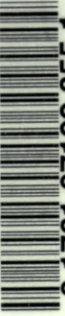


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The Hammond organ

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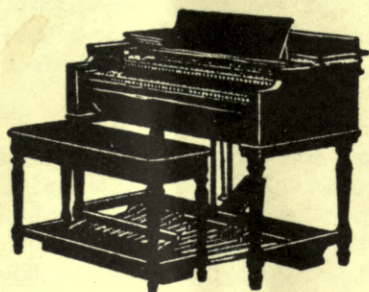
Professor  
Harvey Olnick







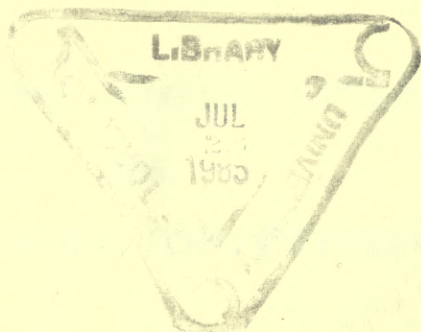
# **THE HAMMOND ORGAN**



**INSTALLATION, OPERATION  
and  
MAINTENANCE INSTRUCTIONS**

**BULLETIN No. 1A**

**HAMMOND INSTRUMENT COMPANY  
2915 North Western Avenue  
Chicago, Illinois**





NOTE: *These instructions and information apply to all Hammond models except as specified. Special additional instructions concerning the Model E organ will be found on page 8.*

## INSTALLATION

A standard Hammond Organ consists of four pieces of equipment: the console, foot pedals, bench and tone cabinet. They are shipped from the factory packed in individual cases. After unpacking, the following steps should be taken in order.

### **Preparing Console for Use**

1. Unscrew the hexagon nuts anchoring the generators until they touch washers at bottom of stud. *Do not remove these nuts.*
2. Be sure the console is level so special nuts anchored to generator frames are free to move in any direction without coming in contact with the steel plates fastened to underside of the console bottom.
3. Loosen the two cables which are attached to the console, by removing the ties.
4. Run the large cable to the tone cabinet location, and connect the small cable to a light socket or wall outlet. (Before plugging in, be sure the two console switches, above the manuals at the right, are both at the "off" position.)
5. Install the foot pedals by sliding under the console. It is necessary to raise them slightly at the front to lock in place.
6. Place the bench in its proper position over the foot pedals.

### **Preparing Tone Cabinet**

1. Place the tone cabinet at least ten feet from the console. (The permanent location of the tone cabinet is of great musical importance. See page 6 for further suggestions.)
2. Remove the four shipping bolts from each amplifier, one from each corner. Some tone cabinets have one amplifier each, some have two each. When these bolts are removed the amplifier will ride freely on its spring suspension. (Save the bolts—you may need them in future moving.)
3. Install the seven tubes in the amplifier. Note that one of the five large tubes is a rectifier. Be sure to install this tube in the proper socket at the extreme left. If this tube is not inserted in the proper socket the amplifier may be damaged.
4. Attach the plug on the end of the console cable in the receptacle on the right side of the amplifier.
5. If the cabinet is a C-20, lift the cover to a vertical position and slide it down behind. Leave the cover open whenever the instrument is used. Closing it will greatly impair the musical results.
6. If cabinet is an "X" or "R" type follow supplementary instruction on printed card tacked to the back of the cabinet.

## OPERATION

### *How to Start the Organ.*

Two switches, one marked "Start" and one marked "Run," are located above the manuals at the extreme right end of the console. (See Figure 1.)

1. Make sure both switches are at the "Off" position.
2. Push the left switch, marked "Start," to the "Start" position. A whirring sound will be heard. Hold the "Start" switch at the "Start" position long enough to count *slowly* to eight (at least eight seconds.)
3. Still holding the "Start" switch at the "Start" position, push the "Run" switch to the "Run" position. Hold *both* switches in these positions long enough to count *slowly* to eight (at least eight seconds.) This is important.
4. Let go of the switches. The "Start" switch will spring back to the "Off" position. Allow six to eight seconds for the amplifier tubes to warm up.

### *Pre-Set Keys*

The pre-set keys (see Figure 1) are located at the extreme left end of each manual and in size and shape are the same as the regular playing keys but are reversed in color. The pre-set keys correspond to combination pistons on other organs and are used to select the ready-mixed tone colors.

The extreme left or C key is a cancel key. When it is depressed all other pre-set keys on that manual return to normal and the manual is silent. Only one pre-set key should be depressed at a time. If by mistake two should be pushed down, depress the cancel key, which will return all keys to the silent position. Then depress the one desired.

Pre-set keys C# to A are ready mixed tone colors designed to meet average requirements of organ playing. The character of tone obtained from each is indicated on the chart found in the bench. (In some instances the organist may find it desirable to alter these combinations to suit his own purposes. This may be done by removing the console back and following the instructions found on the direction card.)

1. Depress one of the pre-set keys, C# to A, on the lower manual and one on the upper manual.
2. Pull out the two brown drawbars in the center of the row located directly above the upper manual. These control the pedal tones.

**THE ORGAN IS NOW READY TO PLAY.**

### *How to Turn Off*

To turn the instrument off, simply pull the "Run" switch to the "Off" position.



## Chorus Control

The chorus control drawbar on Model B organs is at the upper right hand corner of the console (see Figure 1). When pulled out it adds a pleasing ensemble effect to any tone being played.

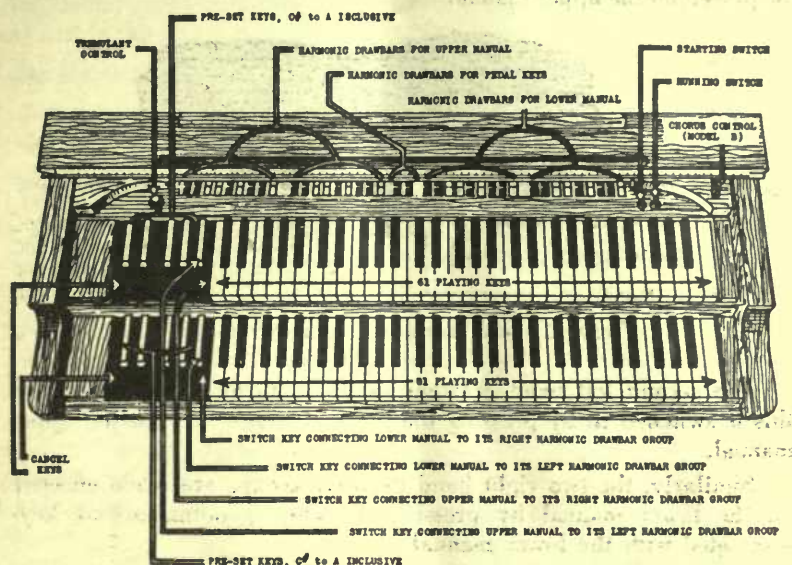


Figure 1, Keyboard and Controls, Models A, B and D

## Swell Pedal

The swell or expression pedal controls the volume. The volume increases as the swell pedal is depressed. It operates on both manuals and pedals.

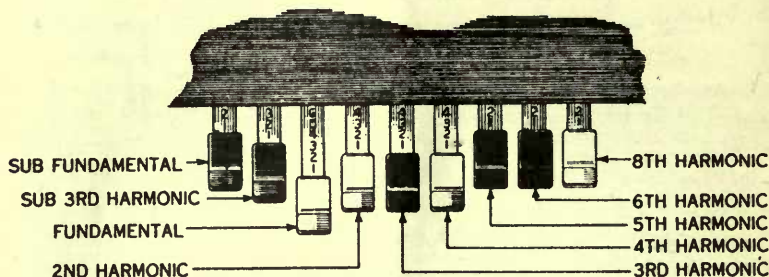
## The Tremulant

The tremulant control is located above the upper manual and at the left end of the console (see Figure 1). When turned to the extreme left the tremulant is entirely off. Turning the control to the right gradually increases the degree of tremulant. A white marker on the control knob indicates at a glance the degree of tremulant being used at any time.

## Harmonic Drawbars

Four groups of nine harmonic drawbars are provided for the manuals and one set of two drawbars is provided for the pedals (see Figures 1 and 2). They are used to compound tone colors other than those provided by the pre-set keys, but it is suggested that the organist become thoroughly familiar with the pre-set qualities before attempting to use the harmonic drawbars.

The two left hand harmonic drawbar groups are effective on the upper manual and the two right hand drawbar groups operate on the lower manual. To switch in the first left hand group, press the white A# pre-set key on the upper manual. Then pull out the drawbars to any desired number or mixture. The tone thus compounded may then be played on the upper manual.



*Figure 2, One Harmonic Drawbar Group*

The second left hand drawbar group is an alternate set up and this is switched in by pressing the black B pre-set key on the upper manual.

Similarly, the two right hand drawbar groups are made effective on the lower manual by pressing the corresponding pre-set keys associated with the lower manual.

The two drawbars located in the center, control the pedal tones. Here the harmonic resources of the organ have been combined into only two drawbars. The sub-fundamental and sub-third harmonic are associated with the left hand drawbar and produce a foundational 16' pedal tone. The first, second, third, fourth, fifth and sixth harmonics are associated with the right hand drawbar to give a foundational 8' pedal tone.

For full information about the harmonic drawbars consult other literature supplied with the organ.

## MAINTENANCE

The Hammond requires little maintenance, and if the following instructions are carried out the instrument should give dependable performance at a negligible upkeep cost for many years.

### *Packing for Moving or Shipping*

If at any time the organ is to be moved from the premises, it is important that the bolts be replaced on the amplifier mountings and the hexagon nuts be drawn up on generator frames. The tubes should be removed from the amplifiers and packed separately. These precautions may prevent serious damage. See the card inside the bench for complete instructions.

### **Lubrication**

The mechanism is lubricated by a centralized system fed from the oil cups. Oil placed in these cups runs into a trough and tiny threads carry the lubricant by capillary action to hundreds of porous bronze bearings and thus minimize running wear. These oil cups should be filled three-fourths full once every four months as instructed on the card inside the bench.

### **Tube Replacements**

Standard vacuum tubes are used in the Hammond. There are two in the console preamplifier and seven in each tone cabinet amplifier. They are obtainable from any dealer and it is advisable that the entire set be replaced when they become worn. These tubes are covered by the guarantee of the manufacturer and have a life expectancy of approximately 1000 hours. *Do not take tubes from amplifiers when organ is turned on.*

### **Speaker Operation**

Both speakers should always be plugged into the amplifier before the organ is turned on. There are two binding posts between the sockets to permit testing the speakers. When both wires are connected to the top post both speakers are on. To make a test remove one of the wires, then the other while the organ is operating. When one of these wires is disconnected the speaker associated with it is silent.

The two speakers are different and cannot be interchanged. Should a speaker develop trouble and a new one is to be supplied, it is important to specify which one by counting the number of prongs on the plug connecting the speaker to the amplifier. One has five prongs, the other six. We must also know the model and serial number of the tone cabinet. You will find this information on a metal plate fastened to your cabinet. In case of trouble with one speaker, the organ may be played with the other one alone. In this case, the terminal of the speaker not used should be connected to the lower binding post.

### **Ventilation**

The console is completely enclosed so it may be placed with back against the wall or in any other position providing it rests on a rigid, level floor.

Tone cabinets with open back (directional type) should always be placed a foot or more from a wall or obstruction. This is necessary for acoustic as well as ventilating purposes.

### **Service**

Every Hammond Organ is fully guaranteed. Your local dealer maintains a capable service department and it is suggested that you call upon him for service when needed, or write direct to the factory.



## GENERAL INFORMATION

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### PERMANENT LOCATION OF TONE CABINETS

Acoustics play an important part in every installation, so it is desirable that cabinet placement be given careful consideration. Your Hammond dealer has a service man whose experience would be helpful in making the most of your installation. It is suggested that you call on your dealer for this service or write direct to the factory, giving adequate information about the enclosure and including a sketch showing dimensions.

The tone cabinet should always be placed at least ten feet from the console, and usually it is desirable to place it even farther away. Cabinets of the directional type which project the sound energy horizontally (A-40 or B-40) should if possible be placed in a chamber or small room adjacent to the main enclosure. When the non-directional type of cabinet (C-20 or D-20) is used it is quite possible to obtain good results with the cabinet in the same room.

### SPECIAL APPLICATIONS

The Hammond is truly a universal instrument. Here are a few of its special features with which every owner should be familiar.

#### *Additional Tone Cabinets*

Additional tone cabinets may be used with the console. Any Hammond may be connected to an almost limitless number of cabinets. Special cable connectors are supplied and it is not necessary to make changes in the console. Your Hammond dealer can help you add to your cabinet equipment any time it is desirable.

#### *Echo Organs*

The attractive additional musical feature of an echo organ can easily be incorporated in your installation. Your dealer can install an additional tone cabinet and cable, as well as an echo switch on the console, whereby both tone cabinets can be made to sound simultaneously and whereby either can be made to sound while the other is silent. Thus the echo cabinet can be placed at some distance from the main cabinet and a pleasing antiphonal effect obtained, at small additional cost.

#### *Adaptation to Non-Standard Current Supply*

Special current sources may be converted or regulated to operate a standard Hammond Organ, but the instrument should never be connected to D.C. or special A.C. sources without introducing the necessary extra equipment. The Hammond will operate satisfactorily

under voltage variations of ten or fifteen volts, but if the frequency (the number of cycles or alternations per second) varies more than  $\frac{1}{2}$  cycle per second the instrument will sound off pitch and regulator equipment must be introduced.

### ***Changing Pre-Set Combinations***

The tone colors connected at the factory to the pre-set keys or pistons are designed to meet the average requirements of organ playing. They can easily be altered or re-arranged (completely, if you like) to suit the particular purposes or needs of the owner. Changing the pre-set combinations is done by removing the console back and following the simple instructions found on the card placed near the pre-set panel.

In planning changes, however, bear in mind that much musical literature is registered particularly for the standard Hammond Organ pre-set combinations, and that such music would be difficult to play to best advantage on a Hammond whose pre-sets differed materially from standard. It is recommended, therefore, that for ordinary musical purposes, the general character of each pre-set combination be kept similar to the standard.

For example, the standard color for pre-set key D# (piston 4 on the Model E) on the lower manual is a clarinet. This particular clarinet may not suit your concept of what a clarinet tone should be. Or it may not sound where your organ is played as it does elsewhere, due to the acoustical environment. By all means, then, alter the combination so that the result is a clarinet tone satisfactory to you and to the environment. But we do not recommend that a completely different color be connected to the D# pre-set, unless for some rather special reason.

This policy, if generally followed, will also give you the advantage of being able to play another Hammond Organ without the necessity of studying its pre-sets, and of having another Hammond organist play your instrument easily.

### ***Phonograph and Microphone Connection***

Phonograph pickups or microphones may be operated through the Hammond system. The output of either device should be matched at 200 ohms and connected to posts "P" and "GND" on the pre-amplifier panel after removing jumper. It is possible to play the organ simultaneously with record or voice amplification. The volume of the organ may be controlled by the swell pedal, and the input device by a gain control.

## SPECIAL INSTRUCTIONS APPLICABLE TO THE MODEL E ORGAN

### INSTALLATION

#### *Preparing Console for Use*

1. Unscrew the hexagon nuts anchoring the generators until they touch washers at bottom of stud. *Do not remove these nuts.* Four will be found under the front of the console. To reach the other four, remove the console back held by five thumbscrews.
2. Be sure the console is level so special nuts anchored to generator frames are free to move in any direction without coming in contact with the steel plates fastened to underside of the console bottom.
3. Figure 3 shows the cable terminal box inside the console. Below it is a round hole. Pass the two pole plug of the small cable through this hole and plug it into the lower receptacle. Similarly place the six pole plug in the upper receptacle.

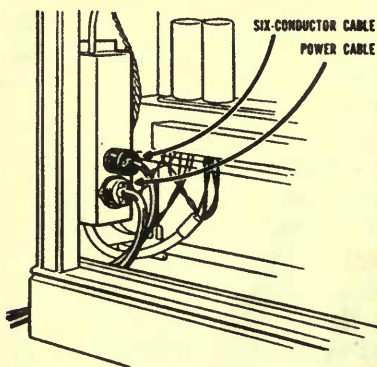


Figure 3

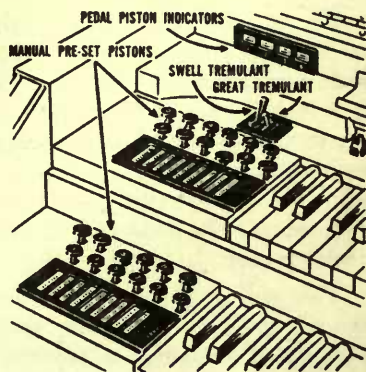


Figure 4

4. Connect the cables as for Model B.
5. Install the pedals by lifting them onto the short runners near the floor on both inside walls of the console; then push the pedal clavier forward and it locks into place. The piece of cloth attached to the middle of pedal clavier should lie forward along the top of the metal springs to protect them from dirt which might drop from the expression pedals.

#### *Pre-Set Pistons*

Pre-sets on the Model E organ are in the form of numbered buttons, or pistons (see Figure 4). The zero piston acts as a cancel key.



Pistons 1 to 9 are ready mixed tone qualities. Pistons 10 and 11 act as switches to control the similarly numbered drawbar groups.

There are four pedal pistons (see Figure 5), each connected to an illuminated indicator (see Figure 4). Pistons 1 and 2 are ready mixed pedal registrations; Piston 3 is a Great to Pedal 8' coupler; and Piston 4 switches on the adjustable pedal drawbars.

When pedal piston 3 is used it is possible to add a desired amount of 16' tone by means of the left pedal drawbar.

Both manual and pedal pre-set combinations may be changed at will by removing the console back and following directions on the card inside.

### **Expression Pedals**

Two expression pedals are supplied (see Figure 5). The one at the left controls the swell manual, while the other controls the great manual and pedals. Their positions are shown by two white-tipped indicator rods (see Figure 6). The indicators move out into view as the pedals are advanced.

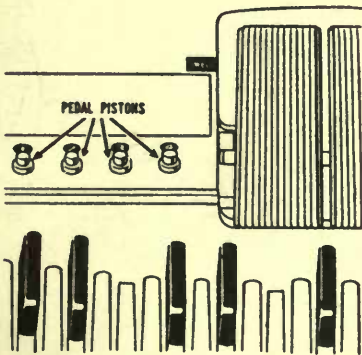


Figure 5

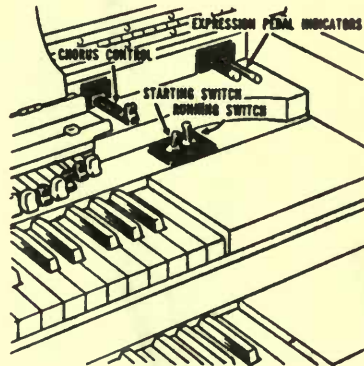


Figure 6

### **Tremulants**

Above and to the left of the swell manual are two small black levers (see Figure 4), which control the tremulants, one for each manual. Pushing these levers away from the organist increases the degree of tremulant.

### **Replacing Bulbs**

If it is necessary to replace one of the pedal indicator lamps, remove the front escutcheon plate and unscrew the bulb. To remove the pedal clavier lamp pull reflector off and unscrew. All five lamps are of the same type—2½ volt—.45 ampere pilot lamps, Mazda No. 41 or equivalent, which can be purchased at any electric or radio shop.

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