

Workingman's 160

FORWARD

In 1984, when SWR first opened its garage door, our goal was to make the finest sounding and most reliable bass equipment we could, geared for the professional market AND carry an honest price tag. The time had come to provide the dedicated bass player an amp that was more than "a guitar amp without the reverb", or a "studio amp" so called because it happened to be..... small. While the major companies were mass producing the above products, bass players were having to go "direct" in the studio (the sound quality was simply far better than most bass amplifiers could produce, much less reproduce). New styles of playing such as "slap" and "tapping" were becoming popular. The five string bass was surfacing. The frequency range and dynamics of the "latest" amps and cabinets just could not accommodate these new techniques and instruments. Bassplayers who wanted a natural sound were having to spend a fortune buying separate cabinets for lows and highs powered by expensive full range power amps (bi-amping). We wanted to change all this!

We knew we had to think and listen. We are still grateful for input given to us by: players such as Dan Schwartz, Nathan East, Neil Stubenhaus, Danny Sheridan, Phil Lesh, Andy West, Bob Glaub and Phil Chen; Luthiers Michael Tobias, Geoff Gould (Modulus Graphite) and Mike Pedulla; and our friend Andy Brauer at Andy Brauer Studio Rentals. We took all this input quite seriously down to and including "amps should be heard and not seen"! It seemed the band felt they should stand out more than their equipment. Our first model, the PB-200 had a simple black front panel, cream color silk screen and small SWR logo. We still keep that philosophy today except that the logo on some top of the line products is hand engraved and we keep naming our combo's after colors (i.e. Redhead, Baby Blue, etc.).

When the first amp was completed we took it down to Andy Brauer who had set up an appointment with Louis Johnson of the "Brothers Johnson". After playing the amp for about 5 minutes he immediately wanted to buy one. Louis ended up purchasing the fourth PB-200 made and used it to record the bass tracks on the song "We Are the World" produced by Quincy Jones. The fact that he was able to use his own amp in the studio under his control with excellent results was quite a breakthrough at the time. We also felt we were on the right "track" (no pun intended).

The PB-200's original design parameters have been the foundation for all electronics produced by SWR. This along with constant input from our advisory board has led to features first introduced into the market place on a production basis by SWR including: the Aural Enhancer; side chain effects loop; Tuner send; real studio quality record XLR balanced outputs selectable for line or direct, and adjustable send, mute and ground lift functions; a combo unit with a built in rack space; separate independent inputs for Active and Passive instruments; EQ settings down to 30 Hz; stereo effects loops; stereo power sections; and full range speaker monitors.

SWR's next step was to produce a speaker cabinet capable of reproducing all the information our amps were sending. After much experimentation, the Goliath Bass Monitor System was introduced six years ago at the January, 1988 NAMM Show. With four 10" speakers, high frequency driver, 500 Watt RMS power handling capacity, incredible frequency response and relatively small size, it was quickly recognized as simply the most innovative bass cabinet to come along in quite a while. Two years later we improved the quality in every area and updated the name to Goliath II. The Goliath II may be the most imitated bass cabinet in the world with 10 look-a-likes that we know of.

The above brief history was to let you know that we were listening then and we are listening now! SWR has had numerous requests from the casual player, beginner and even pro player to produce a line of products that incorporate accurate sound, high reliability, quality components and hand-made craftsmanship. All at a price that the workingman (or woman) can afford. Going into our 10th year anniversary, we felt this would be something worth pursuing. Thus, the Workingman's 12 came into being. The Workingman's 160 is the third in a line of Workingman's products to be developed by SWR with true sound, quality parts and price consciousness in mind.

The precision electronic section is entirely hand-built, employing a variety of technologies selected for their sound quality and practical usefulness in a road-able and studio-ready amplifier, including an all discrete initial gain stage in the preamplifier section and discrete solid-state design in the power amplifier. Regardless of its lower price, the Workingman's 160 offers no compromises of the essential SWR design and construction philosophy. Corners are not cut from a more elaborate model: rather, each product's design parameters are conceived from the ground up and the best available components selected for each application. Once again, with sound, reliability and price consciousness in mind.

The Workingman's 160 tone-shaping section, including the Aural Enhancer (found in all SWR Preamps and Integrated Amplifiers) and the Tone Controls, will not impose a character on your sound. They will instead make the interface between your instrument and the speaker system, the two biggest factors in your final tone, a simple matter and a minimal effort. The center frequencies of the Tone Controls were chosen for their musical effect on most basses.

Thank you for putting your faith into our products. We truly hope that the Workingman's 160 helps bring out the best in your playing and adds to the enjoyment of your hobby or profession.

EVERY WORKINGMAN'S ONE-SIXTY FROM SWR ENGINEERING IS ENTIRELY ASSEMBLED BY HAND IN CALIFORNIA. TRULY "HAND MADE IN THE U.S.A."

FRONT PANEL FEATURES

BALANCED DIRECT RECORD OUT:

The Balanced XLR output is a true balanced output. No front panel controls affect its signal. The tone and output level are controlled only by the instrument plugged into one of the input jacks. To use this feature, run an XLR (Cannon) cable from the Balanced D.I. to the input of a tape machine, mixing console, etc. This output is also suitable for sending a signal to a house mixer in live situations.

Wiring for the XLR connector is as follows: Pin 1 = ground, Pin 2 = +, Pin 3 = -. (American standard)

NO PHANTOM POWER (48V SUPPLY) SHOULD BE APPLIED TO THIS OUTPUT. DOING SO MAY DAMAGE THE INTERNAL CIRCUITRY.

TO TUNER:

The To Tuner send jack allows the user to connect their instrument tuner to the Workingman's 160 without having to unplug and go back and forth from amp to tuner to amp. Like the Balanced D.I. output, this feature is isolated from the rest of the circuitry and no other controls other than your instrument have an affect on this feature. Being on a sidechain (isolated) also avoids loading down of the instrument causing a loss in its dynamic range.

To use this feature, plug in a shielded patch cord from this jack to the INPUT of your tuning device. Turn the amp on and you're ready to go. If you don't want to monitor your sound while tuning, turn down the Master Volume control or position the selector switch on the back panel to the "headphones" (middle) position.

INPUT JACKS

Two separate and independent input jacks are provided so that the best signal to noise ratio can be obtained without overloading the preamp section. The Passive input has over twice the gain than that of the Active input. Both inputs can be used simultaneously without affecting the volume or tone of the other. One use of these inputs would be to plug your bass into the Passive input and practice along with a drum machine by plugging it into the Active input. A more detailed explanation of these inputs follows.

PASSIVE:

This input can and should be used if your instrument has passive electronics (no built-in preamp). Some pickups, such as EMG, etc., employ batteries for operation and will work perfectly using this input. Technically speaking, this input should be used if your instrument has an output voltage of 1 volt RMS or LESS. Consult the owner's manual that came with your instrument or ask the manufacturer if you are unsure.

NOTE: Generally speaking, you should try the Passive input jack first. Some built-in preamps, such as those made by Bartolini and Music Man, can be used with this input depending on their internal gain settings. If you hear a small amount of distortion and the Preamp Clip LED is not activated, try using the Active input jack. And please note, some passive pickups DO distort. Because of the hi-fi nature of all SWR products, even the smallest amount of distortion originating at the source (instrument) may be heard.

ACTIVE:

The Active input jack should be used with instruments having a built-in (on-board) preamp that will produce signals over 1 volt RMS. Known basses that should use the Active input only are the Kubicki X-Factor and some Ovation electrics. Some really "hot" pickups installed in your instrument may find the Active input more compatible. The best judge is your own ears.

NOTE: Using the Active input with passive basses may result in a loss of high-end transients. Players who roll off their high-end starting at around 2K to 3KHz may find this input more to their liking.

If you hear some distortion from your active bass and are using the Active input jack, CHECK YOUR BATTERY!! Also, make sure the Preamp Clip LED is not lighting.

PREAMP CLIP LED:

The Preamp Clip LED will light whenever the Preamp, Tone section or output buffer reach clipping (run out of headroom). In the event the Preamp clip indicator lights, turn down the Gain control. Since the Preamp Clip also monitors the Tone section, boosting any one of the tone controls can cause the LED to activate. Again, turn down the Gain control if this happens.

NOTE: Constant clipping of the preamp will not harm the electronics in your Workingman's 160. However, damage can occur to speakers due to near-DC content present in a clipped waveform. Do not defeat the limiter when overdriving the preamp.

GAIN CONTROL:

The gain control adjusts the volume of the preamp section. After the Tone controls, Aural Enhancer and any effects you may be using have been set to your liking, the Gain control should be set to where the Preamp Clip LED barely flashes upon hitting your loudest note. After setting the Gain, use the Master Volume to set the desired volume level. Using these controls in this manner assures the maximum signal-to- noise ratio with no distortion caused by the preamp circuits clipping. Since the Gain control is similar to a "pad", a small amount of signal will get through with the Gain control turned all the way down. The Gain also adjusts the level sent to the Effects send jack. If your effect is being overdriven, turn down the Gain Control.

USING THE TONE CONTROLS

To get the most out of the Tone Controls of your Workingman's 160, it would be best to first understand how the Aural Enhancer works, and how it interacts with the Bass, Midrange and Treble controls. Think of it as a variable tone curve, changing with its position. As you raise the control from its "0", or fully counterclockwise position, you are elevating the whole range of sound (lows, mids, and highs) at frequency points different than those selected for the individual Tone Controls. This remains true up to about the "2 o'clock" position, at which point the mids start to drop off. The curves involved here are gentle, as opposed to the very extreme curves you can create with the Tone Controls. Most significantly, the Aural Enhancer will raise the low end at a point lower than the Bass control itself. For a "normal" bass (4-string), the Bass control itself will suffice. For the 5-string player, the Aural Enhancer will help bring out the fundamentals of your instrument in the 30-60Hz range.

The Bass control itself, as stated above, works in a range that will be useful under most "normal" conditions. Its musical use might be thought of as a "fatness" control. Leaving the Aural Enhancer in a position lower than 12 o'clock will not boost

the extreme bottom so much as to make indistinct the working of the Bass control. The overall "punch" of your instrument, from your low E-string on up about two octaves (midway up the G- string), will be determined with this control. With passive instruments, this will be straightforward. With active instruments having bass-boost controls more exploration will be worthwhile. (Some active tone circuits have boost-cut controls such as Tobias, Sadowsky, etc. Others such as Music Man, may be straight boost controls).

The Mid Range control operates in a crucial area for most instruments. Many basses, particularly with roundwound strings, can have a very "honky", or nasal, sound. Dropping the Mid Range control can go a long way toward smoothing out your tone. We suggest, though, that what sounds best when you're listening to your tone by yourself may not be what works best in a band or recording. Sometimes that objectionable quality may be just the right "hair" on your note to still have an audible presence in the track or on stage.

The Treble control operates in a tonal area that extends through and beyond the usual Treble control range. The Transparency control "kicks in" at a much higher frequency. Boosting the control will open up the sound of a dull instrument, particularly in conjunction with a tweeter, should you have one in your speaker system. However, this is also the range of string rattle, finger slides, pickup clicks, etc. Again, we recommend you experiment with the control alone with your instrument while finding your tone, and listen again in a band context, both near to and away from your speaker system. Qualities like punch, fatness, presence and bite can be fairly well spread out. Treble, despite the broad dispersion of most tweeters, is a very directional quality. Spend some time exploring what you can hear in this area as you move around.

AURAL ENHANCER:

The Aural Enhancer was developed to bring out the fundamental low notes of the bass, reduce certain frequencies that can "mask" fundamentals and enhance the high-end transients. The effect becomes more pronounced as the control is turned up. The result is a more transparent sound. Listening to a passive bass with the control set all the way down, and then turning it all the way up, can be likened to listening to the bass suddenly become "active".

TONE CONTROL SECTION

The Workingman's 160 Tone Control section is a four-band set of level controls centered around the frequencies 80 Hz (Bass), 800 Hz (Mid Range), 2 kHz (Treble) and 5 kHz (Transparency). Each control can cut or boost its band a maximum of 15dB. Each control has a flat (center click) position that defeats its function. In this position, the tone controls are inactive.

For each tone control, rotating the knob counter-clockwise from the center "click" position will reduce or cut its designated frequency. Rotating the knob clockwise will boost its designated band or frequency.

EFFECTS BLEND:

The Effects Blend control mixes the signal coming from your instrument with the sound coming from your effect. With the Blend control fully counter-clockwise, no signal from your effect will be heard. As you turn this control clockwise, more of the effect can be heard in the overall sound. When the Blend control is fully clockwise, no dry or unaffected signal is heard other than the output of your effect device.

This type of control and patching arrangement is very effective in reducing noise caused by effects devices and in maintaining a more natural sound. If your effects device has a similar control, we suggest leaving it set to its maximum effect/minimum dry signal position and using the Effects Blend control for this function. Please read the "Effects Loop" section for more information.

LIMITER DEFEAT:

Pulling out the Effects Blend knob until a click is heard deactivates the Internal limiter circuit. Pushing the control back in, activates the circuit.

MASTER VOLUME:

The Master Volume adjusts the signal level going to the power amplifier. It DOES NOT control the output of the effects send jack or Balanced Direct Record XLR output. It DOES affect the output at the "Speakers" jacks and headphones jack. Losses caused by effects units can be recovered by increasing the Master Volume.

LIMITER/COMPRESSOR CIRCUIT:

This circuit is located after (post) the Master Volume and before (pre) the power amplifier. Therefore, the circuit is driven by the Master Volume. Its threshold (starting point) is preset by the factory so that the user can get maximum overall apparent volume without unduly overdriving the power amplifier or internal speakers. This feature may be defeated by pulling out the Blend control. See "Blend Control" for further info.

LIMITER ACTIVE LED:

When the threshold of the Limiter circuit is reached the green Limiter Active LED will light.

SPEAKER ON/STANDBY SWITCH:

The top position labeled "ON" completes the circuit from your power amplifier to the speaker jacks located on the back panel. In other words, it turns your speakers on (provided they are hooked up). The bottom position labeled "Stand By" interrupts this path and turns your speakers off.

Note: This switch does NOT affect the Headphone jack.

The "Stand By" position allows you to: tune up silently; use headphones "only" with speakers still plugged in; change or add speaker cabinets with the unit still on; silent turn-on or turn-off transients.

IF NO SOUND IS COMING FROM YOUR SPEAKERS, CHECK THE POSITION OF THIS SWITCH. IF THIS IS NOT THE CAUSE,

CHECK THE SPEAKER FUSE, CABLES, ETC.

POWER SWITCH:

Pressing the Power Switch to the ON position activates the Workingman's electronics as indicated by the red LED above the switch lighting.

NOTE: Because of the tight regulation in the power supply, a transient (pop) may occur when turning on or off the unit. This is normal and will not harm your speaker. If you wish to avoid this condition, turn the Speaker switch to the "Stand By" position before turning the unit on or off.

REAR PANEL FEATURES

EFFECTS LOOP:

The Effects Loop is located POST EQ and PRE Master Volume in the signal path. The level appearing at the Send jack is controlled by the Gain control on the front panel. If you are getting too hot a signal to the input of your effect, reduce the level of the Gain control and raise the level of your Master Volume control to retain similar overall volume levels. By using the Gain, Master Volume and Effects Blend controls, optimum performance should be easily obtainable with any effects device.

The Effects Loop is designed as a "sidechain" (parallel) function similar to those found on mixing consoles. Use of the Effects Loop should greatly reduce noise generated by effects devices (as compared to in-line effects loops). Additional features of this type of loop can be found below under the Receive jack section.

SEND:

Run a shielded patch cable from the Send jack to the input of your effects device. This jack may be used as an additional line level output, in which case its level is determined by the setting of the Gain control.

RECEIVE:

Run a shielded patch cable from the output of your effects device to the Receive jack.

One unique feature of the Receive jack is the ability to practice along with pre-recorded music. Insert a sound source into the Receive jack (make sure it is a mono source). Use the Effects Blend control to mix the level of the recorded music with your instrument's level. The combined signal will be heard through your speakers, headphones, or both. The send jack is not used.

NOTE: Inserting a plug into the Receive jack activates the Effects Blend control by receiving a "command" through the ground created. Therefore, only a mono (2-conductor) phone plug should be used. If you have a stereo (3-conductor) plug only, tie the ring and the sleeve (ground) together.

If you are not getting any "effect" through the speakers, check the position of the Effects Blend control.

SPEAKER JACKS:

Use an unshielded 2-conductor cable (NOT A GUITAR CORD!) to connect any speakers to your Workingman's 160. Use a high quality, heavy gauge cable of at least 18 gauge (the lower the gauge, the heavier the cable). The total impedance of the speakers should be 4 Ohms or greater. This means you can use 1- 4 ohm cabinet, 2- 8 ohm enclosures or 4- 16 ohm cabinets.

STEREO HEADPHONES JACK:

By inserting a set of stereo headphones into this jack you will be able to monitor your sound or practice without disturbing your neighbors. The headphone volume level is adjusted by the Master Volume. We suggest you begin with the Master Volume full off (counter-clockwise), then slowly bring up the volume to the desired level. If you hear some distortion in your headphones that is not present with the speakers on, turn down the volume as you are probably overdriving your headphones and could ruin them.

Any impedance headphones will work. However, optimum impedance is 75 ohms.

DO NOT PLUG A SPEAKER CABINET INTO THE HEADPHONE JACK! DO NOT USE MONO HEADPHONES. REMEMBER, STEREO ONLY!

SPEAKER FUSE:

The speaker fuse is provided to protect the power amplifier from a fault in the speaker cable or the speakers themselves. It can also open (blow) if an impedance less than 4 ohms is used or in the unlikely event of a power amp failure. Size and rating of the fuse is 3AG, 6 AMP FAST BLO. Do not defeat the purpose of this feature by using a higher rated fuse.

A/C LINE FUSE:

The line fuse can open (blow) due to power surges or high power line transients. This fuse will also open in the event of an electronics failure inside your amplifier. Correct size and rating of the Line (Mains) fuse: 3AG, 3 amp slo-blow for 120V operation, and 1 1/2 amp slo-blo for 240V operation. DO NOT REPLACE THIS FUSE WITH ONE OF A HIGHER RATING. IT MAY VOID YOUR WARRANTY AND DAMAGE YOUR AMPLIFIERS ELECTRONICS.

A/C LINE CORD RECEPTACLE:

Accepts a standard A/C power cable (supplied with the Workingman's 160 in the United States), used with almost all current musical, professional and household electronic devices. We recommend taking great care when packing up. Put the cable in your instrument case, accessory case, etc. If it does become misplaced, replacement will be easy at almost any appliance store, super market or the like. But PLEASE NOTE: the rating for this cable is 3-conductor, 10 amperes. This is a rating of the current capacity of the cable, designated for higher power-drawing devices like amplifiers. If replacement is

necessary, or if you wish to buy a longer cable, look for the rating on the cable and be sure it is at least 10 amps.