

## *The Ampeg Limited Warranty*

All Ampeg products are warranted to be free of defects in workmanship and materials for a period of one (1) year from date of purchase. This warranty is offered only to the original purchaser of a new Ampeg product at retail. The Ampeg Limited Warranty becomes effective immediately upon receipt of the registration card by Ampeg. The registration card must be signed by our authorized dealer and the purchaser. Should a malfunction occur within the warranty period an identification sticker on the bottom of the unit will entitle the owner to receive authorized repair and service from any authorized Ampeg dealer or service center. If the malfunction is due to a defect in materials or workmanship, the repair will be completed free of charge to the owner (including parts and labor). Transportation charges to and from the Ampeg service center shall be paid by the owner. NOTE: This Limited Warranty does not apply to Ampeg products purchased from anyone other than an authorized Ampeg dealer or to products that have been subjected to shipping damage, alteration, neglect (extremes of temperature and/or moisture), accident, misuse or modification in any manner by an unauthorized person.

If additional information concerning the Ampeg Limited Warranty or the address of the nearest Authorized Ampeg Dealer or Service Center is required, write to: National Service Manager, The Ampeg Company, Box 310, Elkhart, Indiana 46514.



The Ampeg Company, Box 310, Elkhart, Ind. 46514



# PATCH 2000

---

# Owner's Manual



Your purchase of a Patch 2000 from Ampeg is your first step into a new realm of musical creation that has previously been denied the guitar or bass player. The synthesizer has dominated both music composition and performance during the last several years. But the infinite tonal creation possible with a synthesizer has been available for all practical purposes only to the musician who was proficient on the keyboard. Until now.

The Patch 2000 is a step beyond the electric guitar. It is an electronic instrument that incorporates the latest digital logic circuitry in a unique pedal and the respected Hagstrom Swede to produce the most versatile instrument ever developed for guitar or bass.

The Patch 2000 is the equivalent of three instruments in one body. The fingerboard of the Swede can function in the same manner

as a keyboard to control the voltage input to a synthesizer; the Swede can be played as a conventional electric guitar or bass, independent of the synthesizer connection; or the Patch 2000 system can be played with a combination of synthesizer output and normal guitar audio output.

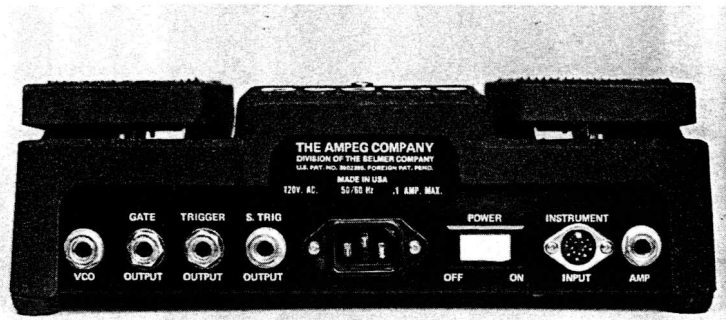
If you're unfamiliar with the operation and capabilities of a synthesizer, be sure to carefully read both this manual and the instruction manual of the synthesizer you'll be using before attempting to play the Patch 2000. If you'll be playing through a synthesizer already owned by your group, we suggest you work with the keyboard player in familiarizing yourself with electronic music and synthesizer techniques. There are also many textbooks available on electronic music, and classes are frequently held at music stores and area colleges and schools.

The Patch 2000 is the beginning of a new chapter in creative expression for the guitarist and bassist. The inherent capabilities of the Patch 2000 are infinite — the only limitations that exist are within the capacity of the synthesizer you will be using, and your own imagination. We hope you'll enjoy the new world of musical exploration that awaits you.

### *Set Up Procedure*

#### **Connecting the Power Source:**

The Patch 2000 is provided with a three-wire line cord (export versions have a similar cord with an appropriate export plug cap). The cable should be connected to the pedal, then plugged into an appropriate three-wire outlet. Turn on both the Patch 2000 and your



synthesizer, and allow them to warm up while the remainder of the cables are being connected.

A special internal grounding system within the Patch 2000 prevents hum being introduced into your amplification system from the Patch 2000 three-wire line cord. If hum is encountered in the amplification system, check the other pieces of equipment. They should be connected to a grounded common supply line, or the AC cord should be reversed if the amplifier has a two-wire plug.

#### Power Supply

The Patch 2000 should be operated from a standard AC outlet.

#### Connecting the Patch 2000 Pedal to the Swede:

The digital electronics and audio signals between the Patch 2000 Pedal and the Swede are carried within a special seven-wire cable. This cable should be connected between the seven-pin input jack on the rear of the Pedal

and the identical output jack located on the Swede instrument.

#### Connecting the Patch 2000 Pedal to an Amplifier:

A standard guitar cable should be used to connect from the jack marked "amplifier" on the rear of the Patch 2000 Pedal to your amplifier. This outlet is for standard guitar sound only.

**NOTE:** There is also a standard phone jack on the Swede that enables a direct connection to be made to an amplifier when the Swede will be played as a standard electric instrument.

#### Connecting the Patch 2000 Pedal to the Synthesizer:

Three color-coded 10-foot cables with a phone plug on one end and a "mini-plug" on the other are provided for connecting the Patch 2000 to the synthesizer. The phone plug provides a solid mechanical connection at the base of the Pedal while the "mini-plug" is the commonest type of inter-connecting cable used by synthesizer manufacturers. These cables will connect:

1. Control voltage jack marked (VCO).
2. Gate
3. Trigger
4. S. Trigger

**NOTE:** Some synthesizers require only a control voltage and a trigger to operate; an internal "retrigger" circuit within the Patch 2000 provides an equivalent gate output.

Connection to accessory jacks of some synthesizers requires special plugs, and these plugs are usually supplied with the

synthesizer. Read your synthesizer owner's manual for connection information.

Connection of the control voltage, trigger and gating system is all that is necessary to operate a synthesizer. It is important to carefully read your synthesizer manual to determine the correct input connections for the Patch 2000, as the synthesizer manufacturer may use different nomenclature than that provided on the Patch 2000 Pedal. If the nomenclature differs, a service technician will need the following electrical outputs as a guide:

1. Voltage Control Oscillator (VCO) or control voltage (CV): One volt per octave (adjustable) or 0.3 volt per octave inverted.
2. Gate: 15 Volts continuous until note is released.
3. Trigger: 15 volts for 1 millisecond. One pulse starts each note.
4. S. Trigger: 0 logic level out while note is sustained. 1 millisecond interrupt when note is changed, TTL, DTL, CMOS compatible.

If your synthesizer does not have accessory input jacks, call the manufacturer's factory service department for details on where and how to modify or update the unit for accessory connections.

#### **Connecting the Synthesizer to an Amplifier:**

The synthesizer can be connected to the second channel of your amplifier. However because of the extended range of a synthesizer, we strongly recommend the use of a separate amplifier or sound reinforcement system with full range speaker

enclosures, such as the Ampeg SR6 console and V-6 speaker enclosure. Your Ampeg dealer can assist you in choosing the best amplification system for your needs.

**NOTE:** *The low frequency output from a synthesizer could severely stress the speakers of some guitar amplifiers.*

## *How To Tune The Patch 2000 To The Synthesizer*

1. Turn on both the Patch 2000 and the synthesizer, and let them warm up for about five minutes.
2. Tune your Swede instrument as you normally would, making sure that the high and low E strings are tuned as accurately as possible.
3. The low F on your Swede must be tuned to the lowest note on the synthesizer keyboard. (Be sure that the 5th Harmony Switch on the Pedal is in the off position, and the Pitch pedal is all the way back. Any tuning adjustment control on the synthesizer should be set at mid-position.)
4. The synthesizer tuning adjustment should now be moved up or down to match the low F on your Swede.
5. Now play an F at the first fret on the high E string of your Swede. If the two octave span between the Swede and the synthesizer are not in tune, adjust the scale adjustment control on the rear of the Pedal.

**NOTE:** *It is recommended that a service technician make the scale adjustment. If you switch to a different synthesizer, the scale adjustment control may have to be set again.*

## Operation and Technique

The Patch 2000 works on a touch system utilizing string to fret contact to activate preset sounds on a synthesizer. For example, touching the string to the first fret of the low E string produces an F note modified by whatever settings have been made on the synthesizer. This applies to both guitar and bass.

The Patch 2000 scans the strings and frets at a very high speed, and will respond to the fastest playing style. The Patch 2000 is interfaced for use with monophonic synthesizers and will always play the highest fret and the lowest string contacted, even if several strings are played simultaneously. With practice, you will have no difficulty adapting to this system, and you can develop a technique which incorporates synthesizer only, guitar only, or synthesizer and guitar combinations. Since the synthesizer can be played without plucking the strings, it is possible to play a synthesized note, then pluck the string to play a guitar note over the synthesized note. The attack, sustain, decay and release of the synthesizer notes can be adjusted for a desired effect, while maintaining control of the guitar's audio output through your regular playing style.

Other interesting effects can be obtained by picking the open strings with the right hand while playing a melody line on the synthesizer with the left hand. Also because the system senses and plays the lowest string and highest fret, interesting guitar chords can be developed which make use of the resulting

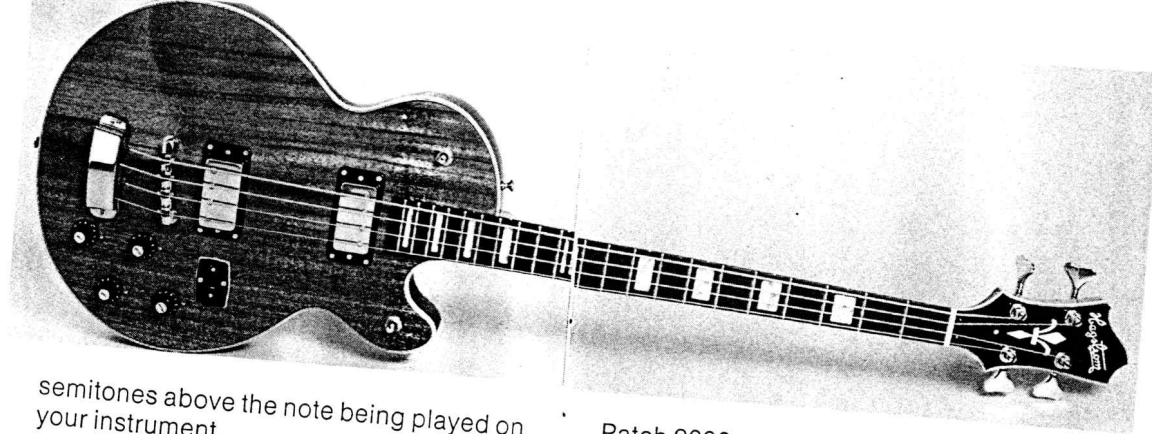
synthesizer harmony. The synthesizer harmony is not actively played, but results from the other fretted notes.



### Operation of the Patch 2000 Pedal

An infinite variety of harmonic effects are possible through the Patch 2000. There are three controls located on the Pedal:

1. *Pitch Pedal:* The Pitch pedal will raise the pitch up to one full octave. Pressing the pedal all the way down produces a pitch one full octave above that played on your instrument. A larger portion of the total pedal travel controls the first few semitones.
2. *Glide Pedal:* The Glide pedal controls the time it takes for one note to change to another (*portamento*). Pushing the pedal down *increases* the time span between notes.
3. *5th Harmony Switch:* Depressing the switch marked "5th" on the Pedal will immediately yield a tone which is seven



semitones above the note being played on your instrument.

**NOTE:** The Pitch and Glide pedal positions will affect the 5th Harmony switch. But regardless of the position of the Pitch pedal, the activation of the 5th Harmony switch will raise the tone seven semitones at the rate established by the Glide pedal.

### Service and Maintenance

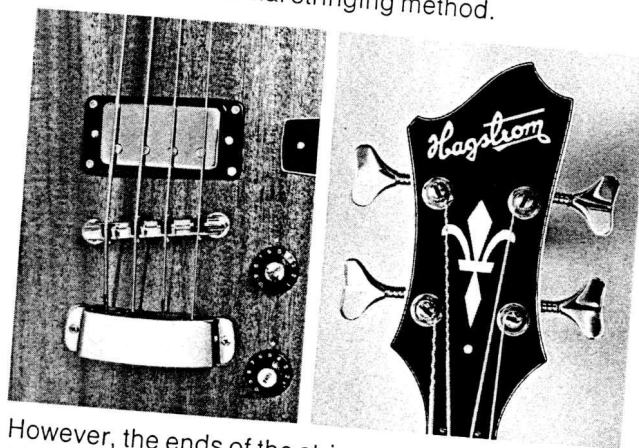
*The Patch 2000 Pedal:* The circuitry of the Patch 2000 Pedal is completely modular. If necessary, the two printed circuit boards within the pedal can be replaced quickly by an Ampeg Service Center.

*The Swede Instrument:* The Swede has each string and fret wired within the neck and body of the instrument, and these connections are fed to a small printed circuit board in the instrument. Normal guitar and bass maintenance, such as replacing or filing worn frets, can be performed without damage to the special circuitry or construction.

**NOTE:** When new frets are required, care must be taken to avoid damaging the contact wire under the fret. When replacing frets, make sure wire is frayed in the groove to insure that contact with the fret is established.

The special bridge and tailpiece of the Swede electrically isolates each string to allow the

Patch 2000 to convert the electrical impulses into accurate voltages for the synthesizer. No special strings are required for the Swede; you can continue to use your preferred choice of strings and normal stringing method.



However, the ends of the strings *must* be trimmed at the peg head to prevent contact of loose ends, which would provide false note information to the Patch 2000. The Swede guitar and bass designed for use with the Patch 2000 Pedal requires a special, insulated bridge saddle. Replacement saddles are available from Ampeg dealers.