Grand Prix

GENERAL DESCRIPTION AND DATA

The Grand Prix Preamplifier represents state of the art engineering in both design and features for the professional musician who prefers modular type reinforcement systems. The preamplifier is the "heart" of the sound in the electronic portion of the musicians rig. Great care has been taken in selecting the components used, the frequency points and bandwidths of the tone sections, and the attention to flexibility so that this product will remain essential even though the owners applications and needs may change over the years.

The precision electronic section is entirely hand-built and employs everything from a vacuum tube for the preamp section to integrated circuits for the tone sections. The chassis is made entirely of aluminum and is chosen for its repeatable electrical properties and superior resistance to the environment. This is preferable to commonly used steel. The front panel is grained and black anodized while the main chassis, top and bottom are painted satin black. All rotary pots and dual concentric potentiometers are custom made for SWR by Noble, USA. Only four coupling capacitors are found in the signal path and are employed in the tube circuit. They are a very high grade, hermetically sealed polyester or mylar type and come from West Germany.

Features that are unique from previous SWR products are a user optionable high pass filter, a mute function on the XLR record out, a dot bar line level display, a separate headphone amp and a new grounding system that provides for extremely low hum levels.

NOTE: We found that when using high power on stage or when several pieces of rack equipment are housed in the same rack unit, ground loops can occur through the rack rails themselves which tie the individual units together - both electrically and mechanically. This is one reason a "star" type grounding system is used in the Grand Prix. Basically, this means that each part of the circuitry has its individual ground routed via a wire to one common point. From this point, the circuitry is tied to chassis ground through a buss "jumper." If you have an elaborate rack system or run high power on stage (such as 1000 watts or more) and are experiencing abnormal hum, crosstalk, etc., the buss that connects the internal circuitry of the Grand Prix to the chassis may be removed, totally isolating the circuitry from the rest of your system. This should only be done by a qualified technician (chances are that if you can afford this type of system, you also have your own technician). Please call the factory for details!

We feel that this is one of our finest preamp designs to date and truly hope it brings a new freshness and quality to your playing.

GRAND PRIX SPECIFICATIONS

Note: Unless otherwise specified, all measurements were taken with a line voltage of 120VAC, Gain and Master Volume full, tone controls flat and Aural Enhancer at minimum.

CHASSIS

Size: Single rack space (1.75") High x 19" wide x 8.75" Deep
Weight: 5 1/4 pounds
Material: 5052-H32 Aluminum

POWER SUPPLY

All discreet components switchable for 100V, 120V, 220V and 240V operation.

INPUTS

Input Impedance
Passive/Active Input Jack = 800K ohms
Active Input Jack = 60K ohms
Effects Return Jack = 27K ohms
Gain @ 1KHz
Passive/Active Input Jack = 71.4
Active Input Jack = 14.3
Effects Return Jack = 1

OUTPUTS

Output Impedance
Effects Send Jack = 10 ohms
Line Out Jack = 100 ohms
Tuner Out Jack = 100 ohms
XLR Balanced Record Out Jack =1.5K ohms
XLR Balanced Line Out Jack = 10 ohms
Unbalanced Preamp Outs = 10 ohms
Maximum Output @ 10K and 600 ohms
Effects Send Jack: 9V and 7V RMS
Line Out Jack: 9V and 7V RMS
Tuner Out Jack: 9V and 7V RMS

XLR Balanced Record Out Jack: 10V and 5.5V RMS
XLR Balanced Line Out Jack: 18V and 14V RMS
Unbalanced Preamp Outs: 9V and 7V RMS

NOISE

Equivalent Input Noise: 2.80 microvolts
Signal to Noise Ratio, unweighted -93db
Typical Unweighted Noise reading less than 200 microvolts

DISTORTION

System Distortion (1V RMS, 600 ohm load, 1 KHz) 0.23% THD

TUBE

(1) Specially selected Groove Tube 12AX7A

DOT BAR DISPLAY

Accurate within .5db

FRONT PANEL FEATURES

DOT BAR DISPLAY

The Dot Bar Display indicates the line level (post tone controls) and is sampled pre- Master Volume. Having the finite level indication the Dot Bar offers, the user is able to get maximum signal to noise ratio while performing and should all but eliminate unwanted clipping of the preamp section. We recommend using this function as follows:
1. Set the Gain and Master Volume about 1/4 of the way up (9 -10 o'clock).
2. Adjust your tone section, Aural Enhancer and any effects you may be using to their desired settings. Set the controls on your bass to their desired levels.
3. Turn down the Master Volume.
4. Raise the Gain Control to where the +10 LED barely flashes when striking your loudest note. Do this in several different positions on the neck. Generally you will find a "hotspot" that gives the greatest (highest) reading. Play this note several times while adjusting the Gain Control to achieve the +10 LED barely flashing.

Once you have accomplished this, use the Master Volume to determine your volume on stage. You have now set your preamp in such a manner that will give you optimum results. The sound man controlling the board in either live or studio situations will appreciate this as you are able to give him a good level with minimum noise. Don't forget that the level at your XLR record jack is governed by the XLR pad.
If you change instruments and need the same volume level, you are able to do this quickly by adjusting the Gain control to a similar level.

PASSIVE/ACTIVE INPUT JACK

This input can and should be used if your instrument has passive electronics (no built-in preamp). Some pickups such as EMG, Fishman, etc. employ batteries for operation and will work perfectly using the Passive/Active input. Technically speaking, this input should be used if your instrument has an output voltage of 1 volt RMS or less. Consult your owners manual or ask the manufacturer if you are unsure. Preamps made by Bartolini, Sadowsky and Rick Turner make a perfect marriage with this input.
NOTE: If you hear a small amount of distortion and the +20 LED in the Dot Bar Display is not lighting and your power amp is not clipping, try using the Active Input jack.
If you would like to overdrive the first TUBE stage, this can be done by using a preamp between your instrument and the Passive/Active input. To obtain optimum sound when trying this, make sure the +20 LED indicator is not lighting. If this occurs, turn down your Gain control. The first preamp stage is NOT monitored by the Dot Bar Display for this reason.

ACTIVE INPUT JACK

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 are Kubicki X-Factor and some early Ovation Electrics. Some really "hot" pickups installed in your instrument may find this input more compatible. The best judge is your own ears. Keyboards, drum machines, etc., should use the Active Input jack.
NOTE: Using the Active input with passive basses may result in a loss in high end transients. Players who roll off their high end starting at about 2K to 3KHz or prefer a "darker" sound may find this input more to their liking.
If you hear some distortion on your active bass and are using the Active input, CHECK YOUR BATTERY!! This will save you and a service technician a lot of aggravation.

GAIN CONTROL

The Gain control adjusts the volume of the preamp section. Since the Gain control is similar to a "pad," a small amount of signal will be heard even with the Gain rotated fully counter-clockwise. Please refer to the information given under the Dot Bar Display for proper use of the Gain control.

AURAL ENHANCER

The Aural Enhancer was developed to bring out the fundamental low notes of the bass guitar, reduce certain frequencies that help "mask" the fundamentals and enhance the high-end transients. This effect becomes more pronounced as the control is turned to maximum. The result is a more transparent sound and is especially noticeable with a slap style technique of playing.
A particularly favorite setting for live situations is at about 2 o'clock. This position of the Aural Enhancer brings out both the low end fundamentals and crisp highs and at the same time adds a little lower midrange to help cut through the band.

HIGH PASS FILTER

The High Pass Filter, activated by pulling out the Bass control knob until a "click" is heard, rolls off all frequencies BELOW 30 Hz and allows all frequencies above 30 Hz to pass unaffected. The 3db down point of the filter is at 30 Hz and response is down 20db at 10 Hz. At higher volumes, this feature can be a real speaker saver as it inhibits cone excursion by disallowing sub-harmonics that can cause the voice coil to "bottom out" or "jump the gap." We strongly recommend the use of the high pass filter when playing at high volume levels. At lower volume levels and especially when a very "open" or fast sound is desired, leave the high pass filter in the off position.

BASS CONTROL

The Bass control cuts or boosts the lower or bass frequencies. Starting at mid-position, turning the control counter-clockwise cuts the bass response and turning the control clockwise boosts the bass response. The design of the bass control is a "shelving" type with the shelving point set at about 80Hz.

MID RANGE SECTION

The Mid Range section is a semi-parametric type with both level (cut and boost) controls and frequency controls. The INSIDE knob is the LEVEL control and the OUTSIDE knob is the center frequency control. The level control boosts or cuts (raises or lowers) the tone set by the frequency control. If the level control is in the flat (center click) position, the frequency control will have no affect to the sound.
To assure the user of the flat (out) position of any one tone control, a center click position has been provided. A twenty four stepped frequency control has been utilized so the user may always relocate a desired tone. As you find different settings that are desirable, you may want to make a note of them.
The easiest way to get acquainted with the semi parametric is to raise the level control close to the +15db setting, then rotate the frequency control from one end to the other noting the change in sound. Do this with both the Lo Mid and Hi Mid sections one at a time. Chances are that with each section you will find a couple of positions that are especially pleasing or unpleasing to your ear. As these are found, adjust the level control to the desired amount of cut or boost that is desired. After finding these positions, make a note of the frequency you have chosen. The more you do this, the more you will relate frequency "numbers" to their respective sounds. The goal that can be reached is to be able to easily find adjustments with the tone section.

FEEDBACK OR SUSTAIN

The Midrange controls can be extremely useful in correcting feedback in acoustic or upright instruments. If you are getting a slight amount of feedback from your instrument, try the following: Set your volume to a point where the feedback is just occurring, but not out of control; raise the Level control of the Lo Mid band to about +8 db; slowly rotate the Frequency control from left to right. At some point in the rotation, the feedback should get more intense. This is the frequency area that needs adjusting. Leave the Frequency control at the position the feedback gets louder; now adjust the Level control in the CUT mode until the feedback disappears. You may find that as you raise your overall volume, you may need to further cut the Level control to achieve the playing volume you need. We recommend not reducing the Level control any further than is needed to maintain sound quality.
If you were not able to find the feedback area with the Lo Mid knob, set its Level control back to "flat," and follow the same above instructions with the Hi Mid band.
By reversing the technique above, you can achieve greater sustain in certain areas or on certain notes. You can also use this technique to correct "hot" spots or "dead" spots on the neck of your instrument.
Below are some suggestions to experiment with:
Midrange is honky or hollow sounding.....cut the 600-1000Hz range
Treble is harsh and hurts the ear.....cut the 1.5K to 2.5K range
Have trouble cutting through the band.....boost around 200 Hz
Need a little more "punch".....boost around 100-120 Hz

TREBLE CONTROL

The Treble control is a shelving type designed tone control whose shelving point is set at 4KHz. This frequency was chosen for its transparency nature and lack of harshness. Starting from mid-position, turning the control counter-clockwise cuts

the highs and turning the control clockwise boosts the high frequencies. A center click position has been provided to indicate a flat treble response.

EFFECTS BLEND CONTROL

The Effects Blend control "blends" the signal sent from your instrument with the sound coming from your effect. With the Blend control full counter-clockwise, no signal from your effect will be heard (dry). As you turn this control clockwise, more of the effect can be heard in the overall sound. When the Blend control is full clockwise (wet), no true or unaffected signal is heard other than what your effects unit provides.
This type of control and arrangement is very effective in reducing noise caused by effects units and in maintaining a more natural sound. Please read the "Effects Loop" section for more information.

MASTER VOLUME

The Master Volume adjusts the signal level found at the Preamp Out jacks and the Balanced Line XLR out jack. It DOES NOT control the output of the effects send jack, line out jack, headphones or line position of the XLR balanced record out jack. The Dot Bar Display reads the signal PRE Master Volume.
The Master Volume should be used in conjunction with the Gain control to get maximum efficiency out of the Grand Prix. Please read the "Gain Control" section of this manual for further info and operating procedures.

HEADPHONES

The Headphone section of the Grand Prix features its own power amp, output jack and volume control. The headphone amplifier is a small wattage "bridged" type. Use only STEREO headphones. The use of mono headphones will short out one of the power sections and could cause a headphone amp failure. Headphones with an impedance of 75 ohms or greater should be used.
Silent practicing or monitoring is available with headphones by turning down the Master Volume. The Grand Prix was also designed for use as a stand alone unit for practicing in Hotel rooms, studio lobbies, etc. or for recording direct to tape without the use of an external power amp.

POWER SWITCH

Pressing the Power Switch to the ON position activates the Grand Prix's electronics as indicated by the red LED lighting.
REAR PANEL FEATURES

LINE/DIRECT SWITCH

In the Line position, the signal going to the Preamp Out jacks also appears at the Balanced out jack. The Master Volume, however, does not control the level. The Level is adjusted by the XLR Pad. All front panel controls (Gain, tone section, Effects Blend, etc.) except the Master Volume are functional and will affect the signal present at the XLR jack in this position. In the Direct position, the Balanced out becomes an active TUBE direct box and the signal is uncolored by the front panel features.
When using this switch, make sure it is all the way up or down and not in a "half way" position.

BALANCED XLR OUT

The Balanced XLR Out is a true balanced output whose level is set by the XLR Pad directly to the left. The signal appearing at this output is governed by the position of the Line/Direct switch directly to the right.
When using the Balanced Out for recording, optimum results can be achieved by DRIVING THE TAPE DECK DIRECT. Of course, if this is not possible, the Grand Prix will work in any other situation. Always try and use the XLR pad to adjust working levels. The use of input pads on consoles can deteriorate sound quality.
If you wish to send a Direct and Line signal simultaneously, you may do so by putting the Line/Direct switch in the Direct position and use the Balanced preamp XLR out for the Line signal. Just remember that the Master Volume controls the Balanced XLR preamp out.
Wiring for the XLR connector is as follows:
Pin 1 = ground, Pin 2 = +, Pin 3 = - (American Standard)

XLR PAD

The XLR Pad adjusts the level (volume) appearing at the XLR connector directly to the right. Volume increases as the control is turned clockwise.
If you are in the LINE position and change the Gain control on the front panel, the level will also change at the balanced output. You may readjust the record level if necessary with the XLR Pad without affecting any other function.
A MUTE function is built into the XLR Pad. Pulling the knob out until a click is heard activates the Mute feature and "kills" any signal at the XLR connector. This is especially useful when tuning up or any other occasion where sending your signal to the board or "house" is undesirable.
Always check the position of this switch when using the record out functions. It can save some stress and panic.

GROUND LIFT

A Ground Lift is provided for the Record Out XLR connector directly to the right. In the down (GND) position, the ground connection to pin #1 is engaged. In the up (GND LIFT) position, the ground connection is interrupted. The ground lift switch applies ONLY to this particular XLR connector.
If a persistent hum exists after trying both positions of the ground lift function, there is probably a problem with the AC wiring or just a dirty AC line. We are told this happens a lot in L.A. between 1pm and 4pm!? If this is the case, we suggest using an isolation transformer between the Grand Prix and the wall socket.
For a few dollars, you can buy an AC wall socket tester. A little light comes on if the socket is wired correctly. We recommend everyone having one of these if they value their equipment.

TO TUNER JACK

The Tuner input jack allows the user to plug their instrument tuner into this jack and "tune up" without having to unplug and go back and forth from amp to tuner. This feature is totally isolated from the rest of the preamp and will function regardless of the settings of the controls on the front panel. Being on a side chain (isolated) also avoids loading down of the instrument causing a loss in dynamic range.
To use this feature, plug in a shielded patch cord from the Tuner Input to the INPUT on your tuner. Turn the amplifier on and you are ready to go. If you do not wish to monitor your sound while tuning, you may turn down the Master Volume. If you are in the studio and sending a feed to the "house," you may want to activate the Mute switch so you won't disturb the engineer who has been trying to get a drum sound for the last 6 hours!

EFFECTS LOOP

The Effects Loop is located POST EQ and PRE Master Volume in the block diagram. The signal 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 to retain similar overall volume levels. By using the Gain, Master Volume and Effects Blend control in conjunction with each other, optimum results should be obtainable with any effects unit.
The Effects Loop is designed as a "side chain" (parallel) function similar to those found on studio consoles. Use of the effects loop should greatly reduce the 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 JACK

Run a shielded patch cord from the Send jack to the INPUT of your effects unit. This jack may be used as an additional line level output.

RECEIVE JACK

Run a shielded patch cord from the RECEIVE jack to the OUTPUT of your effects unit.
One unique feature of the Receive jack is the ability to practice along with pre-recorded music. Insert a tape recorder or other sound source into the Receive jack (make sure it is a mono source). Using the Blend control, adjust the level of recorded music from the Receive jack to the "live" sound of your instrument. The mixed sound will be heard through the headphones and also sent to the Preamp Out jacks. This feature, which is also found on the SWR Redhead and Baby Blue models, has proven to be invaluable to musicians wishing to play along with audition and practice tapes.
A common complaint of bass players is that they are not loud enough in the studio mix. To solve this problem, run a feed from the headphone mix or console mix to the Receive jack. Using the headphone jack, adjust the Blend control to the desired level YOU want to be in the mix! This can only be done if the Line/Direct switch in the DIRECT position and your speakers are not being miked. If you are in this position, you can also make your own private tape of the session by inserting a cassette deck in the Line Out Pre- Master jack.
NOTE: Inserting a plug into the Receive jack activates the Effects Blend control. The Effects Blend control "receives" this command through the ground created by insertion of the plug in the jack. Therefore, results can only be obtained by using a mono phone plug. If you have a stereo plug only, tie the ring and ground together.
If you are not getting any "effect" through your speakers, etc., check the position of the Blend control and the hookups of you patch cords.

LINE OUT PRE-MASTER JACK

The signal present at the Line Out jack is the same signal being sent to the XLR record out connector when the switch is in the Line position. It is post EQ and Pre Master Volume. It can be used as an unbalanced record out or a send to an additional power amplifier.

PREAMP OUT JACKS AND BALANCED XLR CONNECTOR

The Preamp Out jacks are the unbalanced send of the preamp to your power amplifier. Use a good quality shielded patch cord from these jacks to the input of your power amplifier. Two jacks are provided in the case you have two mono power amps or no mono input on your stereo power amplifier. If you wish to use stereo effects, these jacks should go to the input of your effects and the output of your effects to the power amp.
For a power amp to be compatible with the Grand Prix while using the unbalanced out jacks, its sensitivity must be 7V RMS or LESS and have an input impedance of greater than 600 ohms.
The **BALANCED XLR OUT CONNECTOR** is a true balanced output. It can be used to drive power amps having an XLR

balanced input. This type of input on a power amp can be beneficial in avoiding ground loops or hum problems (reread the NOTE section on the first page of this manual). If you use this output on the Grand Prix to drive your power amp, be sure that it is wired for AMERICAN STANDARD (pin 1 = ground, pin 2 = +, pin 3 = -). If your power amp comes from Europe, check the owners manual for wiring references. In any case, either the Grand Prix or your power amp can be rewired for compatibility.

A/C LINE/MAINS FUSE

The line fuse can open (blow) due to power surges or high powerline transients. This fuse will also open in the event of an electronic component failure inside your preamplifier.
DO NOT DEFEAT THE PURPOSE OF THIS FEATURE BY USING A FUSE WITH A HIGHER RATING. IT CAN FURTHER DAMAGE YOUR PREAMP AND VOID YOUR WARRANTY.

SUPPLEMENTAL NOTE

Because SWR chose to put the least amount of components possible in the signal path to retain purity, turn on and turn off transients appear at all the outputs of the Grand Prix Preamplifier. For this reason, the Grand Prix should be turned on FIRST and the power amp turned on second. Likewise, the power amp should be turned off first and the Grand Prix second. Turning the Master Volume down before turning off the Grand Prix will all but eliminate transients sent to your power amp and heard through the speakers if the above procedure is not followed.