

**Model 6176**  
**Channel Strip**

**Universal Audio Manual Number 65-0013**

**Revision 1.3**

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## The 6176 Channel Strip

Thank you for purchasing the 6176 Channel Strip. This unit brings together 1 channel of our 2-610 Mic Pre with an 1176 Limiter. The 610B was inspired by the microphone preamp section of the 610 console designed by my father, M.T. “Bill” Putnam, in the 1950s. The 610 was a rotary-control console and was the first console of the modular design. Although technologically simple compared to modern consoles, the 610 possessed a warmth and character that kept it in demand for decades. As a prominent part of my father’s United/Western studios, the 610 was used on many classic recordings by Frank Sinatra and Sarah Vaughan. The Beach Boys *Pet Sounds*, the Doors *LA Woman*, and Van Halen’s debut album were all recorded on the 610. The legendary Wally Heider used the 610 in his remote truck for many of his best-known live recordings. At Ocean Way Studios (formerly United), the 610 is lovingly preserved and still used in Studio B.

You may be familiar with the fact that there were many versions of the 1176 produced throughout the years. We patterned our reproduction on the D/E versions. These versions were characterized by the transformer input stage, LN circuitry, and the class A (1108 style) output stage. Later versions replaced the class-A output stage with a push-pull class-AB output stage, and eventually replaced the transformer input with a differential op-amp circuit. That highly recognizable blackface 1176 sound was best captured by the version that we are reproducing.

In addition to the 1176LN and 2-610, Universal Audio has released reproductions of the classic Teletronix LA-2A Leveling Amplifier and the 2108 microphone preamplifier which is based on the 1108 line amps that were used in my father’s studios. Universal Audio also creates software emulation’s of our vintage hardware that run on our UAD-1 DSP card as well as Digidesign’s Pro Tools platform. All of these products are designed to meet the demands of the modern recording studio, yet retain the character of vintage equipment.

These products have been quite an enjoyable adventure to develop and we’re sure the next phase will be even more fun! We thank you for your support and we thank my father, Bill Putnam.

Thank you,

Bill Putnam

## IMPORTANT SAFETY INSTRUCTIONS

Before using this unit, be sure to carefully read the applicable items of these operating instructions and the safety suggestions. Afterwards keep them handy for future reference. Take special care to follow the warnings indicated on the unit itself, as well as in the operating instructions.

1. **Water and Moisture** – Do not use the unit near any source of water or in excessively moist environments.
2. **Object and Liquid Entry** – Care should be taken so that objects do not fall, and liquids are not spilled, into the enclosure through openings.
3. **Ventilation** – When installing the unit in a rack or any other location, be sure there is adequate ventilation. Improper ventilation will cause overheating, and can damage the unit.
4. **Heat** – The unit should be situated away from heat sources, or other equipment that produce heat.
5. **Power Sources** – The unit should be connected to a power supply only of the type described in the operating instructions, or as marked on the unit.
6. **Power Cord Protection** – AC power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit. Never take hold of the plug or cord if your hand is wet. Always grasp the plug body when connecting or disconnecting it.
7. **Grounding of the Plug** – This unit is equipped with a 3-wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.
8. **Carts and Stands** – The unit should be used only with a cart or stand that is recommended by the manufacturer. The unit and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the unit and cart combination to overturn.
9. **Wall Or Ceiling Mount** – The unit should be mounted to a wall or ceiling only as recommended by the manufacturer.
10. **Cleaning** – The unit should be cleaned only as recommended by the manufacturer.
11. **Nonuse Periods** – The AC power supply cord of the unit should be unplugged from the AC outlet when left unused for a long period of time.
12. **Damage Requiring Service** – The unit should be serviced by a qualified service personnel when:
  - a) The AC power supply cord or the plug has been damaged; or
  - b) Objects have fallen or liquid has been spilled into the unit; or
  - c) The unit has been exposed to rain; or
  - d) The unit does not operate normally or exhibits a marked change in performance; or
  - e) The unit has been dropped, or the enclosure damaged.
13. **Servicing** – The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

## **Notice**

This manual provides general information, preparation for use, installation and operating instructions for the Universal Audio 6176 Channel Strip.

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## **610B Specifications**

Microphone Input Impedance	Selectable, 500 $\Omega$ or 2k $\Omega$
Balanced Line Input Impedance	20k $\Omega$
Hi-Z Input Impedance	Selectable, 2.2M $\Omega$ or 47k $\Omega$
Maximum Microphone Input Level	+18 dBu (2K input Imp. & 15 dB Pad in)
Maximum Output Level	+20 dBm
Internal Output Impedance	80 $\Omega$
Recommended Minimum Load	600 $\Omega$
Frequency Response	20 Hz to 20 kHz +0, -1 dB
Maximum Gain	65 dB (500 $\Omega$ input impedance)
Signal-to-Noise Ratio	> 90 dB @ maximum gain
Tube Complement	One 12AX7A and one 12AT7A per channel
Power Requirements	115V/230V

### **Special Note:**

The 610B is virtually identical to one side of a 2-610 with two exceptions. The front panel -15dB Pad and a different power supply. We have added a MOSFET regulator to the 610B's High Tension power supply. This regulator, besides keeping the voltage stable, reduces the supplies noise contribution to a negligible level.

## **1176LN Specifications**

Input Impedance:	Selectable, 15k $\Omega$ or 600 $\Omega$
Output Load Impedance:	600 $\Omega$ (floating)
External Connections:	XLR Connectors
Frequency Response:	+/- 1 dB. 20Hz to 20 kHz
Gain:	40 dB, +/- 1dB
Distortion:	Less than 0.5% T.H.D. from 50 Hz to 15 kHz with limiting, at 1.1 seconds release setting. Output of +22 dBm with no greater than 0.5% T.H.D.
Signal-Noise Ratio:	Greater than 75 dB
Attack Time:	Adjustable from 20 to 800 microseconds.
Release Time:	Adjustable from 50 milliseconds to 1.1 seconds.
Stereo Interconnection:	Using 1176 SA stereo interconnect accessory

### **General:**

Power Requirements:	115V / 230V operation
Dimensions:	3.5" vertical, for mounting in standard 19" rack (2RU).
Weight:	12 lbs. (Shipping weight 14.5 lbs.)

## 610B Operating Instructions

The 610B is a vacuum-tube microphone/instrument/line preamplifier. The main circuit has two gain stages that utilize a dual-triode tube operating in a class A single-ended configuration. Variable negative feedback is applied to both of these stages to control gain, distortion, and frequency response. Balanced inputs and outputs are transformer coupled.

### 610B Front Panel (left side)

The front panel has Input Select, Gain, Level, EQ, Pad and Polarity controls as well as a Hi-Z Input. The center section contains (Figure 2) the power ON/OFF switch, pilot light, JOIN-SPLIT switch and a 48 V phantom power ON/OFF switch. Each control is discussed in the following sections.

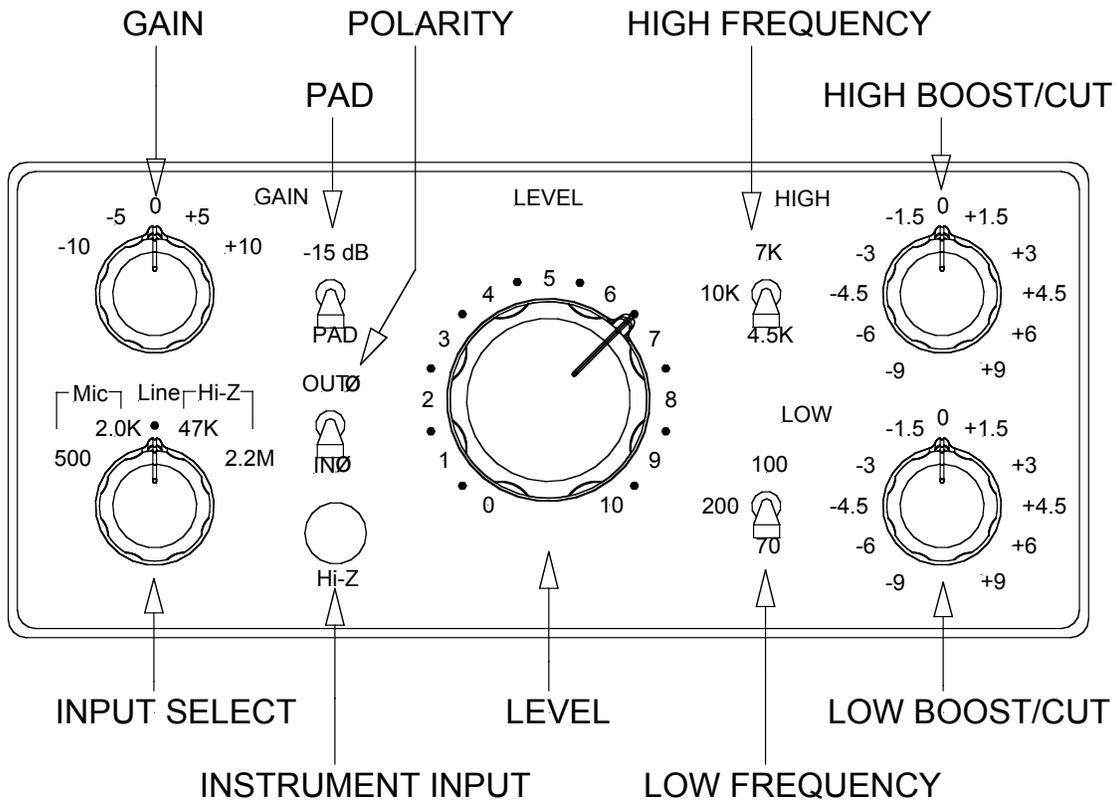


Figure 1: 610B Front Panel

### **610B Input Select**

The Input Select switch determines which input is active: Mic, Line, or Hi-Z. Within both the Mic and Hi-Z areas, the switch includes two settings to select between input impedances.

- **Mic:** Selects the signal from the rear-panel, balanced, MIC INPUT XLR connector. The impedance for the MIC INPUT can be set to 500  $\Omega$  or 2K  $\Omega$ . Switching between these two positions while listening to a connected microphone may reveal a different tonal quality and / or gain. A typical mic preamplifier should have an input impedance equal to about 10 times the mic output impedance. For example, if your mic has an output impedance between 150  $\Omega$  and 200  $\Omega$ , set the switch to the 2K position. However, since making music is not necessarily about adhering to technical specifications, feel free to experiment with the settings to attain the desired sound. You will not harm your microphone or the 6176.
- **Line:** Selects the signal from the rear-panel, balanced, LINE INPUT XLR connector. LINE INPUT has an input impedance of approximately 13 k $\Omega$  and is intended to accommodate mixers, tape machines, other mic preamps or any device with a line level output, such as keyboards, sound modules and drum machines. The 6176 may be used as a “tone box” in this configuration, offering a variety of sonic colors based on the front panel control settings.
- **Hi-Z:** Selects the signal from the front panel, unbalanced Hi-Z 1/4”connector. This input can have an input impedance of 47K  $\Omega$  or 2.2M  $\Omega$  and is intended for bass, guitar or any instrument with a magnetic or acoustic transducer pickup. The 47K  $\Omega$  setting is best suited for -10 dBv level signals, typically found on active basses and guitars. The 2.2M  $\Omega$  setting is appropriate for instruments with passive pickup systems. Since an instrument’s output impedance may be somewhere between the active and passive levels, feel free to experiment to achieve the best sound at the desired level.

### **Gain**

The Gain control adjusts the gain of the input stage in 5 dB increments. Turning the switch clockwise reduces the negative feedback, which raises the gain. In addition to changing the volume, the Gain control also alters the amount of the tube’s harmonic distortion, a major contribution to the warm sound characteristic of tube equipment.

### **Level**

The Level knob is the master volume control. It determines the amount of signal from the preamplifier gain stage sent to the output stage. The cleanest signal is attained by setting the Level knob between 7 and 10 on the scale, then turning the Gain knob until the desired level is attained. Altering the Gain, Impedance, and Output controls together provides many useful tonal variations. The numeric values on the front panel for the Level control denote magnitude and are NOT specific dB values.

### **Pad**

The front panel toggle switch labeled PAD will attenuate the Mic input level by 15dB when the switch is “up”. When undesired distortion is present at low gain levels it is recommended to engage the Pad switch.

### **Polarity**

The front panel toggle switch labeled IN  $\emptyset$  and OUT  $\emptyset$  determines the polarity of the LINE OUTPUT. When IN  $\emptyset$  is selected, pin 2 is hot (positive). When OUT  $\emptyset$  is selected, pin 3 is hot (positive).

### **EQ Controls**

The 610B has both low and high frequency shelving-type equalizers, each with two controls:

- Frequency: This toggle switch selects the corner frequency (Hz). High: 4.5K, 7K, 10K; Low: 70, 100, 200
- Boost/Cut: This rotary switch selects the amount of boost or cut applied to the frequency “shelf.” The positive and negative numbers on the front panel denote dB values.

### **Meter Function**

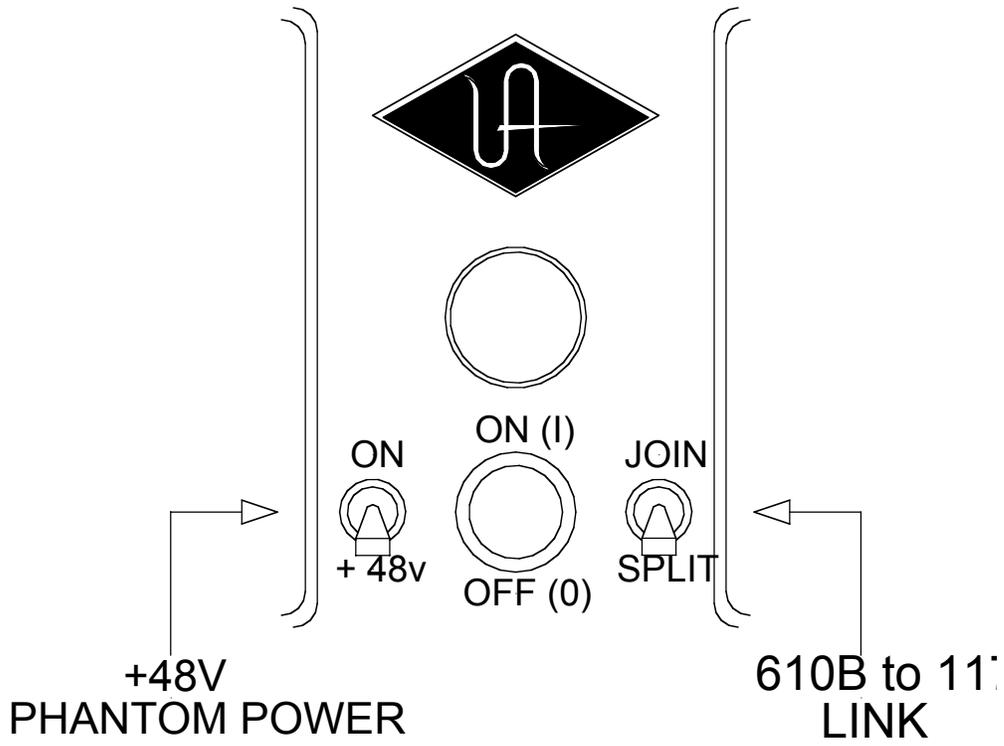
The VU meter can be used to indicate 610B preamp output, 1176LN gain reduction or 1176LN output level. The Meter function is determined using the three position knob to the left of the meter. When PRE is selected, a meter reading of 0 corresponds to an output level of +4 dBm at the 610B Preamp output.

### **+48 V (Phantom Power)**

Most modern condenser mics require phantom voltage to operate and we recommend checking the requirements of your microphones before connecting them. It is good practice to keep phantom power off (switch down) when it is not required. To avoid loud transients, always keep the phantom power off when connecting or disconnecting microphones.

### **Join / Split**

The center section toggle switch labeled JOIN / SPLIT allows separate use of the 610B preamp and the 1176LN limiter. When the switch is “down” in the SPLIT position, each side of the 6176 is a separate device with associated in / out connections on the rear chassis. When the switch is “up” in the JOIN position, the 6176 behaves like a channel strip with the 610B output routed to the 1176LN internally. In this position, the 610B rear chassis output XLR is automatically disconnected.



**Figure 2:** Front Panel center section

# 1176LN Operating Instructions

The 1176LN is an all discrete solid state FET based compressor/Limiter featuring feedback style compression and offers extremely fast attack times.

## 1176LN Front Panel (right side)

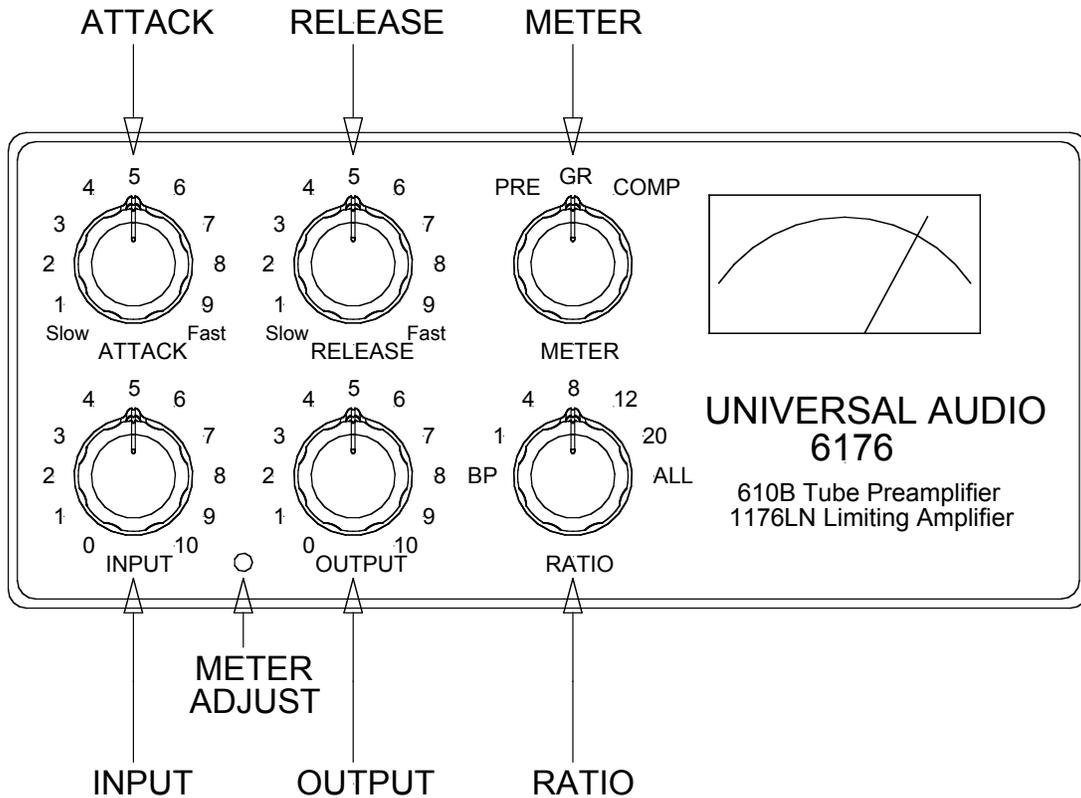


Figure 3: 1176LN Front Panel

### Input

The 1176LN Input control determines when the compressor receives a signal “loud” enough to trigger gain reduction as well as total output level. Higher settings will increase the relative amount of compression.

In order to set the limiter to provide a specific amount of compression, first adjust the Input and Output controls to a fully counterclockwise (CCW) position. Set the Attack and Release controls to “5” so that Gain Reduction is enabled. Set the Meter switch to it’s center position so that the meter reads Gain Reduction (GR). Rotate the Input Level control CW until the desired amount of gain reduction is achieved.

### **Output**

The Output control determines the final output level from the 1176LN. Once the desired amount of limiting is adjusted by setting the Input Control, the Output Control can be used to set the required output level. Set the Meter switch to the Compressor (COMP) position so that the meter reads the desired output level from the 1176LN.

### **Attack**

The Attack control adjusts the time it takes the limiter to respond to an input signal and instigate gain reduction. The Attack control allows for an adjustable response time of 20-800 microseconds. The fastest attack time is achieved when the Attack Control is in its fully CW position. The Attack knob is also a redundant “Compressor Off” control. See Compression Ratio 1: below.

### **Release**

The Release control allows for an adjustable release time of 50 to 1100 milliseconds. The fastest release time is achieved when the control is in the fully CW position.

### **Compression Ratio**

The Ratio control allows 7 different modes of operation.

BP: Bypass. This position switches the 610B output directly to the 1176LN output. In this position the 1176LN and its associated “tone” are completely removed from the signal chain. This feature is here so you can quickly remove the Limiter from the signal path without having to physically move cables.

1: This position passes signal through the 1176LN with NO GAIN REDUCTION. (This is the same as turning the Attack knob full CCW until it clicks OFF). A common use of the 1176 for adding “color” without compression.

4: This position selects a 4:1 compression ratio.

8: This position selects an 8:1 compression ratio.

12: This position selects a 12:1 ratio (mild limiting).

20: This position selects a 20:1 ratio (hard limiting).

All: This position implements the “4 button trick”. This mode increases distortion and the Meter goes wild, often maxing out. This is what happens when all 4 ratio push buttons on an original 1176 are pushed in. Also know as “British Mode”.

### **Meter Function**

The VU meter can be used to indicate 610B preamp output, 1176LN gain reduction or 1176LN output level. The Meter function is determined using the three position knob to the left of the meter. When GR is selected, the meter reads Gain Reduction level in dB. When PRE is selected, a meter reading of 0 corresponds to an output level of +4 dBm at the 610B Preamp output. When COMP is selected, a meter reading of 0 corresponds to an output level of +4 dBm at the 1176LN output.

### **Meter Calibration**

The 0dB gain reduction reading may need to be calibrated.

- 1) Turn the 6176 on and warm up for 5 minutes.
- 2) Set the meter knob to the GR position.
- 3) With the 1176LN Input control full off (CCW) adjust the GR Zero Set trim pot So the meter reads 0 dB. Turn pot slowly and watch how meter settles.
- 4) The GR Zero Set pot is located through a small hole on the front panel between the 1176LN Input and Output knobs.

### **Join / Split**

The center section toggle switch labeled JOIN / SPLIT allows separate use of the 610B preamp and the 1176LN limiter. When the switch is “down” in the SPLIT position, each side of the 6176 is a separate device with associated in / out connections on the rear chassis. When the switch is “up” in the JOIN position, the 6176 behaves like a “channel strip” with the 610B output routed to the 1176LN internally. In this position, the 610B rear chassis output XLR is automatically disconnected.

## **Stereo Operation**

Using an external 1176 Stereo Adapter (1176SA), which is available from Universal Audio, two units may be connected for stereo operation. Use the following procedure to calibrate the 1176 stereo adapter:

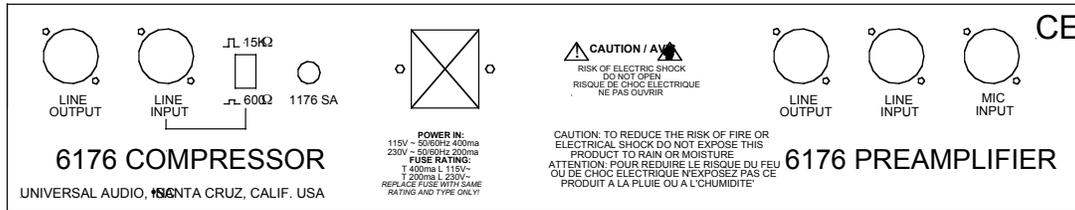
- 1) Remove the signals from both 1176 units.
- 2) Disable the gain reduction on each limiter (set both ATTACK controls fully CCW).
- 3) Connect the 1176-SA to both limiters (This requires two RCA style cables).
- 4) Use the METER function knob to set both units into GR mode.
- 5) Adjust the potentiometer on the 1176-SA until both meters read 0dB.
- 6) If it is not possible to zero both meters, reverse the stereo interconnect cables and repeat the preceding step.

**Note:** When used in stereo operation, the Attack and Release controls on the two units will interact. Controlling the Attack and Release on either of the units controls both units. When connected in a stereo configuration, the fastest attack time is double that of a single unit.

## **6176 Rear Panel**

On the left, the rear panel (Figure 3) has the 1176LN LINE INPUT and LINE OUTPUT XLR connectors. Also, there is an 1176LN Input Loading switch and an 1176LN Stereo Link jack.

On the right, the 610B MIC INPUT, LINE INPUT, and LINE OUTPUT XLR connectors. The center of the rear panel has an AC Power input with fuse holder. These connectors and controls are discussed in the following sections.



**Figure 4: 6176 Rear Panel**

### **Input/Output**

Standard XLR input and output connectors are provided on the rear panel. Pin 2 is wired positive (hot) on the LINE and MIC INPUTS. Pin 2 is positive on the 610B LINE OUTPUT when the front panel Polarity toggle switch is down (IN  $\emptyset$ ). Pin 3 is positive on the 610B LINE OUTPUT when the front panel Polarity switch is up (OUT  $\emptyset$ ).

### **1176LN Input Loading**

The 1176LN Input Loading switch is located to the right of the LINE INPUT XLR. When the button is pushed in, the input impedance will be 600 ohms, typical of older vintage gear. When the button is out, the impedance will be 15K ohms. In some situations you may perceive a “brighter” tone by using the 15K ohm position.

### **AC Power**

The 6176 uses a standard, detachable IEC power cable.

### **Fuse/Mains**

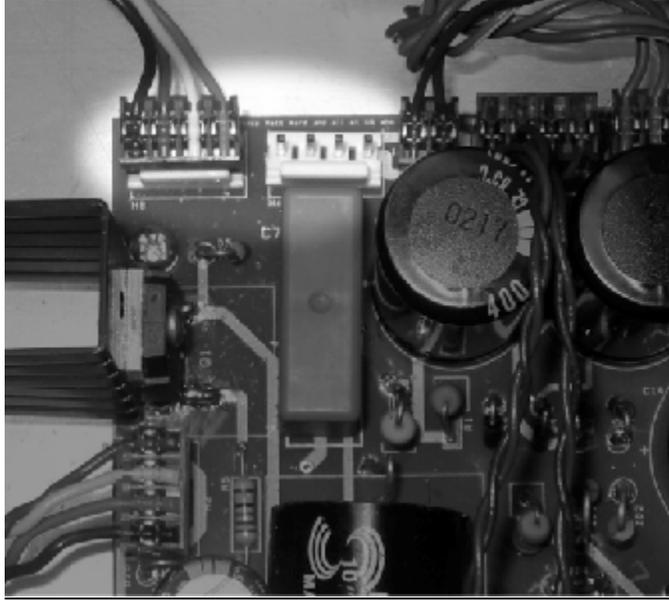
The AC power fuse is located in the AC power connector block. Remove the power cord before checking or changing the fuse.

A 400 mA time delay (slow blow) fuse is required for operation at 115 V.

A 200 mA time delay (slow blow) fuse is required for operation at 230 V.

### **Voltage Select**

The 6176 can operate at 115 V or 230 V. To change the mode, wait 5 minutes after power down, **unplug the AC power cord from the rear chassis**. Remove the top cover. As shown below, there is a connector that can be plugged in to one location or another location to configure the unit for 115V or 230V operation. This figure shows the unit configured for 230V operation. The connector can be identified by its wire colors; Black, Blue, White, Orange. This connector should be plugged into location H8 for 230V operation and location H6 for 115V operation. The connector is part of the wiring that comes from the power transformer located at rear center of the 6176. **When changing operating voltage, fuse value must be changed as well. Make sure the 6176 is properly set for the voltage in your area before applying AC power to unit!**



**Figure 5:** Operating Voltage Selector

# History

## The 610B

Bill Putnam was awarded the 2000 Technical Grammy for his multiple contributions to the recording industry. He was highly regarded as a recording engineer, studio designer/operator and inventor. Putnam was considered a favorite of musical icons including Frank Sinatra, Nat King Cole, Ray Charles, Duke Ellington, Ella Fitzgerald and many, many more. The studios he designed and operated were known for their sound and were an experimentation ground for his continuing desire to push the envelope. Universal in Chicago, United and Western in Los Angeles (now Ocean Way and Cello) all preserve elements of his room designs.

The companies Putnam started, Universal Audio, Studio Electronics, and UREI, built products – mostly of his design – that are still in regular use decades after their development.

In 1999 Bill and James Putnam re-launched Universal Audio to reproduce classic analog recording equipment designed by their father and others. In a short time the company has released two reproductions, the 1176LN and Teletronix LA-2A compressors, designed the 2-610, a new mic-pre inspired by a classic, acquired a company (Kind of Loud Technologies), and launched Powered Plug-Ins, the first in the Universal Audio Digital product line. Whatever the endeavor, every project taken on by the UA team is driven by its historical roots and a desire to wed classic analog technology with the demands of the modern digital studio.

The 2-610 was inspired by the Putnam-designed 610 console built in 1960 for his United Recording facility at 6050 Sunset Boulevard in West Hollywood (now Oceanway). As was the case with most of Putnam's innovations, the 610 was the pragmatic upshot of a recurring problem in the studio: how to fix a console without interrupting a session. The traditional console of the time was a one-piece control surface with all components connected via patch cords. If a problem occurred, the session came to a halt while the console was dismantled. Putnam's solution was to build a mic-pre with gain control, echo send and adjustable EQ on one modular chassis using a printed circuit board. While modular consoles are commonplace today, the 610 was quite a breakthrough at the time.

While the 610 was designed for practical reasons, it was aesthetic appeal that made it popular with the recording artists who frequented United and Western in the 60's. The character of the mic-pre in particular made it favorite of engineers like Bruce Swedien, Bruce Botnick, Lee Hirschberg and Jack Joseph Puig; and artists including Sarah Vaughan, Frank Sinatra, Ray Charles, and The Beach Boys. Swedien describes the character of the preamp as "clear and open" and "very musical".

Studios 2 and 3 at Western, which featured the 610 console, were the site of many classic recordings of the 60's, including the Mamas and the Papas (Bones Howe), Up, Up and Away by the Fifth Dimension, Herb Alpert, Sergio Mendes (Bruce Botnick), and of course Pet Sounds.

Legendary engineer Wally Heider, manager of remote recording at United, used his 610 console to record many live recordings including Peter, Paul and Mary "In Concert" (1964), Wes Montgomery's "Full House" (1962), and all of the Smothers Brothers Live albums. Heider's console was later acquired by Paul McManus in 1987, who spent a

decade restoring it. [We thank Paul for his efforts and his contribution to our efforts to trace the history of the 610.]

At least one 610 module is still in use at Oceanway. Allen Sides, who purchased the studio from Putnam to open Oceanway, personally traveled to Hawaii to collect the 610 console that was used to record the live "Hawaii Calls" broadcasts. Jack Joseph Puig has been ensconced in Studio A with the 610 (and a stunning collection of vintage gear) for nearly five years where he has applied the vintage touch to acts including Beck, Hole, Counting Crows, Goo Goo Dolls, No Doubt, GreenDay and Jellyfish

The 6176 you have purchased carries on the illustrious history of the 610. The 610B circuitry is identical to one half of our 2-610 Mic pre with a few exceptions. We have added a 15dB Pad switch and a power supply modification.

### **1176LN**

It was Bill Putnam himself who, in 1966, was responsible for the initial design of the 1176. Its circuit was rooted in the 1108 preamplifier which was also designed by Putnam. As is evident from entries and schematics in his design notebook, he experimented with the recently developed Field Effect Transistor (F.E.T.) in various configurations to control the gain reduction in the circuit. He began using F.E.T.s as voltage variable resistors, in which the resistance between the drain and the source terminals is controlled by a voltage applied to the gate. His greatest challenge was to ensure that distortion was minimized by operating the F.E.T.s within a linear region of operation.

After several unsuccessful attempts at using F.E.T.s in gain reduction circuits, Putnam settled upon the straightforward approach of using the F.E.T. as the bottom leg in a voltage divider circuit, which is placed ahead of a preamp stage.

The output stage of the 1176 is a carefully crafted class A line level amplifier, designed to work with the (then) standard load of 600 ohms. The heart of this stage is the output transformer, whose design and performance is critical. Its primary function is to convert the unbalanced nature of the 1176 circuit to a balanced line output, and to provide the proper impedance matching to drive the line impedance of 600 ohms. These two jobs are accomplished by the primary and secondary windings whose turns' ratio defines the impedance ratio.

This transformer is critical due to the fact that it uses several additional sets of windings to provide feedback, which makes it an integral component in the operation of the output amplifier. Putnam spent a great deal of time perfecting the design of this tricky transformer and carefully qualified the few vendors capable of producing it.

The first major modification to the 1176 circuit was designed by Brad Plunkett in an effort to reduce noise--hence the birth of the 1176LN, whose LN stands for low noise. Numerous design improvements followed, resulting in at least 13 revisions of the 1176.

Opinion has it that the D and E blackface revisions sound the most "authentic".

Both the 1176 and the LA-2A remain in daily use. Busy engineers and producers' comments about both the 1176 and the LA-2A demonstrate their impact on the industry:

Mike Shipley (Def Leppard, Shania Twain, Blondie): "I grew up using 1176s --- in England they were the compressor of choice. They're especially good for vocals, which is also what I primarily use the LA-2 for. Most anything else I can do without, but I can't be without at least a pair of 1176s and an LA-2A. For example, on the Enrique Iglesias

project I'm currently mixing, I'm using both an 1176 and an LA2 on his voice, which is not unusual for me.

“The 1176 absolutely adds a bright character to a sound, and you can set the attack so it's got a nice bite to it. I usually use them on four to one, with quite a lot of gain reduction. I like how variable the attack and release is; there's a sound on the attack and release which I don't think you can get with any other compressor. I listen for how it affects the vocal, and depending on the song I set the attack or release--faster attack if I want a bit more bite. My preference is for the black face model, the 4000 series--I think the top end is especially clean.”

Allen Sides has always been known for his golden ears when it comes to the sound of equipment. The owner of Ocean Way Studios in Los Angeles and Nashville, he's also a speaker designer and engineer who is especially respected for his work with live musicians, including orchestra and string dates. Among his recent credits are work with the Goo Goo Dolls, Alanis Morissette and Green Day. Sides brings his different perspectives into play when he talks about using the 1176.

“The 1176 is standard equipment for my sessions. I just used them last night, as a matter of fact, on a project for singer Lisa Bonet that Rob Cavallo was producing at Ocean Way. We were recording drums and I used them on the left/right overheads as effects limiters. It's something I learned from (engineer) Don Landy, who worked with Randy Newman a lot. I mult the left and right overheads and bring them back on the console, then insert a pair of 1176s into a pair of the mults. Push in 20 to one and four to one simultaneously and it puts the unit into overdrive creating a very impressive sound.”

Murray Allen is a veteran engineer and Director of Post Production for the San Francisco Bay Area company Electronic Arts. He has a fascination for gear both old and new and he explains why he thinks the 1176 has been so popular for so long. “It has a unique sound to it that people like, it's very easy to operate, and it does a great job. You have just two controls relative to the ratio of compression. You have input and output and you have attack and release. That's all there is. It's still my favorite limiter for Fender basses and string basses, because you don't know it's working. It doesn't change the way the bass sounds, it just keeps the level at a more controllable place.”

Mixer Ken Kessie (En Vogue, Tony! Toni! Tone!, Celine Dion) is known for being experimental. “Seems like everybody knows the basic tricks for the 1176,” he says, “But here are two that might be lesser known. If you turn the attack knob fully counterclockwise until it clicks, the 1176 ceases to be a compressor and acts only as an amplifier. Sometimes this is the perfect sound for a vocal. And of course the unit can be overdriven, adding another flavor of distortion in case your plug-ins are maxed out!”

“Then, for that hard-to-tame lead vocalist (the one that backs up from the mic to whisper and leans in for the big ending chorus), try an 1176 followed by a DBX 165. Use the 1176 as a compressor, and the DBX as a peak limiter...it's guaranteed to be smooth as silk.”

Jim Scott shared a Grammy for Best Engineered Album for Tom Petty's Wildflowers. He's also known for his work with Red Hot Chili Peppers, Natalie Merchant and Wilco. “I use 1176s real conservatively and they still do amazing things,” he comments. “I'm always on the four to one button, and the Dr. Pepper--you know, 10 o'clock, 2 o'clock, and it does everything I need. “

“I always use them on vocals. I use them on room mics, on acoustic guitars--sometimes in mixing I'll sneak a little on a snare drum or a separated channel of a snare drum. I'm

not one of those guys who leaves it on everything, but I'd have to say I've used an 1176 on everything at one time or another."

"They have an equalizer kind of effect, adding a coloration that's bright and clear. Not only do they give you a little more impact from the compression, they also sort of clear things up; maybe a little bottom end gets squeezed out or maybe they are just sort of excitingly solid state or whatever they are. The big thing for me is the clarity, and the improvement in the top end."

"The 1176 has that same kind of phenomenon, where, when you patch something through a Neve equalizer and you don't even engage the EQ, it sounds better. It's just a combination of the amps."

"I've also used the 1176 as a stereo buss compressor-you just have to be a little bit careful that your mixes don't go one sided. Tom's [Petty's] records have often been mixed through 1176s. I've also done that with LA-2As --they are of course, more inconsistent piece to piece than the 1176s, because of the tubes and the difference in fatigue of the tubes."

"My big mentors were Andy Johns and Lee DeCarlo and Ron Nevison because they were all Record Plant guys. I learned how to make a rock and roll record from them. Although over the years it's become my own thing, my style still tends to be that Record Plant style, U87s, 1176s, LA-2As, 47 F.E.T.s...it's what I like."

Producer/Engineer Mike Clink (Guns N' Roses, Sammy Hagar, Pushmonkey) also comes from the Record Plant school of recording. "I find that I actually use 1176s more now than I ever did," he comments. "I like them because they bring out the brightness and presence of a sound--they give it an energy. It seems like when I'm mixing I end up using an 1176 on the vocals every time. And if I want to compress a room sound I'll take a mono room mic, put an 1176 across it and push in all the buttons."

Bruce Swedien is a master engineer who needs no introduction. He also is a die-hard 1176 fan. "I have two silverface 1176LNs in my rack that Bill Putnam personally picked out for me," he says. "I remember sitting at Bill's place in the Channel Islands, and talking about the 1176 and how I wanted a pair. The next time we went over he'd picked this pair out and they were sitting in his garage waiting for me. I love them on vocals. All of the Michael Jackson and James Ingram vocals that everyone has heard so much were done with at least one of those 1176s. I couldn't part with them for anything. They sound fabulous."