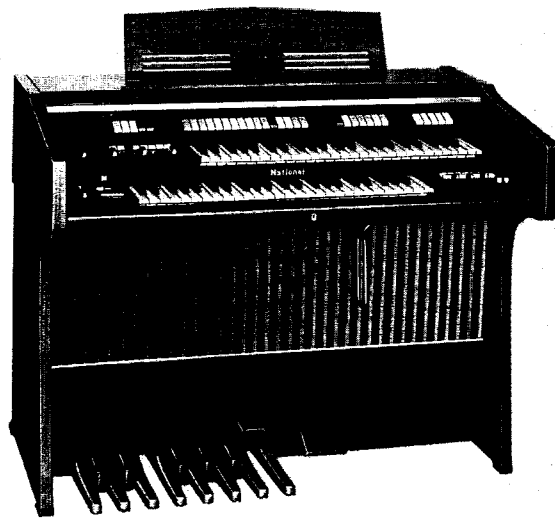


# Operating Instructions

Electronic Organ  
**SX-5500G**



 **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



You will understand the detailed operation of these controls by reading the following pages, but first arrange these controls as shown on this page with reference to the next page. With such an arrangement, your Electronic Organ will readily produce musical sounds.

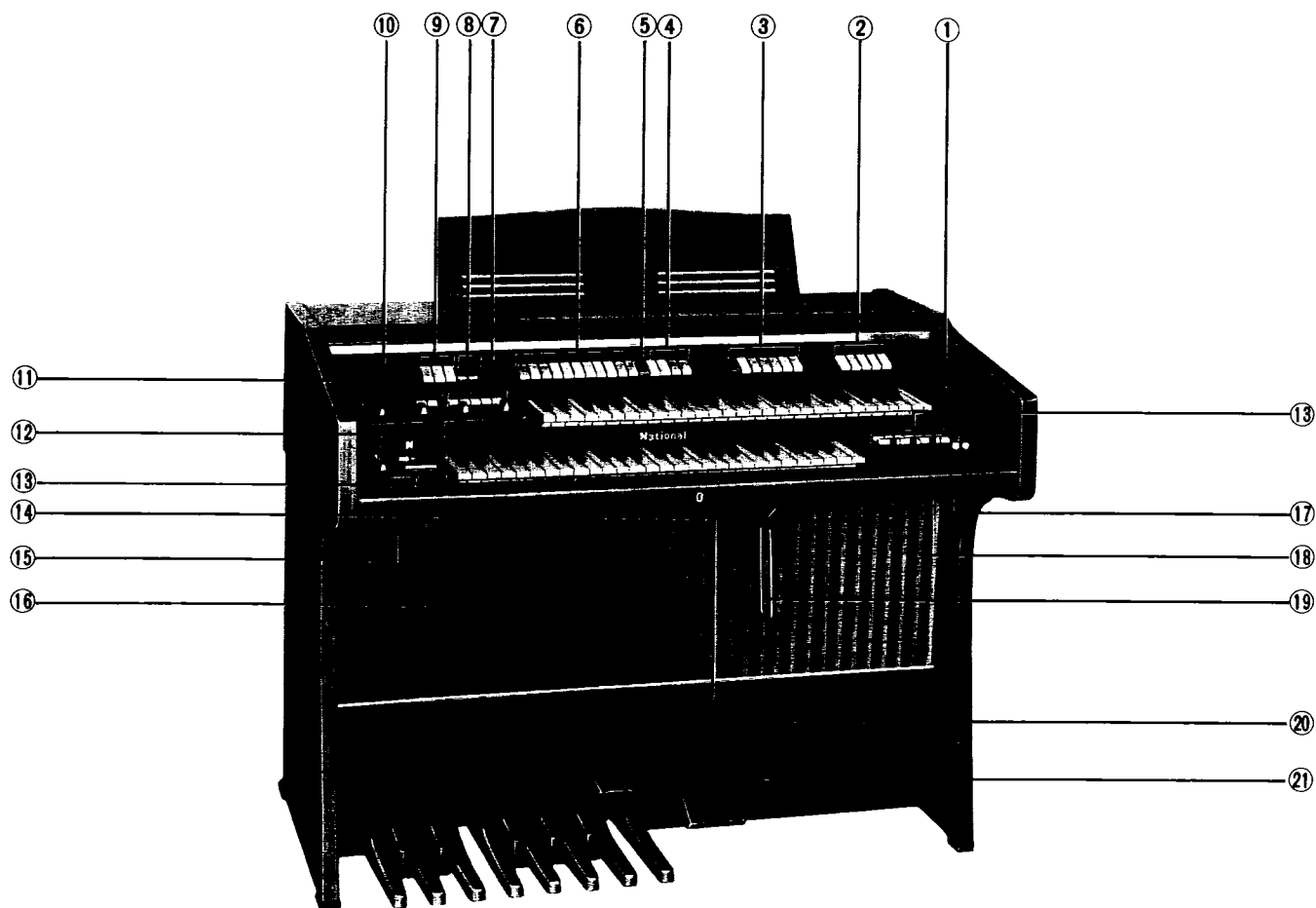
If you have any knowledge of music and can perhaps play the piano or the electronic organ even moderately well, you will immediately be able to play the National Electronic Organ in its simplest form. Even if you have no musical knowledge, you will become a good player after referring to the following pages which explain, step by step, how to play the Electronic Organ with its special musical effect.

1. Power Switch & Volume Control Knob  
This is turned to the right (clockwise) and set with the pointer upright.
2. Lower Manual Tone Tabs  
The tab marked FLUTE 8' is depressed at the bottom.
3. Effect Tabs  
The tab marked MULTI-TREMOLO ON is depressed at the bottom.
4. Percussive Tone Tabs  
These are not depressed. (Instructions on the following pages will explain how to use them.)
5. Upper Sustain Tab  
This is not depressed. (Instructions on the following pages will explain how to use it.)
6. Upper Manual Tone Tabs  
The tab marked FLUTE 8' is depressed at the bottom.
7. Pre-set Sound Buttons  
These are not depressed. (Instructions on the following pages will explain how to use them.)
8. Pedal Sustain Tabs  
The tab marked ON is depressed at the bottom.
9. Pedal keyboard Tone Tabs  
The tab marked BASS 8' is depressed at the bottom.
10. Pedal Volume Knob  
This is turned to the right (clockwise) and set to the center point.
11. Harmonizer Controls  
These are left as they are. (Instructions on the following pages will explain how to use them.)
12. Effect Levers  
These are set to the center point.
13. Automatic Rhythm Control  
These are left as they are. (Instructions on the following pages will explain how to use them.)
14. Expression Pedal  
This is depressed forward with the toe of the right foot. (Instructions on the following pages will explain how to use it.)

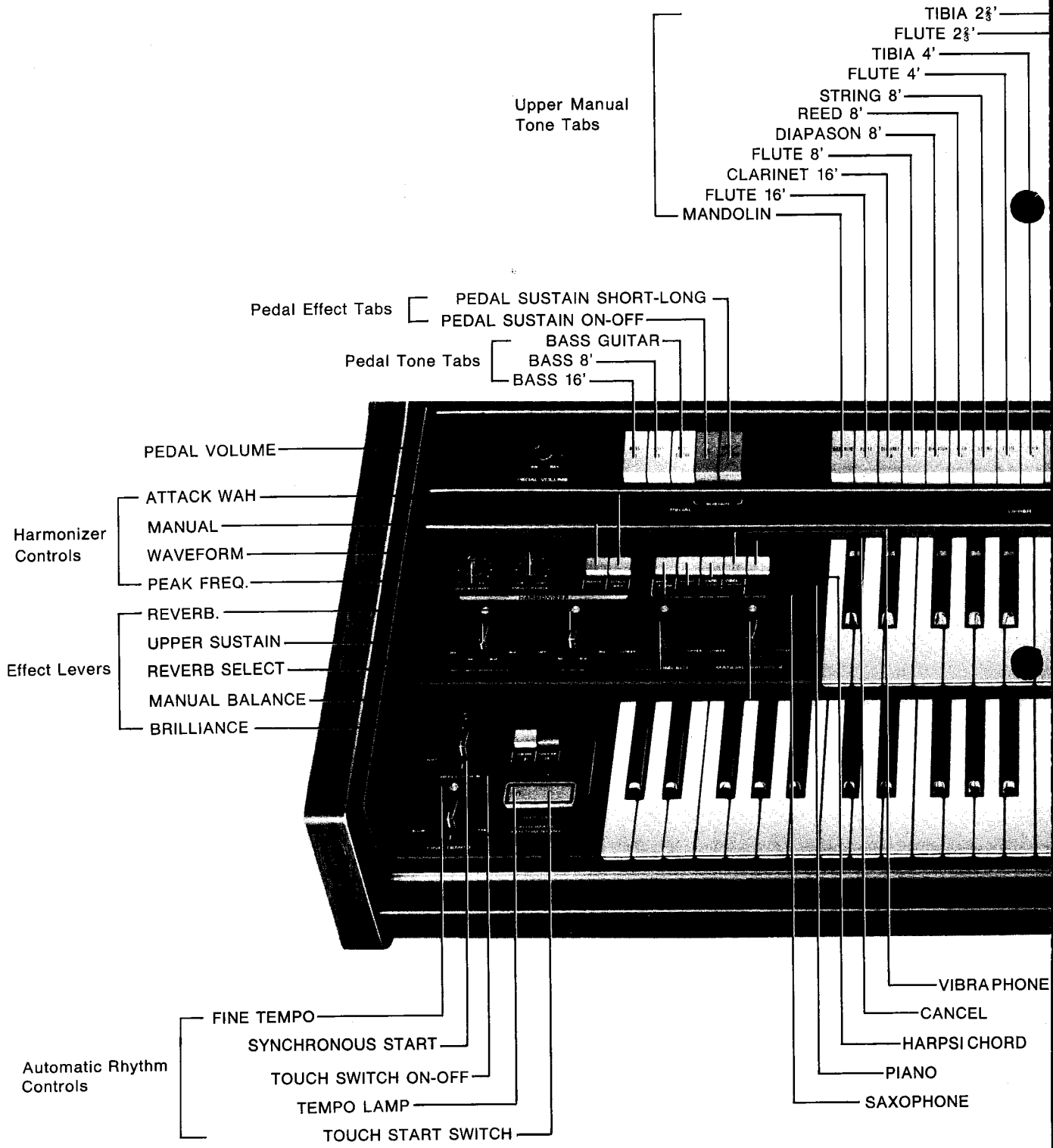
# NAMES OF PARTS

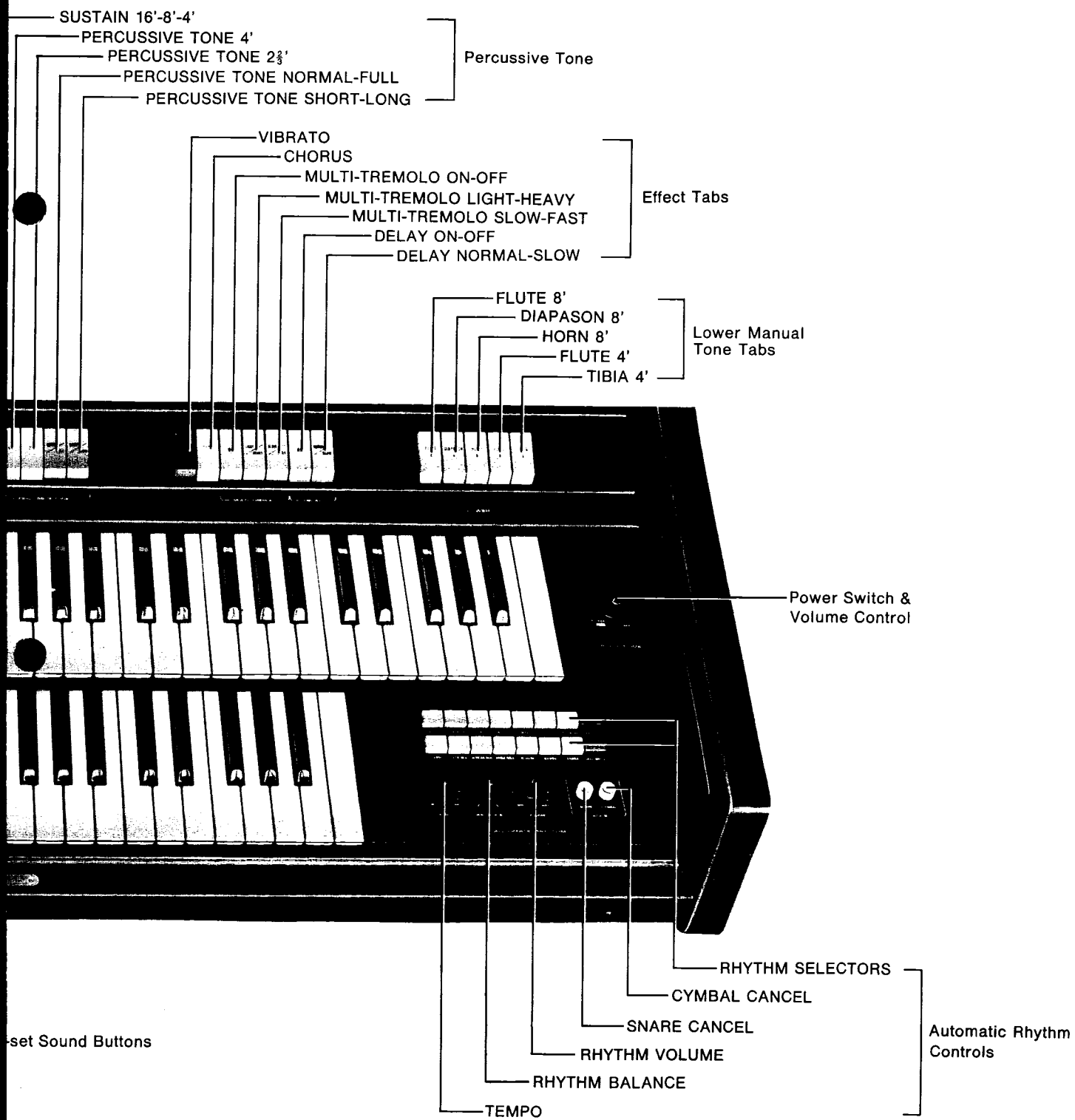


- |                                      |                             |
|--------------------------------------|-----------------------------|
| ① POWER SWITCH & VOLUME CONTROL KNOB | ⑫ EFFECT LEVERS             |
| ② LOWER MANUAL TONE TABS             | ⑬ AUTOMATIC RHYTHM CONTROLS |
| ③ EFFECT TABS                        | ⑭ EXPRESSION PEDAL          |
| ④ PERCUSSIVE TONE TABS               | ⑮ MICROPHONE TERMINAL       |
| ⑤ UPPER SUSTAIN TAB                  | ⑯ INPUT JACK                |
| ⑥ UPPER MANUAL TONE TABS             | ⑰ OUTPUT TERMINAL           |
| ⑦ PRE-SET SOUND BUTTONS              | ⑱ HEADPHONES JACK           |
| ⑧ PEDAL SUSTAIN TABS                 | ⑲ SUSTAIN KNEE LEVER        |
| ⑨ PEDAL KEYBOARD TONE TABS           | ⑳ GLIDE CONTROL SWITCH      |
| ⑩ PEDAL VOLUME KNOB                  | ㉑ FULL-BASS PEDAL           |
| ⑪ HARMONIZER CONTROLS                |                             |



# NAMES OF CONTROLS





# MAIN FEATURES



## Harmonizer

The Harmonizer has a function, which has simplified the function of the music synthesizer, born from a composite of electronic and sound technology with which it is constructed. It can be called a mini-synthesizer.

This electronic organ has adopted three music-source waveforms (square wave, stair-step wave and sawtooth wave) and has a unique design. It is a harmonizer which can vary the degree of mixture of the square waves and sawtooth waves.

Because it can freely produce tones that suit your taste—round and soft clarinet tones or brilliant and radiant trumpet tones or mute-like tones—by operating two kinds of control knobs, you can effectively use the unique tones to enjoy performances which are rich in originality.

Because the harmonizer has been newly added to this electronic organ, you can enjoy the pleasure of creating tones more than you have in the past.

## Pre-set Sounds

Pre-set Sounds are the unique tone buttons with which you can freely obtain the characteristic sounds of the saxophone, piano, harpsichord or vibraphone—tones which are said to be difficult to produce by using only a combination of the fundamental tone tablets; moody saxophone, rich reverberations of the piano, transparent, delicate tones of the harpsichord and the sweet sound of the vibraphone can be enjoyed even by a beginner with the one-touch operation. When a Pre-set button is pressed during a performance, all of the other upper keyboard tones will be cancelled, and the pre-set sound that you like can be obtained on a preferential basis. Because of it, effective contrasts can be added to the music to produce a rich performance.

## Full-Bass Pedal

A full-scale organ has a pedal keyboard of  $2\frac{1}{2}$  octaves (32 keys), permitting the performer to play throughout the wide bass range. This organ has a Full-Bass Pedal with only one pedal, giving the same bass range (32 keys) of the full-scale organ, in addition to the pedal keyboard (13 keys) of the ordinary organ.

This new pedal keyboard system is a completely new development from National. By using this Full-Bass Pedal, the lowest sound of the accompanying chord (lower manual) is always selected and a bass sound which is one octave lower than the former is selected without selecting the scale on the pedal keyboard, thereby permitting the performer to freely play the bass sound range of 32 keys with the left hand, using the Full-Bass Pedal even while playing the pedal keyboard of 13 keys.

It is easy to create a quick bass solo, or create the sound of the electric bass guitar during performance of jazz or rock music. Thus new horizons of playing, formerly almost impossible, have been opened to the performer. And, in addition, it demonstrates its full power when used for the performance of pipe organ tunes.



### **Electronic Multi-Tremolo Effect**

National engineers have ingeniously used their skills to provide a beautiful multi-speed tremolo effect. The realism is created by using stereophonic amplifiers to cause the sound to flow from one speaker system to the other. The advantages of the National system over other mechanical types are that the National system cannot wear out because there are no moving parts—it is noiseless in operation, and the tremolo can be heard through headphones when silent practice is required. Finally, the Organ sounds can be recorded direct to a tape recorder without the need for microphones, and the quality of the sound is therefore perfect because the tremolo can also be recorded onto tape. In addition, the speed and depth of sound can be set to suit your own taste.

There is also an "Electronic Chorus" effect in addition to the "Multi-Tremolo" effect. This effect creates a rotational effect in slower sounds and is very useful for church music and special effects for light music.

### **Sustain Effect**

Sustain is an effect of gradually reducing the volume automatically of the voice selected after the key has been released. The SX-5500G is designed to give the sustain effect to all of the 16', 8' and 4' tones, and to the Harmonizer voice. You will soon realize how attractive this effect is and find many uses for it.

### **Delay Effect**

The delay effect is that effect created when some other effect is applied after pressing the keys. This delay effect can be used for the Multi-Tremolo and the Vibrato effects, permitting the creation of an effect as fine and delicate as that of the stringed instruments. And, because National has created the Multi-Tremolo electronically, the delay effect can now be applied to the tremolo effect for the first time in the world, thus greatly enlarging the possible playing spectrum.

### **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. Sixteen 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 operation is very easy because the rhythm is started by the Touch Start switch or by the Synchronous Start.

### **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.

# KEYBOARDS & COMPASS CHART



## Keyboards

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

The UPPER MANUAL keys are depressed (with the right hand) usually for solo melodies; the LOWER MANUAL keys (with the left hand) mainly for accompaniment; and the PEDAL keys (with the left foot) for bass sounds.

## RANGE

UPPER MANUAL	Extends from c to c; (medium to high-pitched tones)	49 keys, 4 octaves
LOWER MANUAL	Extends from C to c; (low to medium-pitched tones)	49 keys, 4 octaves
PEDAL KEYBOARD	Extends from C to c; (bass tones)	13 keys, 1 octave
	Extends from C to g;	1 Full-Bass Pedal (32 notes)

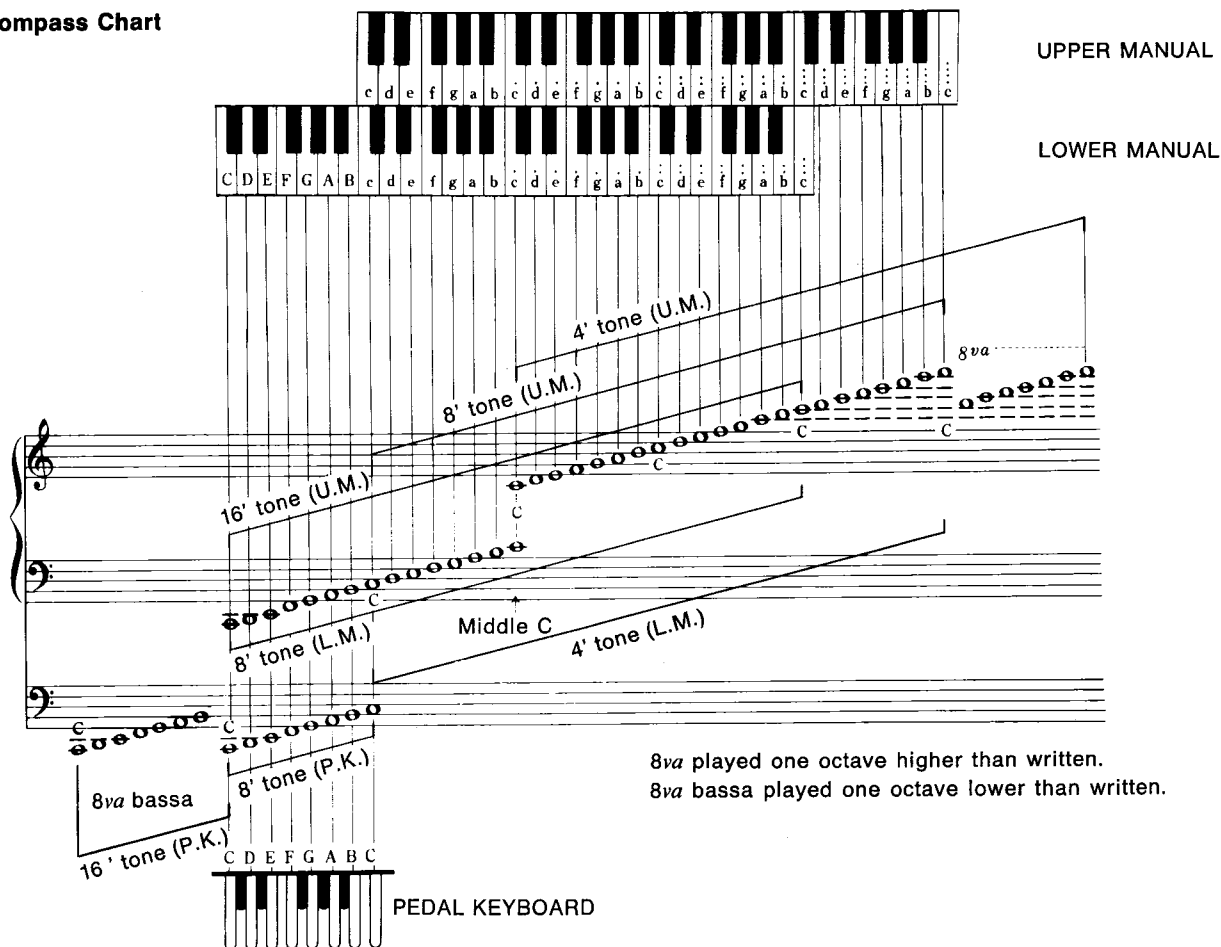
## TOUCH

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 to play the organ effectively.

## PLAYING TIP

In order to assure accuracy when playing the pedals, it is important to seat yourself on the organ bench in the same position each time you play. Naturally, this position can vary from one person to another, but the best way is to sit at a position where the left foot strikes the G pedal accurately every time.

## Compass Chart



# 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 16', 8' and 4' tone tab, the sound produced by that one key is in fact three octaves or three C notes.

On the SX-5500G, you can reproduce four pitch levels: 16', 8', 4' and  $2\frac{2}{3}'$ . 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 16' pipe would produce the sound an octave lower than an 8' pipe, simply because it is twice the length, and so on. Each tone tab on a National Organ has a corresponding pitch level.

## Upper Manual Tone Tabs

MANDOLIN	FLUTE 16'	CLARINET 16'	FLUTE 8'	DIAPASON 8'	REED 8'	STRING 8'	FLUTE 4'	TIBIA 4'	FLUTE $2\frac{2}{3}'$	TIBIA $2\frac{2}{3}'$	
UPPER											

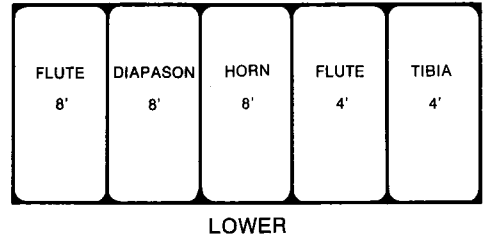
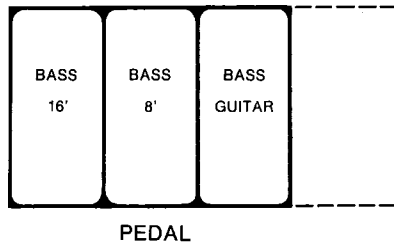
The upper manual provides two 16' tones, four 8' tones, two 4' tones, two  $2\frac{2}{3}'$  tones and one special effect tone: FLUTE 16', CLARINET 16', FLUTE 8', DIAPASON 8', REED 8', STRING 8', FLUTE 4', TIBIA 4', FLUTE  $2\frac{2}{3}'$ , TIBIA  $2\frac{2}{3}'$  and MANDOLIN.

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 its harmonic make-up.

The 16', 8' and 4' tones can be used as solo voices or in any combination. All these tones can be used effectively with sustain.

This organ has two  $2\frac{2}{3}'$  pitch tones which are described as a harmonic voice and these, added to the aforementioned three pitch levels, will add even greater body to the sound produced, so pitch levels are, put in a different way, octaves or harmonic couplers. These tones will not sustain.

The Mandolin tone is a repeated percussive voice that can be used solo or with other tones. It produces an attractive solo voice with sustain added.



### Lower Manual Tone Tabs

The lower manual provides three 8' tones and two 4' tones: FLUTE 8', DIAPASON 8', HORN 8', FLUTE 4' and TIBIA 4'.

These tones can be played as solo voices, but are usually combined to provide suitable accompaniment to upper manual voices. These tones do not sustain.

### Pedal Keyboard Tone Tabs

The pedal keyboard provides one 16' tone, one 8' tone and one special effect tone: BASS 16', BASS 8' and BASS GUITAR.

The Bass 8' with sustain is similar to that of a string bass.

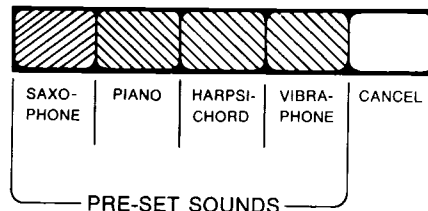
The Bass 16' tone is particularly attractive when used for playing Theatre, Classical and Church Organ music.

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

# PRE-SET SOUNDS



Pre-set sound means that the tone has been determined in advance. When the Pre-set button is pressed, the tones of the upper keyboard are cancelled, and the selected Pre-set sound will be produced as you play. To change back to the tones of the upper keyboard during a performance, simply press the Cancel button at the extreme right; the changeover will be automatic. If two Pre-set buttons are pressed at the same time, only the one on the right will take effect. Multitremolo, Chorus, Vibrato, Reverberation, Delay and Glide Control can be added, but Sustain is already set at its best.



## SAXOPHONE

Although called saxophone, this particular heavy reed sound effect is a wonderful addition to any organ, for not only does it produce a typical moody saxophone solo voice when used with the delay effect, but it can also be used to reproduce the powerful sounds of a 'Big Band' when played with chords by the right hand.

## PIANO

This attractive sound is a very useful effect. It should not be used with Vibrato or Tremolo, although some players may prefer to use the Piano with the Chorus effect on. The operation includes an automatic sustain when the keys are released, and therefore the best effect will be created by playing the Piano voice instacca to form.

## HARPSICHORD

Although voiced differently from the Piano, the operation of this voice is similar to the piano and the same technique is therefore suggested to achieve best results.

## VIBRAPHONE

National Engineers have not only voiced this feature beautifully, but have also included an automatic tremolo (independent of the multi-tremolo) and sustain, which makes this stop most authentic. Here again, it is suggested that the Vibraphone sound be used either straight or with the Chorus effect, and not with Vibrato or Tremolo.

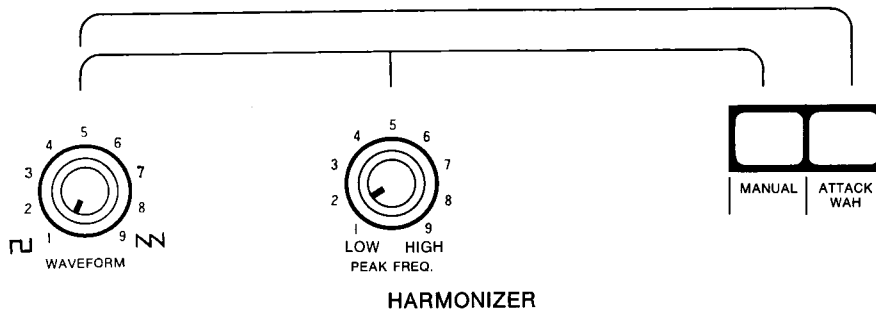
## CANCEL

This button is used when changing over to the normal tones of the upper keyboard from the Pre-set sound or from the Harmonizer.

Upon pushing this button, the Pre-set sound or Harmonizer buttons will be switched off and the sound will change back to the sound set by the tone tablet. Further, when you wish to switch to Harmonizer, simply push the Harmonizer button and the change will be automatic.

Once one has become accustomed to the instrument, it is a simple matter to create wonderfully varied sounds at the touch of a button. For example, if you have selected say, 16', 8' Flute with  $2\frac{2}{3}$ ' percussive tone in the organ tone tab section and wish to change in the space of a quaver rest to a solo saxophone, vibraphone or piano (pre-sets) or solo trumpet (Harmonizer), this will present little difficulty and will add great dimension to your organ playing.

# HARMONIZER



This ingenious tone generation system designed by National offers tone colors rarely found on organs at any price, and we are quite sure that once you have accustomed yourself to using this feature, you will enjoy it. The following examples indicate a few recommended positions which will produce good examples of the many varied sounds of which the Harmonizer is capable. The principal of the Harmonizer is similar to a musical synthesizer except that the synthesizer is monophonic (only plays one note at a time). The National Harmonizer is polyphonic (can play more than one note, i.e., a chord) which is a great advantage over normal synthesizers.

To use the Harmonizer, first press either the Manual or the Attack Wah button, and then adjust the two knobs—the Waveform and the Peak Frequency—to produce a tone. It is also possible to add the effects of Vibrato, Multi-tremolo, Chorus, Sustain, Reverberation and Glide Control for more creative and enjoyable sound. The Cancel button in the pre-set sound section not only cancels the pre-set voices, but the Harmonizer voice also. This operation automatically brings the upper tone tabs in.

## Manual Button

When ON, the sound of the Tone Tabs and Pre-set sound will be eliminated, and the sound of the Harmonizer will be produced.

Adjust the two controls for Waveform and Peak Frequency on the left to freely creat any tone.

## Attack Wah Button

When ON, the sound of the Harmonizer is an amusing fun feature producing all sorts of sounds including muted trumpet effects. The Wah sound has been designed to affect only the first sound during legato performance. And thus, it is very convenient since you can apply the Wah sound only when it is necessary.

## Waveform Knob

The many varied sounds of which the Harmonizer is capable are due to the infinite control of waveforms. National engineers have designed the Harmonizer unit to enable you to vary the frequency shape from the square-wave (□) to the sawtooth-wave (∇) patterns. The result is a very pleasing and versatile sound effect. To produce the soft tones of the tube system (like the clarinet), turn and set the control to the Squarewave side and, for a strong tone full of harmonics (like a trumpet), set the control to the Sawtooth-wave side.

## Peak Frequency Knob

Tones consist of waveforms containing various components. By turning this control either to the right or left, the characteristics of the music area you wish to emphasize will be changed. To stress and “round-out” the tone of the Waveform you have selected, turn the control to the LOW side; to give gayness and brilliance to the selected waveform, turn the control to the HIGH side.

This control will not operate in conjunction with the Attack Wah.

Some examples of the tones which can be created with the Harmonizer are shown below.

**BRASS ENSEMBLE**

WAVEFORM PEAK FREQ MANUAL ATTACK WAH Chorus-On

**BRIGHT TRUMPET**

WAVEFORM PEAK FREQ MANUAL ATTACK WAH Chorus-On

**CLARINET**

WAVEFORM PEAK FREQ MANUAL ATTACK WAH Chorus-On

**HARP**

WAVEFORM PEAK FREQ MANUAL ATTACK WAH Sustain-On Vibrato-On Chorus-On UPPER SUSTAIN

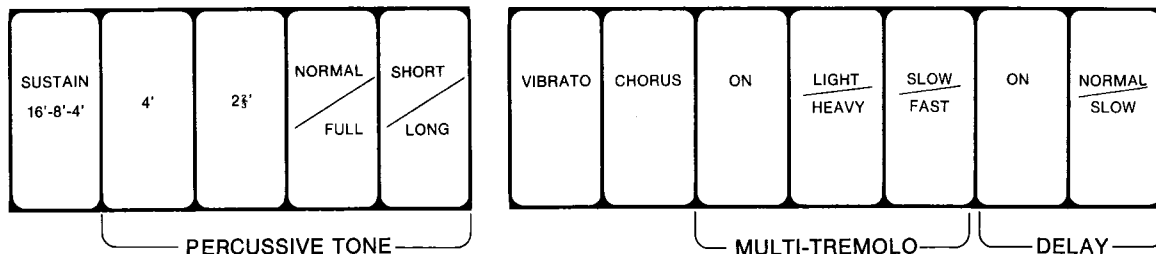
**WAH TRUMPET**

WAVEFORM PEAK FREQ MANUAL ATTACK WAH Vibrato-On Chorus-On Delay-On-Slow

**SOFT TRUMPET**

WAVEFORM PEAK FREQ MANUAL ATTACK WAH Vibrato-On Chorus-On Delay-On-Normal

# EFFECT TABS



## Upper Sustain Tab

The UPPER SUSTAIN tab gives the sustain effect to all 16', 8' and 4' tones, and to the Harmonizer voice on the upper manual, as mentioned previously. You may try to play your favorite piano score with the Flute tone sustained moderately in a staccato touch on the upper manual.

## Percussive Tone Tabs

The Percussive Tone is the effect, when the upper manual keys are pressed, of gradually diminishing. It is generally used with the fundamental tone tabs. It is particularly effective to obtain strikingly clear beginning sounds, or a performance which is very clear and crisp.

### PERCUSSIVE TONE 4'

When ON, a percussive tone which is 4' is added to the upper manual. If this effect is not to be used, the top of the tab should be depressed to turn it off.

### PERCUSSIVE TONE 2 2/3'

When ON, a percussive tone which is 2 2/3' is added to the upper manual. This tab can, of course, be used with the Percussive Tone 4'.

### PERCUSSIVE TONE NORMAL-FULL

This tab is for varying the strength of the percussive tone. The bottom of the tab can be depressed to obtain a strong tone, "FULL", and a weaker tone can be obtained by depressing the stop of the tab, "NORMAL". Neither this tab nor the Percussive Short-Long tab described next will operate unless either the Percussive Tone 4' or Percussive Tone 2 2/3' is depressed.

### PERCUSSIVE TONE SHORT-LONG

The bottom of this tab can be depressed to obtain a prolonged decreasing percussive tone, "LONG", and the top can be depressed to obtain a shorter decreasing percussive tone, "SHORT". Note that the percussive tone is obtained while the key is depressed, and disappears when released, even while decreasing.....a feature very convenient when playing in legato because it is applied only to the beginning sound.

## Vibrato Tab

The Vibrato has a different character than the Tremolo: Vibrato changes the pitch of the note—sharp and flat in quick succession. By using Vibrato with solo Reed, String or Flute tones, the sound produced will be very similar in character to an orchestral instrument. To change the degree of vibrato speed, use the Slow-Fast tab of the Multi-Tremolo.



### Electronic Multi-Tremolo Tabs

The three Multi-Tremolo tabs give a new tremolo effect and change the depth and speed of tremolo. Because of the principal of operation, the beautiful phase shift effect can be reproduced by combining Vibrato with the Multi-Tremolo in it's fast or slow position. The Multi-Tremolo can be used with the Tremolo Vibrato delay feature, thus adding even greater dimensions to the sound and quality of your playing.

#### MULTI-TREMOLO ON-OFF

The MULTI-TREMOLO ON-OFF tab gives tremolo to the music when depressed at the bottom, and eliminates it when depressed at the top. The other two tabs (Light-Heavy & Slow-Fast) can change the degree of tremolo.

#### MULTI-TREMOLO LIGHT-HEAVY

The MULTI-TREMOLO LIGHT-HEAVY tab can change the depth of tremolo by making tremolo heavier or lighter. Note that Multi-Tremolo Light-Heavy & Slow-Fast tabs operate only when the Multi-Tremolo On-Off tab is in the "On" position.

#### MULTI-TREMOLO SLOW-FAST

The MULTI-TREMOLO SLOW-FAST tab can change the speed of tremolo by making tremolo faster or slower. If a throbbing, Theatre Organ tremulant is desired, this effect can be achieved by adding Vibrato to the Multi-Tremolo which is switched to the fast/heavy position.

### Electronic Chorus Tab

The excellent chorale effect achieved by the CHORUS is achieved on the same principal as the aforementioned multi-tremolo, except that the Chorus sound flows at a much slower rate from one speaker to the other. The stereophonically reproduced chorale will add warmth and presence to your playing, particularly when performing Church/Classical music. It can also be used very effectively when playing Jazz or Swing music.

### Delay Tabs

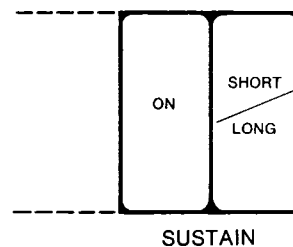
Very attractive effects can be achieved by playing the SX-5500G with Tremolos or Vibrato used with the Delay feature. A violinist controls vibrato by shaking the left hand at a pre-determined speed. If he wishes, he can stop the hand movement, thus creating a "straight" sound. The effect of controlling or delaying the vibrato in this way creates a beautifully romantic sound. It is important to remember however, that all players of not only strings, but brass, saxophone and reed instruments, use the delay vibrato effect to add color to their playing. You too will soon realize the advantage of having this delightful feature at your disposal. You can select either NORMAL or SLOW delay to suit your own taste and the type of musical interpretation you wish to achieve.

Note that this delay effect is applied every time the key is released. When playing in legato, there is no delay and there is no change made.

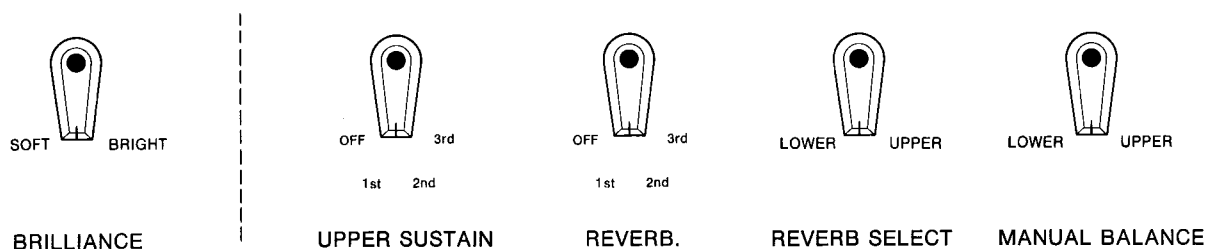
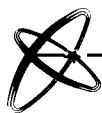
### Pedal Sustain Tabs

The PEDAL SUSTAIN ON-OFF tab gives the pedal sustain effect to the pedal tones. When this tab is on, you can obtain the pedal sustain effect.

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



## Manual Balance Lever

The MANUAL BALANCE lever allows you to select the perfect volume balance between upper manual and the lower manual. You can, if you wish, select one of the tones on the lower manual as a solo voice to an accompaniment of the upper manual and, here again, the Manual Balance control will enable you to do this. Because the Organ is fitted with sustain on the Upper, many attractive accompaniment sounds can be made by playing a sustained obligato with the right hand to a solo melody by the left hand.

This Manual Balance lever has no effect on the Harmonizer and Pre-set sound tones. On the other hand, it affects the volume of the lower manual.

## Reverberation Lever

The National reverberation offers you complete control of this feature, particularly when discreet use of the Reverb Select control is exercised. Reverberation is fitted to allow for deadness which carpets, curtains and furniture create in a small room. Therefore, by using the reverberation feature, the big echoing sounds of a cathedral or auditorium can be achieved, even in a small living room. The REVERB SELECT lever enables you to channel the reverberation to either the upper or lower manual voices. In modern recording studios, reverberation is used a great deal to add attractive effects to solo instruments, and this sound can be obtained on the Organ. As an example of how the effect can be achieved, try the following registration:

16' Clarinet (Upper Manual)—8' Flute (Lower Manual)—8' Bass with sustain (Pedal)—Chorus—Vibrato—Long Delay—Brilliance full—Reverb Select upper max—Manual Balance lower max.

The Clarinet will sound as if the player is in an echo chamber. Naturally, there are dozens of possible effects and you will no doubt find a great number which will appeal to your own musical ear.

## Upper Sustain Lever

The UPPER SUSTAIN lever controls the length of sustain heard after the key or chord has been released. This feature controls all 16' 8' and 4' tones, and the Harmonizer, but it does not affect the Pre-set sounds. By setting this lever to the proper position and the Sustain On-Off tab to "ON", you can obtain the sustain effect throughout the music. When the Sustain On-Off tab is set to "OFF", you can temporarily give the sustain effect to the music by operating the Sustain On-Off Knee lever.

## Brilliance Lever

This control adjusts the organ's harmonics so that you can adjust the tone of the organ to suit your ear or the type of music you are playing. By turning the control to the right, you will increase the treble harmonics, thus making the organ sound brighter. Naturally, the opposite effect will be heard when turning the brilliance control to the left. This lever is particularly effective in making the String, Oboe and 4' tones more brilliant.

## OTHER CONTROLS



### Sustain On-Off Knee Lever

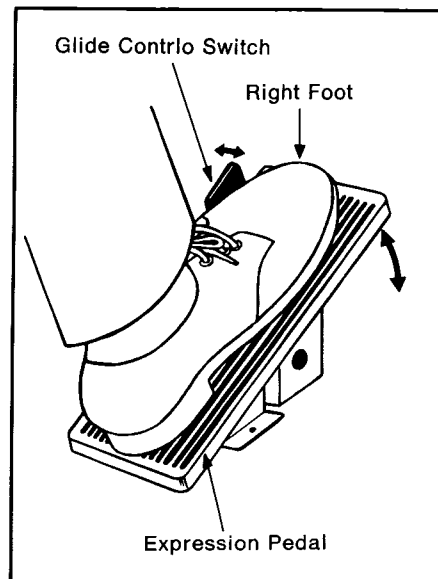
The knee-operated SUSTAIN KNEE lever is released by moving the control downward and to the right. You will find this feature extremely useful to bring in a sustain effect quickly and without the need to remove your hands from the keyboards. The Knee Lever works independently of the sustain tab, and therefore can be operated at will to bring in or cut out sustain as you wish.

### Glide Control Switch

Used wisely, the Glide can be a wonderful asset to the sound quality of your playing. Very effective Hawaiian guitar sounds may be reproduced by using the glide to "bend" the melody line. In addition, the gliding sound is a feature used fairly frequently by trombone sections, violinists and a host of other instrumentalists. The important point to remember about the glide is to use it for effect, which means only when you feel the type of tune that you are playing can be enhanced by using the Glide Control.

### Expression Pedal

The volume pedal operated by the right foot is above all, what the feature implies, i.e., an expression control. In other words, it is there to enable the player to express a feeling for the music by controlling the volume of the organ. Remember not to beat time with your right foot on the Expression Pedal because to do so will have a detrimental effect on your performance.



### Power Switch & Volume Control Knob

You will have found that, by turning the knob to the right, the organ is switched on and, by continuing to turn the control, the volume of the organ increases. It was mentioned earlier that the expression pedal also acts as a volume control. However, the main purpose of the Main volume control is to allow you to preset the maximum volume of the organ to suit the room in which the organ is being played, or the conditions under which the organ is used. The advantage of this control is that it enables the player to control the maximum volume desired, but yet still allowing him to use the expression pedal effectively. After playing the organ, the Volume Control is turned counterclockwise to a position at which the power is switched off.

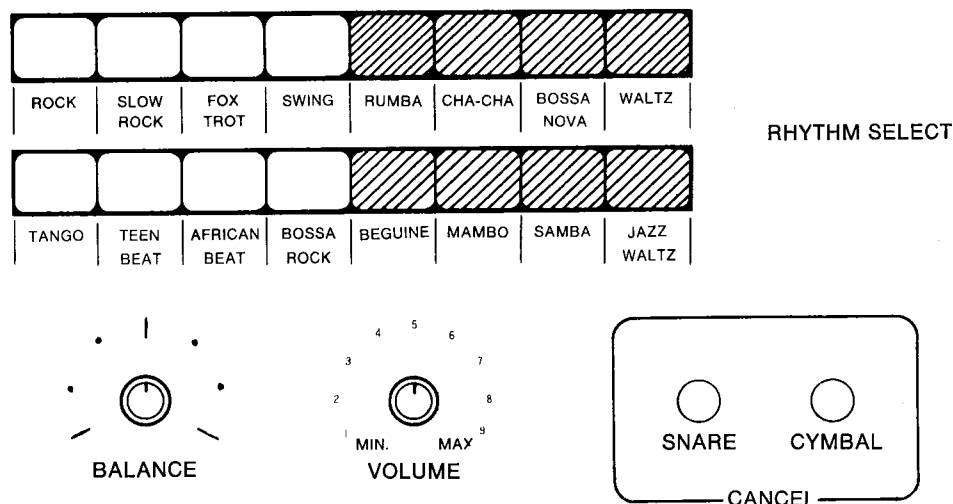


### Pedal Volume Knob

The volume of the Pedal is controlled by a rotary knob which is located on the left-hand side of the organ, immediately to the left of the tone tab board. Set the Pedal Volume knob to the proper position to balance the sound volume of the Pedal Keyboard with that of the Upper and Lower Manuals.



# AUTOMATIC RHYTHM



## Rhythm Selection Buttons

The Automatic Rhythm section of the Organ is most comprehensive, enabling the player to reproduce all types of rhythmic music most effectively. Not only does the Rhythm Unit offer 16 standard rhythm patterns, but in addition, by depressing a combination of two or three rhythm buttons, some very exciting rhythms may be achieved.

These are clearly marked and, during use, you will note that each selection will automatically cancel the previous button selected. A combination of rhythm patterns may be selected if required. To do this, it must be remembered to depress the required rhythm select buttons simultaneously, otherwise the mechanical action will not operate.

## Rhythm Volume Knob

The RHYTHM VOLUME is self explanatory although it should be remembered that the volume control works in conjunction with the Organ's Main Volume or Expression Pedal. Therefore, even though the rhythm volume control may be set to maximum, very little volume will be heard until the expression pedal is depressed.

## Rhythm Balance Knob

The BALANCE control is a most useful and desirable feature because it controls the character of the rhythm voices. By turning it to the right (clockwise), the effect is to increase the high harmonics of the percussion section, i.e., the cymbals etc., By turning to the left (counterclockwise), the base sounds of the percussion section are emphasized—Drums, Bongos, etc.,

## 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. 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.

### Cancel Buttons

You will note that the Rhythm Unit is also fitted with a Snare Drum and Cymbal Cancel control. Here again you have a most useful feature which can assist greatly in adding flexibility to your rhythm playing. For example, by using the Cancel feature in conjunction with the Balance control, it is possible to create the effective March rhythms. You will have noted that a March is not offered on the Rhythm Unit—this is because there are two different types of March tempos—the 4/4 time and the 6/8 time. To achieve these March rhythms, try using the following rhythm setting:

MARCH  $\frac{4}{4}$  ——— Rhythm Select Buttons: Swing and Rumba,  
Balance: Fully clockwise,

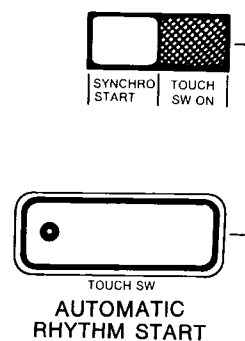
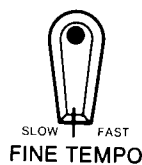
Tempo: No. 3,  
Cancel: Snare off/Cymbal off.

MARCH  $\frac{6}{8}$  ——— Rhythm Select Buttons: Slow Rock and Waltz,  
Balance: Fully clockwise,

Tempo: No. 8,  
Cancel: Snare on/Cymbal off.

### Fine Tempo Lever

The organ includes a FINE TEMPO CONTROL. This is particularly useful when adjustment of the tempo of a tune is desired during a performance. By turning the control to the right, the rhythm speed increases: by turning to the left, the speed decreases.



### Rhythm Start Switches

On the left of the organ console you will find the stop and start controls of the rhythm unit. These consist of the TOUCH SWITCH, which is a metal plate with a Tempo Lamp included, and the SYNCHRO START and TOUCH SWITCH ON, both of which are push-on, push-off button controls.

#### TOUCH SWITCH ON-OFF BUTTON

To operate the Rhythm Unit, depress the Touch Switch ON button. This will engage the Rhythm Unit, although no sound will be heard until the Plate switch is touched.

#### SYNCHRONOUS START BUTTON

The SYNCHRO START switch is an ingenious device which enables you to start the Rhythm Unit automatically, simply by depressing either a key on the lower manual or one of the bass pedals. This feature is most successful when playing Latin American music. The rhythm section can be stopped between phrases and this action will add a tremendous amount of realism to Latin American musical interpretation.

#### 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.

# FULL-BASS PEDAL



This ingenious feature was pioneered by National and acts as a type of coupling device to convert the pedal voices to the Lower Manual keyboard. The compass of the pedal, when coupled to the lower manual, is 32 notes from low C to middle G. The feature is simple to operate: simply place the left foot on the Full Bass Pedal, which is situated to the left of the Expression Pedal. You will quickly realize the advantages of this feature, for it will allow the player a vast range of musical effects, and indeed musical interpretations which otherwise would not be available to you. In technical terms, what the full bass pedal does in operation is to sound a deep pedal voice, one octave lower than is actually being played.

It is possible to play on the SX-5500G music which has hitherto been impossible to play on most spinet organs. The major works of Bach, etc. can be played most effectively by using this feature. To explain in musical terms just what the full bass pedal effect can do, try the following musical examples.

Note how the full bass pedal can be used to great effect when playing classical music. A typical example is the Fughetta by J.S. Bach.

On the other hand, modern pop music, boogie bass rhythms, etc. can be performed with extremely good effect when using this feature.

Here, then, is an explanation of how it sounds.

March (without Full-Bass Pedal)



(with Full-Bass Pedal)



notes depressed by the left hand.

extra pedal note sound one octave below.

In this exercise, depress the Full-Bass Pedal at the P position.

Beguine



Bossa Nova



Upper: FLUTE 8', FLUTE 4', DIAPASON 8', FLUTE 4'	Chorus
Lower: HORN 8', FLUTE 4'	Percussive 4'-Normal-Short
Pedal: BASS 16', BASS 8', Sustain On-Short	

from "Gavotte"  
Gossec

Actual Bass Sound

When you select this on the pedal keyboard, the sound is as follows:

Even performers who cannot play the church organ can get pipe organ effects for hymns and chorales by using the Full-Bass Pedal (Ped.....\*).

Upper:	Chorus
Lower: HORN 8', FLUTE 8', FLUTE 4'	
Pedal: Bass 16', BASS 8'	

Actual Bass Sound

By simply depressing the Full-Bass pedal at the lowest sound during contrapuntal polyphonic fugues, etc., the sound obtained is similar to a full compass pedal sound.

Upper: Chorus  
 Lower: FLUTE 8'; FLUTE 4'  
 Pedal: BASS 16', BASS 8'

from "Fughetta"  
 J.S. Bach

Actual Bass Sound

Upper: FLUTE 16', FLUTE 8'  
 FLUTE 4', FLUTE 2 3/4'  
 Lower: FLUTE 8'  
 Pedal: BASS 16', BASS 8'

From "Marche Royale du Lion"  
 Sain-Saëns

Actual Bass Sound

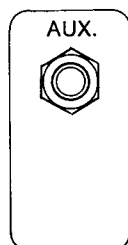
Play in the following manner to capture the feeling of the electric bass guitar.

Upper:  
 Lower:  
 Pedal: BASS GUITAR  
 Sustain On-Short

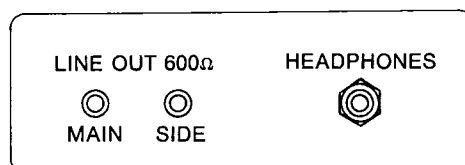
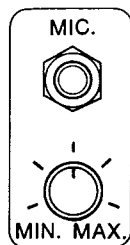
Actual Bass Sound



## OTHER FACILITIES



(Under the Left Side of the Keyboard)



(Under the Right Side of the Keyboard)

### Headphones Jack

All National organs have a facility for using headphones for silent practice. When plugged in, the organ speaker system is automatically cut off: the only sound heard in these conditions is through the headphones.

Because this organ is a stereophonic organ, it is essential that only stereophonic headphones be used. You can hear the Multi-Tremolo effect through the headphones.

### Output Terminals (MAIN, SIDE) <LINE OUT>

The organ is designed to enable the player to use it most successfully for professional work if required. By plugging into a high-power stereophonic amplifier via the Output Terminals, the complete organ sound, including microphone and auxiliary instruments, can be reproduced at a very high volume level. In addition, you can channel the sound of the organ into your Hi-Fi, Stereo or Quadraphonic system for home use to very good effect. Furthermore, the sound of this organ can be tape recorded most successfully by using this method of connection. The output terminals are located under the right side of the keyboard (output level 360mV 600 $\Omega$ ).

### Input Terminal <AUX>

If the organ is to be used for professional purposes or in conjunction with other electronic equipment, the Auxiliary Input Terminal will be a useful advantage. Among the many items which can be connected to this are Tape/Disc pre-amps, portable synthesizers and electric guitars. It is suggested that bass guitars not be used.

Because the input impedances of some guitars vary, better results may be achieved by plugging into the microphone terminal (input level 25mV, 20k $\Omega$ ).

### Microphone Terminal <MIC.>

The input impedance of this Terminal is 20k ohms at 5mV and is therefore ideal for use with dynamic microphones of the uni-directional type. There is a volume control included at the microphone terminal in order to balance the voice with organ volume. Increase the volume of the microphone by turning the control to the right (clockwise).

# MAINTENANCE & SPECIFICATIONS



## Maintenance

The National Organ is a very high quality product and built to a standard to ensure good performance, long life and reliability. Nevertheless, even the finest merchandise requires service occasionally. In the unlikely event of failure, please insist, when contacting your National Organ Dealer, that genuine National replacement parts are used in order to satisfy yourself that your instrument will continue to give you many years of trouble-free pleasure.

However, the following do's and don'ts will assist you in keeping the organ in top condition:

- Be sure to switch the instrument off after use, and do not switch the organ on and off in quick succession, as this places an undue load on the electronic components.
- Do not, under any circumstances, remove the back from the organ and tamper with the electronic circuitry. If a fault does develop, switch the organ off, unplug it from the electrical outlet and contact your nearest National Organ Dealer. To assist your Dealer, please explain the nature of the fault.
- To keep the lustre of the keys and tabs, simply use a damp cloth to clean and finish with a soft duster. Polish may be used but do not use thinners or petrol chemical based polishes.
- The cabinet may be polished with a wax polish, although you will find that a rub with a soft cloth will normally suffice.

## Specifications

Keyboards:	Upper Manual	49 keys	c-c̣	(4 octaves)
	Lower Manual	49 keys	C-c̣	(4 octaves)
	Pedal Keyboard	13 keys	C-c	(1 octave)
		1 (Full-Bass Pedal)	c-g̣	(2½ octaves)
Tones:	Upper Manual.....	Flute 16', Clarinet 16', Flute 8', Diapason 8', Reed 8', String 8', Flute 4', Tibia 4', Flute 2⅔', Tibia 2⅔', Mandolin		
	Pre-Set Sound.....	Saxophone, Piano, Harpsichord, Vibraphone, Cancel		
	Lower Manual.....	Flute 8', Diapason 8', Horn 8', Flute 4', Tibia 4'		
	Pedal.....	Bass 16', Bass 8', Bass Guitar,		
Harmonizer:	Waveform, Peak Freq, Manual, Attack Wah.			
Effects:	Multi-Tremolo (On-Off, Light-Heavy, Slow-Fast), Chorus, Vibrato, Percussive Tone (4', 2⅔', Normal-Full, Short-Long), Delay (On-Off, Normal-Slow), Pedal Sustain (On-Off, Short-Long), Upper Sustain (On-Off, Length), Manual Balance, Reverberation, Reverberation Select, Brilliance, Pedal Volume, Glide Control,			
Automatic Rhythm:	Rhythm Selectors..... Rock, Slow Rock, Fox Trot, Swing, Rumba, Cha-Cha, Bossa Nova, Waltz, Tango, Teen Beat, African Beat, Bossa Rock, Bequine, Mambo, Samba, Jazz Waltz, Rhythm Volume, Rhythm Balance, Tempo, Fine Tempo, Synchronous Start, Touch Start, Touch Switch On-Off, Tempo Lamp. Cancel (Snare Drum, Cymbal)			
Others:	Power Switch & Volume Control, Expression Pedal, Headphone Jack, Input Jack, Microphone Terminal (with Volume), Output Terminals (Main, Side), Pilot Lamp, Sustain Knee Lever			
Output:	60W (Peak power)			
Speakers:	30cm(12'') × 1,20cm(8'') × 2,8cm(3'') × 2			
IC's:	19	Transistors:	426	
Diodes:	371	Power Requirement:	100W AC 100/120/220/240V 50-60 Hz	
Cabinet:	Simulated Rosewood : 115cm(45.3'') [W] × 96cm(37.8'') [H] × 65cm(25.6'') [D]			
Net Weight:	83 kg. (182 lbs.)			

1975 MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.



**Matsushita Electric Trading Co., Ltd.**  
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