

peterson

LOW NOTE FLUTE GENERATOR

INSTALLATION INSTRUCTIONS

SELECTION OF LOCATIONS FOR ELECTRONICS PANEL AND SPEAKER CABINET

Before beginning the installation select a location to mount the electronics panel, keeping in mind that the standard line cord for the 117 VAC is six feet long and that connections will also be made to the organ rectifier positive and negative, the speaker, and to the keying inputs. Also, keep in mind that certain level and voicing adjustments may be necessary when the system is installed and convenient access will be appreciated at that time.

Mount the electronics panel in the best location as suggested above.

In general, it is preferred that the speaker cabinet be placed in a corner or at the least, against a wall. If placed in the open, in the middle of the room, the maximum loudness obtainable without speaker overload will be substantially reduced as compared with a corner location. There are few hard and fast rules regarding speaker placement, however if maximum power is required some experimentation with speaker location is in order. When the speaker is placed in an organ chamber it should be obvious that not much sound will get out if the speaker is buried or on a different level than that of the shutter opening.

On multiple speaker systems, where each speaker gets its electrical signal from the same source, the speakers should be clustered together and face the same way. The cluster should be located according to the guidelines above. The speakers connected to a common electrical signal should be connected in the same **phase**. This means that like terminals on each speaker should be connected to the same side of the source. This way, the cones on each speaker will work together to displace the air and thus transmit the sound. Speakers that are out of phase tend to cancel each other so that the system seems to lack power.

WIRING AND TESTING

1. Connect the organ rectifier "+" and "-" leads to the appropriate terminals of the barrier strip on the Peterson system marked *Org. Pos.* and *Org. Neg.* respectively. Wire size is not critical, 24 To 22 A.W.G. wire is sufficient.
2. Connect the speaker leads to terminals of the barrier strip marked *Speaker* and *Sys.Neg.(Spkr)*. 16 A.W.G. or 18 A.W.G. wire (lampcord) is recommended for these. Use 16 A.W.G. for runs longer than 30 feet.
3. Check to be sure a jumper is in place between barrier terminals marked *Org.Neg.* and *System neg.* This system can be connected in either the positive common or the negative common configuration. The negative common configuration is recommended for most applications. Units are shipped from the factory with a jumper in place for negative common operation. Should positive common be required, move the jumper to the terminals marked *Org. Pos.* and *Sys.Pos.* on the barrier strip.

Positive common may be required on non-Peterson relay systems, since often keying voltage is negative (a keying voltage inverter is also required for this application).

4. Connect the organ "keying" leads (from pedal keyswitch or from the "relay" as the case may be) to the "keyswitch Input" connector. Keys must feed "+" (positive) to the standard Peterson system. These wires may be as small as 28 A.W.G..

NOTE: The Peterson system has been designed for keying from a 12 to 15 Volt D.C. supply. No harm will be done, however, if operated as low as 10 volts or as high as 18 volts. Any ordinary organ rectifier with the normal amount of filtering should be suitable. An unfiltered or very poorly filtered supply could cause the tone of the note to be modulated by hum.

5. The barrier terminal marked V.C.O. provides the opportunity to tune the electronic voice from the console. This requires the optional remote tuning control. If used, follow the instructions supplied with the Peterson remote tuning control. If not used, no connection is required at this terminal.

NOTE: Only one Peterson remote tuning control is required to tune any number of Peterson electronic voices.

6. Plug the line cord of the Peterson system into a 117 Volt 50-60 HZ outlet. This outlet does not have to be switched from the organ, however, *be certain that it is not switched off with the chamber lights.*
7. Turn the organ and stop on and test each note to see that the unit operates.
8. A relay built into the Peterson system will activate the electronic equipment whenever the organ rectifier is operating. After installation, check to be certain that the amplifier, and thus the complete system, turns off when the organ is turned off.

WIND GENERATOR

Connect the terminals on the wind generator marked "Wind Speaker" to the speaker terminals marked "Wind Speaker" using #24 AWG or heavier wire.

Key a note and set the main wind volume control to the approximate level desired. The individual wind volume controls (marked ind. wind volume) adjust the wind level on a note by note basis.

The attack delay controls adjust the length of time it takes for the tone to start building up after keying. With the controls fully counter-clockwise, (when looking at the knob) the attack is almost immediate. As the control is rotated clockwise, the attack delay is increased.

The unit has been adjusted at the factory so a rapid key and release will only produce the wind hiss, but no tone. A less rapid key and release sequence will produce hiss and let the tone start building (like an actual pipe).

VOICING AND TUNING

NOTE: All controls have been set for a "nominal" stopped flute, which will give satisfactory performance. After the system is installed, an even closer match to the pipes can be obtained by adjusting the group note partial potentiometers (pots) or the individual note partial pots as follows:

1. Adjust the overall volume with the potentiometer marked "main volume". The mark on the pot

indicates the maximum volume without distortion when the system is wired in the positive common configuration; when wired in the negative common configuration, the maximum volume setting varies with the organ rectifier (keying) voltage.

2. Refer to drawing 402011 for voicing pot locations. Five pots on the edge of the "gate" printed circuit board are used to adjust the partials by groups. The pot marked "fund" adjusts the fundamental tone for all 12 notes on that particular gate assembly. The "fund" pot is factory adjusted at its maximum position. If more fundamental tone is desired, reduce the 3rd and chiff partials and increase the main volume setting. Should some of the notes sound too loud or soft, try walking around the room to see if the reason is due to standing waves that result from room reflections which tend to reinforce or cancel the direct radiated sound at different points in the room. A note that is loud at one point in the room and soft in another, cannot be electrically corrected. This phenomenon has nothing to do with the fact that the tones are electronically generated, and is equally a problem with organ pipes. The electronic system permits some control by moving the loud speaker cabinet to a different location, thus moving the loud and soft points to where they are the least objectionable.

If a particular note should seem to have too much or too little fundamental in comparison with other notes, refer to drawing number 402011 to find the correct pot to adjust that particular note.

To adjust the 3rd harmonic, there are two group controls called "3rd low" and "3rd high", the 3rd low control affects notes "C" through "E" and the 3rd high control affects notes "F" through "B".

Individual note levels can be adjusted by determining which pot affects the note while referring to the drawing.

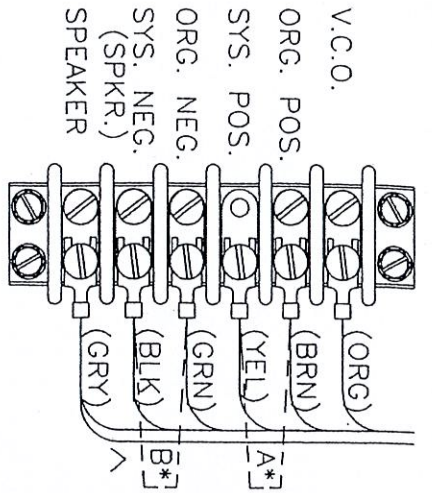
The "chiff" level can be adjusted in 2 groups called "chiff high" and "chiff low". Chiff low affects notes "C" through "G" and chiff high affects notes "G# through B". Individual adjustments of notes can be accomplished as mentioned previously.

The tuning of the Peterson flute extension is set at the factory to A=440 HZ. If tuning is required, all of the electronic notes can be tuned simultaneously by adjusting the iron core in the master tuning coil with the special tuning tool supplied. Insert the tuning tool into the hole at the top of the tuning coil can, and carefully rotate the core slowly to bring a note of the electronic unit in tune with a corresponding pipe (Clockwise rotation will cause the unit to go flat and counter clockwise rotation will cause it to go sharp). Do not rotate the core carelessly or excessively or it may fall out or be damaged. The electronic voices are temperature stable but may need to be adjusted if severe temperature changes are encountered in order to track changes in tuning of the pipes. A remote tuning control permitting the unit to be tuned from the console is available from the factory. (Refer to instruction #5, Page 2).

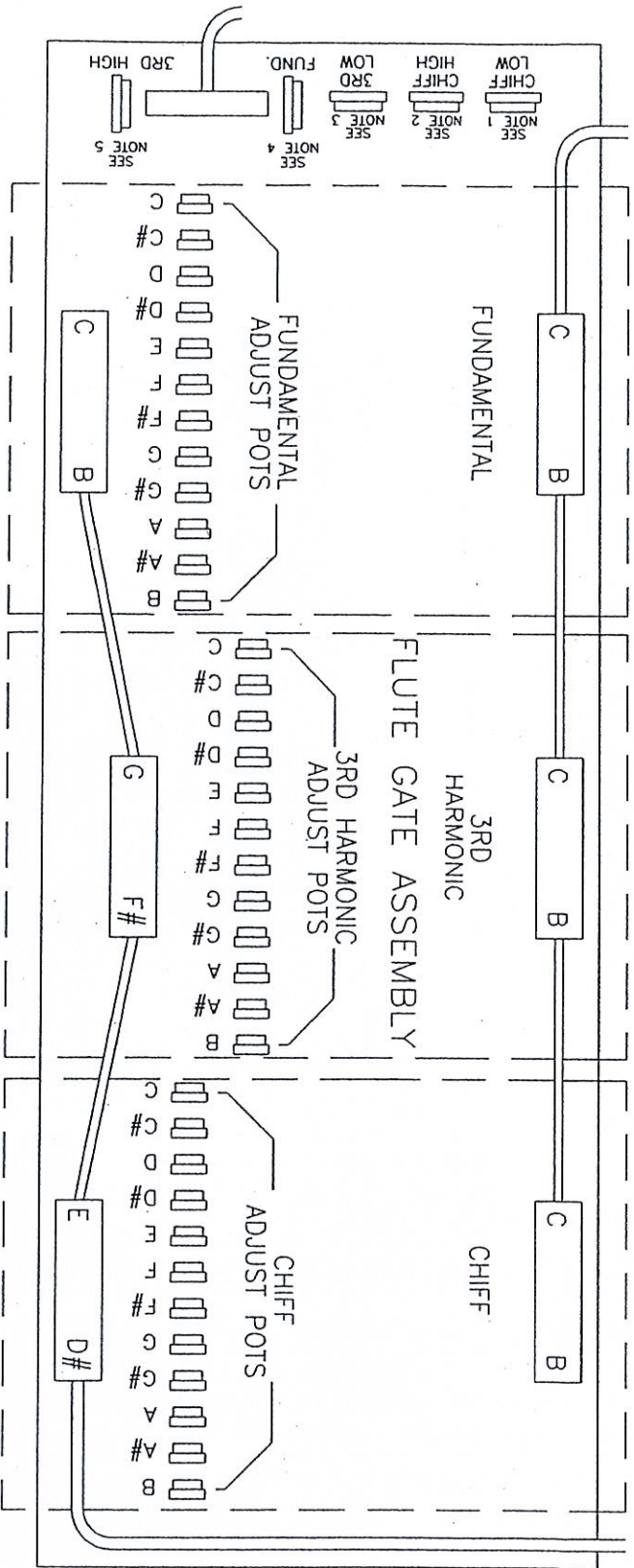
Should any problems be encountered with the installation or adjustment, call the factory at 1(708) 388-3311 or our toll-free number which is 1(800) 341-3311. ***A simple phone call may save you much time and money.***

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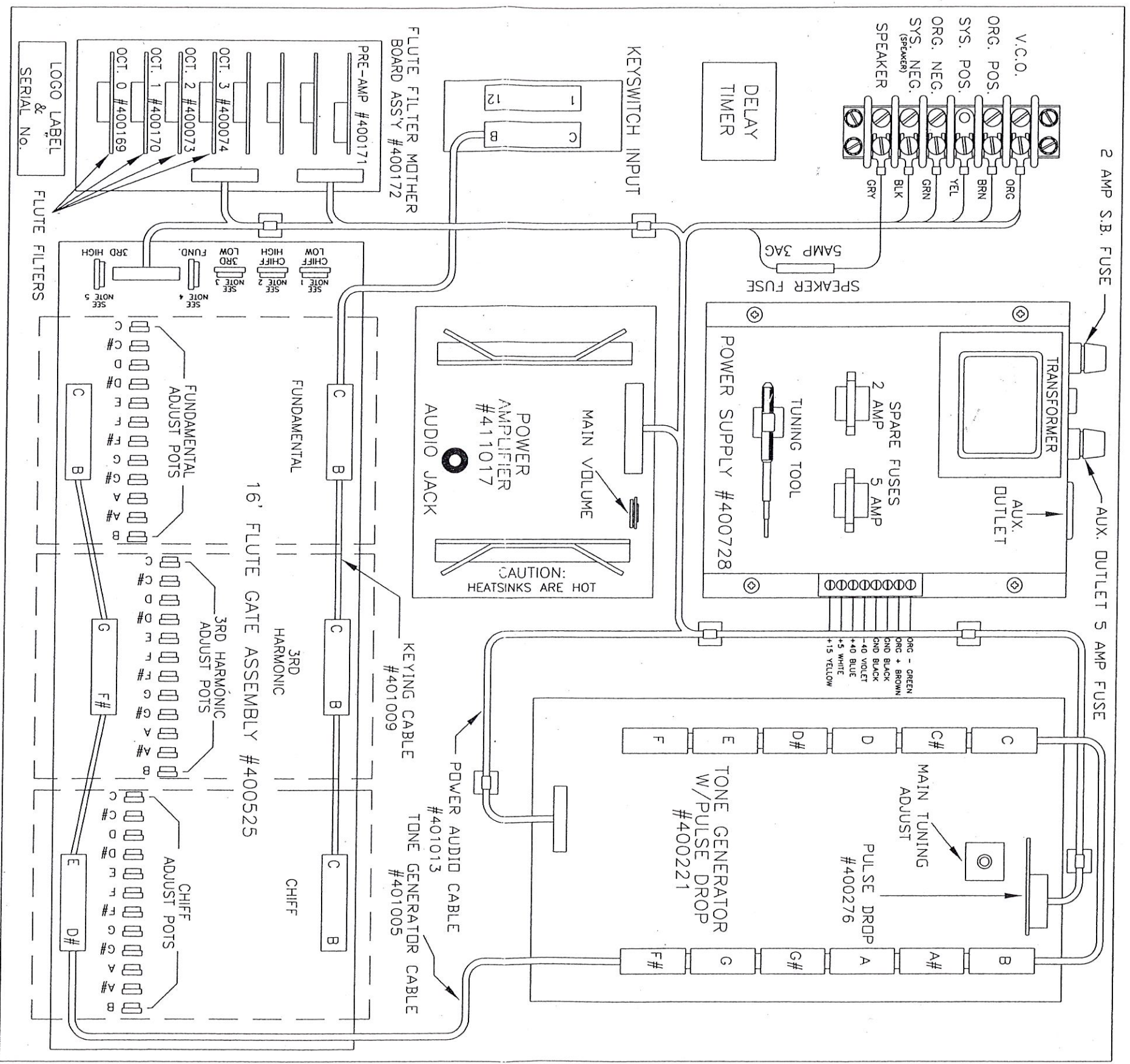
*FOR POSITIVE COMMON CONFIGURATION - JUMPER "A" IN & JUMPER "B" OUT.
 FOR NEGATIVE COMMON CONFIGURATION - JUMPER "B" IN & JUMPER "A" OUT.
 REFER TO ACCOMPANYING INSTRUCTIONS



NOTES:

1. THE CHIFF LOW POT ADJUSTS THE LEVEL OF CHIFF FOR NOTES C THRU G AS A GROUP.
2. THE CHIFF HIGH POT ADJUSTS THE LEVEL OF CHIFF FOR NOTES G# THRU B AS A GROUP.
3. THE 3RD LOW POT ADJUSTS THE LEVEL OF THE 3RD HARMONIC FOR NOTES C THRU E AS A GROUP.
4. THE "FUND" POT ADJUSTS THE LEVEL OF FUNDAMENTAL FOR ALL 12 NOTES (C-B) AS A GROUP.
5. THE 3RD HIGH POT ADJUSTS THE LEVEL OF 3RD HARMONIC FOR NOTES F THRU B AS A GROUP.

LOW NOTE VOICE, 16' FLUTE ASSEMBLY #402011



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IMPORTANT NOTICE

TO INSTALLERS OF SOLID STATE EQUIPMENT IN PIPE ORGANS

June 1993

We recently discovered a correlation between several instances of unexplained failures and occasional erratic operation of some pipe organ control systems, and Astron brand rectifiers that have an internal connection from the D.C. negative output terminal and to earth ground. The third, or grounding plug on the Astron's line cord is **and should be** connected to the rectifier's chassis. However, Astron often provides a wire from the Negative D.C. output terminal to a stud on the chassis, which then provides a path from D.C. Negative through the line cord to earth ground. We have determined that when the Astron supply is used in conjunction with Peterson solid state systems for the pipe organ, this connection should be removed to isolate the D.C. Negative output terminal from the chassis.

Problems can occur for several reasons in solid state equipment built by virtually any manufacturer, if this path to earth ground is in place. With the wire connected, 60 cycle hum can appear in the D.C. circuit, which may create undesirable noise in audio circuits. Vulnerability to damage from lightning can be much higher if the D.C. Negative is grounded because a static charge may place a high voltage at one end of a long wire, and since the other end of the wire is at ground, a high voltage may be caused to appear across the wires, instantly damaging the equipment. There can also be referencing problems wherein notes or stops may not turn off dependably when this earth ground connection is made and two or more Astron rectifiers are connected together in certain ways.

Fortunately, these problems may be easily avoided by simply removing the wire coming from the Organ Negative output terminal from the chassis stud or by clipping out both ends of the wire. ***This must be done with the power to the rectifier disconnected!*** Be sure to wrap any remaining clipped or disconnected wire ends with electrical tape. Whenever more than one rectifier is used in an organ, please contact Astron or your Astron distributor for their recommendations on how to wire the rectifiers.

Thank you for your cooperation. A few minutes spent now removing this wire may save much time and effort trying to diagnose problems in the future.

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