is most suitable to church and classical music, while Heavy and Fast Vibrato is suitable for popular music in general.

## Pedal Sustain Tabs

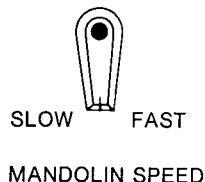
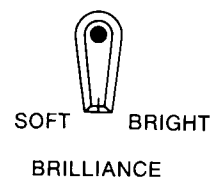
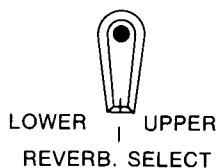
### PEDAL SUSTAIN ON-OFF

The PEDAL SUSTAIN ON-OFF tab gives the pedal sustain effect to the pedal tones. The pedal sustain effect means that a bass tone produced by the pedal keyboard decays gradually after the depressed pedal is released. When this tab is ON, you can obtain the pedal sustain effect.

### PEDAL SUSTAIN SHORT-LONG

The PEDAL SUSTAIN SHORT-LONG tab can change the duration of the sustained bass tones. By depressing the tab at the bottom or at the top, you can obtain long or short pedal sustain effect.

# EFFECT LEVERS



## Reverberation Lever

The REVERBERATION lever can change the length of the reverberation effect, giving a spaciousness and warmth to the music from OFF to 3rd degree. By changing the degree of the reverberation effect, you can bring various special effects to the music.

## Reverberation Select Lever

The REVERBERATION SELECT lever can select the reverberation ratio of the Upper Manual tones and the Lower Manual tones. When you set this lever to the center point, the reverberation length of both manuals becomes equal. When this lever is turned to the UPPER position, the reverberation of the Upper Manual tones exceeds that of the Lower Manual tones, and vice versa with the lever turned to the LOWER position.

## Brilliance Lever

The BRILLIANCE lever is similar to the brilliance knob or the tone control knob on a good high fidelity amplifier system. It can control the upper harmonics of tones from SOFT to BRIGHT, and its normal position is the center point. When turned to the BRIGHT position, the brilliance of tones of the manual keyboards is emphasized, and when turned to the SOFT position, the brilliance is reduced completely. This lever is particularly effective in making the String tone and the Oboe tone more brilliant.

## Manual Balance Lever

The MANUAL BALANCE lever can control the volume balance between the Upper Manual and the Lower Manual at the discretion of the player. When this lever is set to the center point, the volume of both manuals becomes nearly equal. The lever set to the Upper position causes the volume of the Upper Manual to exceed that of the Lower Manual, and vice versa with the lever set to the Lower position.

## Pedal Volume Lever

The PEDAL VOLUME lever can control the volume of the sounds of the Pedal Keyboard from OFF to 3rd degree. Set the Pedal Volume lever to the proper position to balance the sound volume of the Pedal Keyboard with those of the Upper and Lower Manuals.

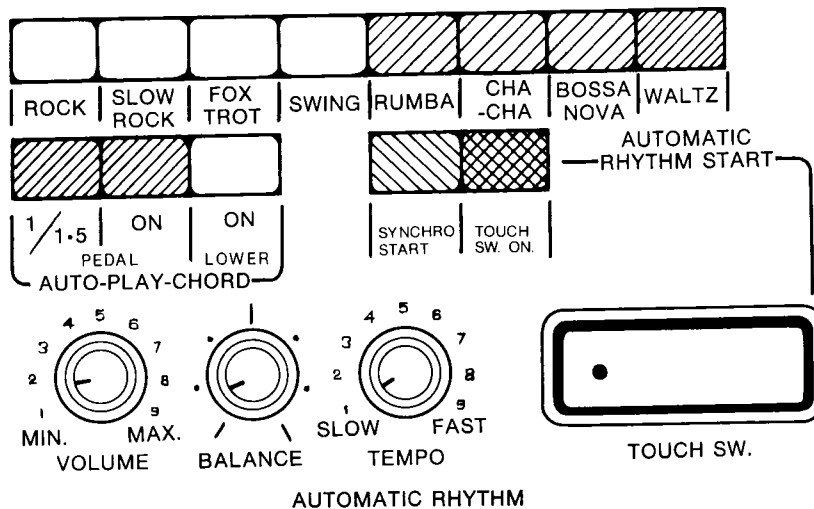
## Mandolin Speed

The MANDOLIN SPEED lever can control the speed of the MANDOLIN from SLOW to FAST degree. By changing the degree of the mandolin speed, you can bring various special effects to the music.

# AUTOMATIC RHYTHM CONTROLS



The automatic rhythm section has three rhythm control knobs, eight rhythm selector buttons, two rhythm start switches, one tempo lamp and touch start switch.



## Rhythm Selection Buttons

This rhythm section has eight rhythm selectors. They are Rock, Slow Rock, Fox Trot, Swing, Rumba, Cha-Cha, Bosa Nova and Waltz. Select your favorite and push the corresponding button.

This button switch turns on the rhythm when you push it. These are interlocking switches, so that when you push a rhythm selection, the previous rhythm turns off automatically.

If you push two or more rhythm selection buttons at the same time, a complex and interesting rhythm can be created.

## Rhythm Volume Knob

When the RHYTHM VOLUME knob is turned to the right (clockwise), the volume of the rhythm increases gradually. Adjust the volume of the rhythm according to the volume of the keyboard sounds.

It should be noted with caution that the main volume and expression pedal of the organ have some influence on the volume of the rhythm.

## Rhythm Balance Knob

If the knob is turned clockwise, the percussion instrument sound of the cymbals and the maracas becomes gradually louder, while the sound of the other percussion instruments becomes lower. If the knob is turned counterclockwise, the sound of the claves, the cowbell and the drums become louder and the sound of the cymbals and the maracas becomes lower. Thus, set it to the desired position. Also, if this knob is turned clockwise or counterclockwise until it stops, it can be used as a cancel effect, and in this way various rhythms can be created.

### Tempo Control Knob

If you turn the TEMPO CONTROL knob clockwise, the tempo of the rhythm increases. The tempo of the rhythm should be adjusted according to the music you play.

The Tempo Lamp in the touch start switch is designed to illuminate on the first beat. Therefore, you can easily adjust the tempo by switching the tempo lamp. If the synchronous start switch is turned to the ON position, the tempo lamp indicates a beat interval even though the rhythm has not yet started. It is, therefore, possible to adjust the beat without emitting the percussion instrument sounds.

### Rhythm Start Switches

There are two starting methods for rhythm as shown below. In both cases, the rhythm begins with the first beat.

#### SYNCHRONOUS START BUTTON

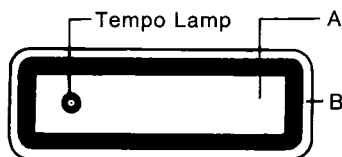
If the SYNCHRONOUS START button is pushed beforehand (in the condition where the button is depressed), the rhythm will start when either the lower manual or the pedal keyboard is played. In this manner, it is very convenient. Using the Touch Start switch, you can stop the rhythm.

If the performance is conducted without using the synchronous start button, this button should be pressed again to set it to the OFF position (in the condition where the button is not depressed). The rhythm will be turned off by pushing this button during performance.

#### TOUCH START SWITCH

This TOUCH START switch is especially convenient because on-off control of the rhythm can be quickly accomplished by simply gently touching it (when the Touch Switch button is set to the ON position). Note that, even when the Synchronous Start button is ON, that this Touch Start switch can be used to control on-off operation.

\*When using the Touch Start switch, be sure to touch the inside of the switch, part [A] and the outside, part [B], at the same time. Parts [A] and [B] are designed to be touched simultaneously and, if only one part is touched, the start switch will not operate. Therefore, care should be exercised.



#### TOUCH SWITCH ON-OFF BUTTON

This button is to prevent mistaken operation of the Touch Start Switch, located on the control panel. When not using the rhythm, it should be set to the OFF position (upper position). When so set, the rhythm cannot be started even if the Touch Start switch is accidentally touched. To use the rhythm, press this button (lower position) and use the touch start switch. The touch start switch can, however, be used to stop the rhythm no matter to which position this button (ON or OFF) is set.

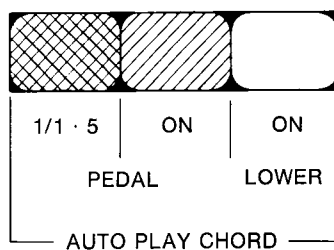
# AUTO-PLAY-CHORD CONTROLS



The Auto-Play-Chord is a new function which makes the rhythm accompaniment by the left hand and left foot much easier and automatic. This elementary step in playing has been considered very difficult. The organist can play the melody on the upper manual and the rhythm accompaniment can be automatically played with a selected rhythm, such as Rumba or Rock, by simply pressing the accompanying chord, which corresponds to that melody, on the lower manual and the pedal keyboard. Accordingly, even those who are just beginners can easily play the melody with the right hand while playing the accompaniment.

Because this Auto-Play-Chord is connected to the automatic rhythm, if one of the rhythm selection buttons is not pushed, the automatic accompaniment will not be obtained, in another words, only when the automatic rhythm is operating does the Auto-Play-Chord function. When you don't require the percussive instrument tones of the automatic rhythm, turn the "Rhythm Volume" knob completely counterclockwise (Min.) and only the lower manual and pedal tones will play the rhythm. Control the speed with the "Tempo" knob. The starting function of the Auto-Play-Chord is the same as that of the automatic rhythm.

Also, with this Auto-Play-Chord, automatic accompaniment using only the lower or manual, only the pedal keyboard, or using both the lower manual and the pedal can be obtained. Accordingly, it is very convenient when practicing the lower manual and the keyboard.



## Auto-Play-Chord Lower On-Off Button

By simply pushing this button to the ON position (lower position) and depressing the chord, which corresponds to the playing melody, with the lower manual, accompaniment by the lower manual at the selected rhythm can be automatically obtained.

When not using, please be sure to push this button again to set it to the OFF position (upper position).

## Auto-Play-Chord Pedal On-Off Button

Push this button to the ON position (lower position), push the root tone among the chord, which is played on the lower manual (C. if the chord is C, E, and G), at the pedal keyboard, and the bass sound at the selected rhythm will be automatically obtained. If using together with the Auto-Play-Chord of the lower manual, the rhythm accompaniment may be played by simply pressing the lower manual and the pedal keyboard. Thus, you are able to play very easily.

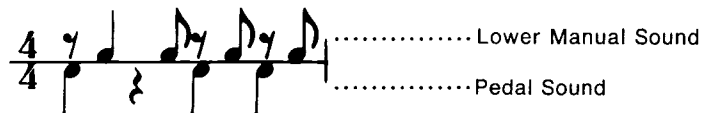
When not using this button, be sure to set it to the OFF position (upper position).

### Auto-Play-Chord Pedal 1/1 · 5 Button

Automatically rhythm accompanying bass sound is accomplished by only the pressing pedal key tone when this button is set to the "1" position (upper position). If this button is set to the "1 · 5" position (lower position), the pressing pedal key tone and its fifth tone (G tone when the C key is pressed) will create a rhythm automatically without moving the foot.

Also, this effect is applicable to "Fox Trot", "Rumba", "Cha-Cha" and "Waltz". It is not applicable to other rhythms because it is not suitable.

When you select the Rumba rhythm with the Auto-Play-Chord, the sound from the lower manual and pedal is as follows:



The accompaniment is repeated according to the following rhythm pattern, when another rhythm is selected, by the same method.

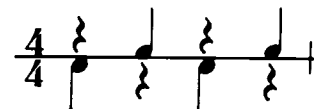
[Rock]



[Slow Rock]



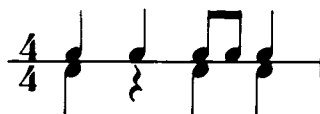
[Fox Troy]



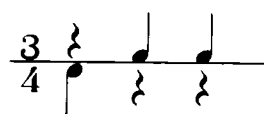
[Swing]



[Cha-Cha]



[Waltz]



[Bosa Nova]



# MAINTENANCE & SPECIFICATIONS



- \*Be sure to turn the switch off after playing.
- \*Because the keys are plastic, do not use thinner, benzine or other petro-chemicals, but polish them with a dry, soft cloth.
- \*Never attempt to touch the inner parts of the unit. For service or repairs, contact the store where purchased. When replacing a fuse, be sure it is the correct rating.
- \*The National Electronic Organ creates sounds with IC's and transistors, so tuning is entirely unnecessary.

Keyboards:	Upper Manual	44 keys	f-c	(3½ octaves)
	Lower Manual	44 keys	F-c	(3½ octaves)
	Pedal Keyboard	13 keys	C-c	(1 octave)
Tones:	Upper Manual	Flute 8', Dipason 8', Oboe 8', String 8', Flute 4', String 4', Mandolin		
	Lower Manual	Flute, Horn, Cello		
	Pedal	Bass, Bass Guitar		
Effects:	Vibrato (on-off, Light/Heavy, Slow/Fast)	Manual Balance,		
	Reverberation,	Reverberation Select,		
	Brilliance,	Pedal Volume,	Glide Control	
	Pedal Sustain,	Pedal Sustain Short-Long,	Mandolin Speed	
Automatic Rhythm:	Rhythm Selectors	Rock, Slow Rock, Fox Trot, Swing, Rumba, Cha-Cha, Bossa Nova, Waltz		
	Rhythm Volume,	Rhythm Balance,	Tempo Control,	
	Tempo Lamp,	Synchronous Start,	Touch Start Switch,	
	Touch Switch On-Off			
Auto-Play-Chord:	Auto-Play-Chord Lower,	Auto-Play-Chord Pedal,		
	Auto-Play-Chord Pedal 1/1 - 5			
Others:	Power Switch & Volume Control,	Pilot Lamp,	Expression Pedal,	
	Headphone Jack,	Input Terminal (25 mV, 20 kΩ),		
	Microphone Terminal (with Volume),	Output Terminal (360 mV, 600Ω),		
Output:	30 W (Peak Power)			
Speakers:	20 cm (8'') × 2, 8 cm (3'') × 1			
L.S.I:	1			
IC's:	11			
Transistors:	156			
Diodes:	101			
Power Requirement:	55 W AC 100/120/220/240 V, 50-60 Hz			
Cabinet:	Teak Grain			
Dimensions:	111 cm (43.7'') [W] × 92 cm (36.3'') [H] × 59 cm (23.2'') [D]			
Net Weight:	68 kg (158 lb.)			





**Matsushita Electric Trading Co., Ltd.**  
P.O. Box 288, Central Osaka Japan