EV TAPCO

intersound

IVP

OWNER'S MANUAL

a gulton company

GENERAL DESCRIPTION

INTERSOUND's instrument voicing preamplifier, the IVP, is a versatile control device suitable for most applications requiring advanced sound control concepts. The unit has been designed with sufficient headroom and interfacing flexability to accommodate virtually every normal instrument and output requirement found in the industry today.

Extensive effort has been placed on providing maximum control flexability, features, and functional ease of operation. Control knobs most frequently used are located on the top row of the unit for easy access and readability. These knobs have been carefully selected for readability in the poor stage lighting conditions often found by musicians and soundmen. No distracting chrome has been used. The chassis is cold rolled steel designed for free standing use or unsupported rack mounting. Illumination of LED and power switch indicators have been selected for readability under typical performing conditions.

The IVP contains provisions for multiple inputs with selectable input gain. This enables the IVP to accommodate levels found with mics or transducers all the way up to powerful keyboards and synthesizers. The equalization section offers a great deal of control with six different bands of equalization; this enables the musician to achieve the sound he wants.

Two separate effects loops have been provided to accommodate any choice of effects. The second effects loop is located after the unique tube voice circuit for those effects which are enhanced by more complex signals.

Perhaps the most interesting feature of the IVP is the TUBE VOICE. This provides an authentic dynamically responsive tube sound. The range of sound available from this circuit is amazing - soft velvet clipping to hard compressed overdrive effects are possible for the musician. The TUBE VOICE or the CLEAN VOICE can be selected by the front panel switch which controls a quiet FET electronic switching circuit. An external footswitch jack is provided for your additional convenience.

The output stage of the IVP provides three output choices to meet varying requirements. The need for a direct box has been eliminated.

Overall, the IVP is an extremely sophisticated instrument control center. It is the result of many months of research, market analysis, development, and field testing. Every feature has been carefully chosen to meet the demands of musicians and other sound professionals. INTERSOUND is proud to bring you this outstanding product.

FUNCTIONAL DESCRIPTION

The IVP incorporates two separate inputs with standard ¼" jacks. They accept input levels from 50Vrms to 8Vrms. This range of input levels is sufficient to provide adequate headroom and control range for mic levels or transducer levels up to the hottest guitar, bass or keyboard levels. Each input has a separate GAIN SENSIVITY SWITCH and INPUT LEVEL CONTROL.

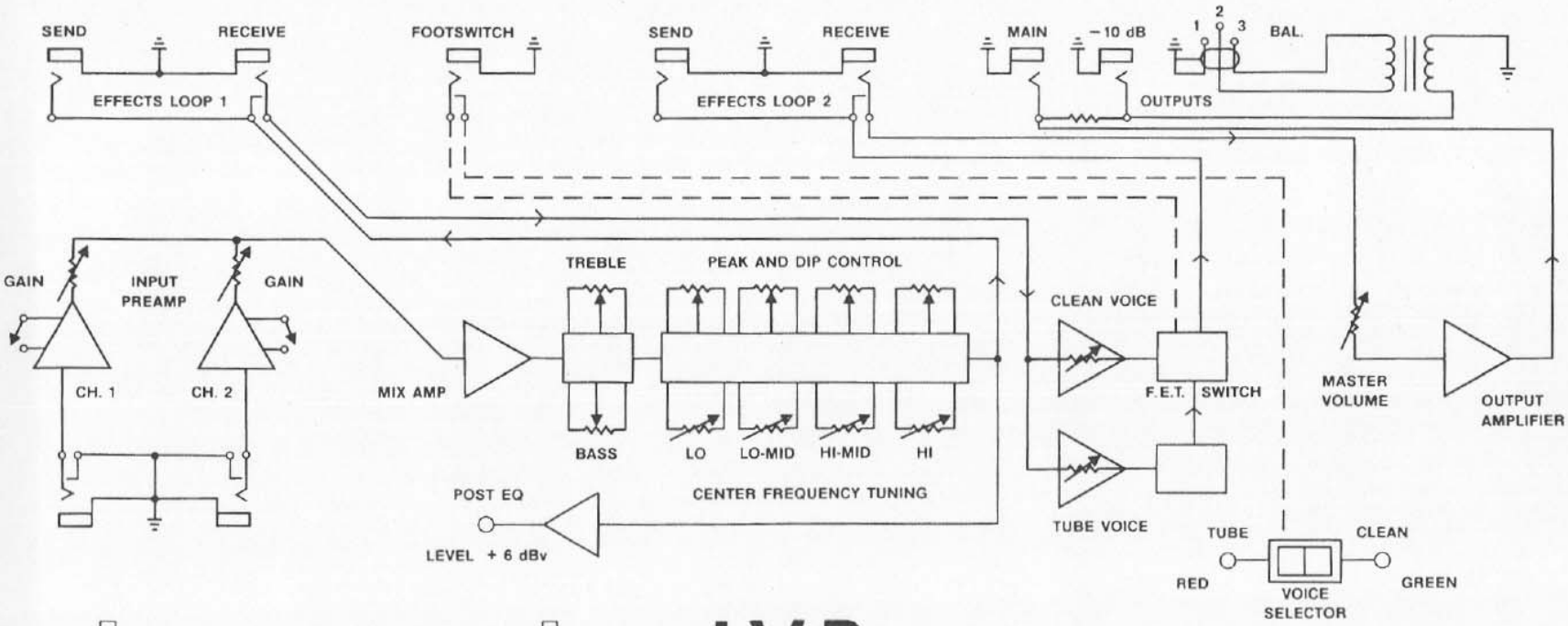
Next the signal is routed through the BASS and TREBLE shelving type equalization where the general tonal response is set. This equalization is very important in shaping the fundamental sound of the instrument. Then the signal is processed by four separate bands of peak and dip equalization. These four bands feature variable center frequency control. This enables the performer to select the desired frequency range to be equalized.

Now the performer has the option to route the signal through EFFECTS LOOP #1 or to continue directly into the VOICING SECTION. This first effects loop is a good point to use devices such as wah-wah, volume pedal, reverb, echo, DDL, etc.

The equalized signal, with or without the external effect, is now processed by the VOICING SECTION - tube or clean and then passed directly to the output stage. The choice of tube or clean voice can be made by means of the front panel switch or by a footswitch. The relative levels of the tube and clean voices are set by the two LEVEL CONTROLS in this stage.

Again, the performer has an option to utilize another effects loop. This EFFECTS LOOP #2 is located after the VOICING SECTION to provide a more complex signal for devices such as phase shifters and flangers. Electronically, this loop is identical to EFFECTS LOOP #1 and may also be used for other types of effect devices.

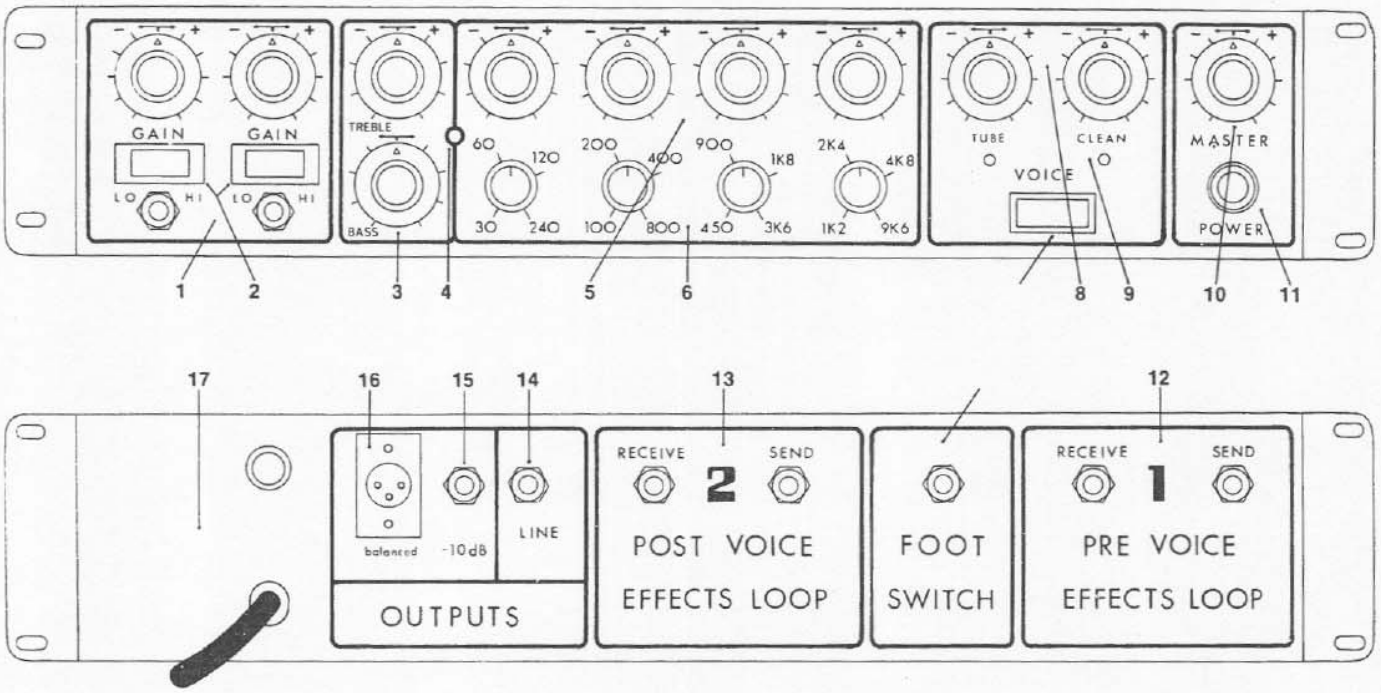
Final output level is adjusted by the MASTER control. The performer has a choice of three outputs. The LINE LEVEL OUTPUT is normally used for driving a power amplifier, crossover, or powered monitors. An additional UNBALANCED OUTPUT at -10dB is provided for preamplified systems, standard guitar or bass guitar type musical instrument amplifiers, or direct taping. The BALANCED OUTPUT at -10dB is provided for long feed lines or studio patching. With this selection of outputs, the need for a direct box is eliminated.



intersound **IVP**

FUNCTIONAL FLOW DIAGRAM

IVP CONTROLS AND CONNECTIONS



Before using the IVP, familiarize yourself with the various controls, connections, and their functions. This will give you a better overall understanding of the IVP and enable you to master the use of the unit quickly. The use of each control will be discussed in the next section. Refer to the diagrams above for the location of each item.

1. INPUT STAGE - Two separate BIFET inputs with independent level controls and front panel jacks.
2. INPUT GAIN SENSITIVITY SWITCHES - Select the HI or LO gain sensitivity of the input stage to assure adequate headroom for the type of instrument being used.
3. TREBLE/BASS CONTROLS - Provide shelving type boost or cut equalization for general tonal response.
4. LED PEAK INDICATOR - Blinking indicates the proper level for external effects. This LED does not indicate clipping of the IVP whatsoever.
5. EQUALIZATION CONTROLS - Provide boost or cut for each of the four variable center frequency equalization bands.
6. VARIABLE FREQUENCY CONTROLS - Enables one to "slide" each band of equalization over a 3 octave range to locate the proper frequency for equalization.
7. TUBE VOICE CIRCUIT - This switch activates the unique tube voice of the IVP. The related FOOTSWITCH JACK on the rear panel overrides the front switch when utilized.
8. TUBE and CLEAN VOICE CONTROLS - Gives you independent volume adjustment for each voice.

9. LED STATUS INDICATORS - Indicate which voice is selected.
10. MASTER VOLUME CONTROL - Permits final level matching for any amplifier.
11. POWER SWITCH - Push ON/push OFF with illumination.
12. EXTERNAL EFFECTS LOOP #1 - For patching your choice of effects pre-TUBE VOICE. The SEND jack feeds the signal to the effect and the RECEIVE jack returns the signal from the effect back to the IVP.
13. EXTERNAL EFFECTS LOOP #2 - Same as EFFECTS LOOP #1 but post-TUBE VOICE.
14. LINE LEVEL OUTPUT JACK - For normal use feeding a power amplifier or powered monitors.
15. DOWN 10dB OUTPUT JACK - A lower level output for preamplified systems or direct taping.
16. D3M OUTPUT JACK - Provides balanced direct box function for long feed lines or studio patching at -10dB.
17. POWER SUPPLY - Regulated and fused for quiet, reliable service. Be sure to use the proper value fuse for replacement.

IVP SETUP

The IVP has been designed for freestanding use or unsupported rack mounting. For rack mount installation, it may be necessary to remove the rubber feet from the bottom of the unit. It is recommended that the feet and screws be placed in a small bag and taped to the rear of the chassis for future use in freestanding applications.

The power cord should be plugged into a standard power source with a nominal rating of 95-120VAC and 50-60Hz. PLEASE NOTE: Hum problems can occur when several pieces of equipment are used together. If several units have three wire AC cords, the hum may be caused by a ground loop. The hum is not the fault of any unit, but it is caused by the system interconnections. To eliminate this problem, use a three prong adapter to lift the neutral (ground) connection on one or more of the units. A three prong connector can be purchased at any hardware store and at most dime stores, drug stores, and grocery stores. UNDER NO CIRCUMSTANCES SHOULD YOU USE THREE PRONG ADAPTERS ON EVERY PIECE OF EQUIPMENT IN THE SYSTEM! For your protection, at least one of the units should remain connected in the normal fashion--that is with the ground connected.

Before we start hooking up the signal leads, we would like to address the problem of hum in yet another context. It is generally accepted that the use of inferior cables or cables that are worn may introduce hum into the signal path. INTERSOUND recommends the use of high quality cables of a type designed for this intended purpose. All phone plug tips should be diamond shaped for positive locking in the jacks. Round ball shaped tips are not recommended. Always keep cable lengths to a minimum. These simple precautions will prevent many frustrating hum problems.

Check the output and input specifications of the IVP and of the other units you plan to use with it. The comparison of specifications will generally indicate the compatability of the devices and the particular output jack of the IVP to use for your hookup. As there are such a great number of application possibilities, it is not feasible to discuss each one on a case by case basis. If there is a particular question in this area, consult your local INTERSOUND dealer or our factory for assistance. The wide range of input levels and output characteristics of the IVP virtually assures you of having a proper matchup with other equipment.

With these thoughts in mind, proceed to hookup the IVP to the down line equipment. This may be a power amplifier, a cross-over system, a conventional preamplified guitar type amplifier, monitor system, master house mixer, studio mixing board, etc. The following recommended output selections may be regarded as GENERALLY best for your guidance, but these are only a guide. BE SURE TO COMPARE THE PUBLISHED SPECIFICATIONS.

IVP OUTPUT	NORMALLY ACCEPTABLE FOR:
LINE LEVEL ¼" JACK	COMPONENT POWER AMPLIFIERS; POWERED MONITOR SPEAKERS; CROSSOVER NETWORKS; INTERSOUND MIXERS; OTHER MIXERS CAPABLE OF LINE LEVEL INPUTS; HIGH IMPEDANCE HEADPHONES
DOWN 10dB ¼" JACK	PREAMPLIFIED GUITAR TYPE AMPLIFIERS; MOST MASTER HOUSE MIXERS; DIRECT TAPE RECORDING; LOW IMPEDANCE HEADPHONES; SOME POWER AMPLIFIERS IN BI-AMPLIFIED SYSTEMS
D3M JACK (-10dB)	LONG CABLE RUNS TO HOUSE MIXERS; STUDIO MIXERS; ALL UNITS REQUIRING BALANCED INPUTS

If a footswitch is used, choose any standard guitar footswitch of the push-ON/push-OFF type. NOTE: WHEN A FOOTSWITCH IS PLUGGED INTO THE FOOTSWITCH JACK, THE FRONT PANEL SWITCH HAS NO EFFECT ON THE VOICE SELECTION.

All that is left is to plug in your instrument. The input jacks are mounted on the front panel for convenience. Any high impedance instrument or pickup device may be plugged directly into the IVP. Certain low impedance guitars, basses, and keyboards

require the use of a transformer at the IVP input in order to achieve a proper match. Consult your instrument owner's manual or your dealer for assistance.

NORMAL OPERATING PROCEDURES

After completing the hookup, make a final check of all connections and turn on the power. It is recommended that the power amplifier be the last unit turned on. As simple as it may sound, be sure that the power is on for ALL units in the system. It's surprising how easy it is to overlook this!

To best understand the functions of the IVP, start in the CLEAN VOICE with all of the controls on the IVP at the 12 o'clock (flat) position except the MASTER output level. Set this at the 9 o'clock position. Play a chord or two and see if your levels are alright. Don't worry about the tone yet...we will adjust that in a moment. If you find that the sound is distorted, check the position of the INPUT GAIN SENSITIVITY SWITCH. Normally, most guitars, basses, etc. will work fine with the HI gain position. Some new instruments with "hot" pickups may have as much output as keyboards and synthesizers and require the increased headroom provided by the LO position. Once you have the proper input range selected, bring up the input level until you see the LED PEAK INDICATOR start to blink while playing. If this light is blinking frequently or continuously on, you may have too much gain for some external effects.

Now you are ready to equalize the signal. Start with the BASS control. Turn the control clockwise to boost and counter-clockwise to cut. Play with this control until you find the setting that is right for you. If the setting you end up with has added boost to the signal, you may notice that the LED PEAK INDICATOR is now on steady. If so, simply reduce the amount of input gain until the LED is again just blinking. This is a normal condition due to the fact that the LED is reading the signal level at the end of the equalization stage and is affected by changes in the EQ.

With the BASS control set, adjust the TREBLE control in a like manner to achieve the general tone desired. Again, note that changes to this control may require adjustment of the input level to set the proper level for the LED PEAK INDICATOR.

Now you are ready to experience the extremely wide range of control possible with the IVP. The four bands of EQ with the variable center frequency control provide the performer with the capability to voice his instrument to the sound he wants. Each of these bands offers a center frequency variation over three music octaves range. An overlap of approximately one octave between adjacent bands has been provided to permit a broader response

curve. The top knob of each band determines the amount of boost or cut within that band. The lower knob selects the center frequency of that particular band. By properly adjusting the controls, the performer can tune the response desired for his instrument. To see how this operates, try this: Turn up the boost on one of the bands all the way clockwise. Now sweep the frequency control through its range while playing the instrument. Notice the affect this has on the sound. It is easy to identify the particular notes that are boosted as you sweep the frequency control. With just a little practice, you will be able to adjust the sound to your preference.

Because of the very wide control range possible with the IVP's equalization stage, it is possible to achieve extremely large amounts of boost or cut. This can be particularly noticed at the frequencies that are in the octave of overlap. This effect occurs when the frequency of one band is turned close to the frequency of another band. In this condition, boosting both bands results in the amount of boost being added together. There may be situations where this is desired. Likewise, this may not always be the best thing to do. As long as you are aware of this effect, you should be able to use it to your advantage. After setting the equalization to your taste, again check your input level to make sure that the LED PEAK INDICATOR is occasionally blinking. Minor changes in the equalization settings will not require this readjustment.

Next in the signal flow path is the first effects loop. The equalized signal can be sent out to your choice of external effect device and returned at this point. You may wish to place more than one effect device in series in this loop. As long as the LED PEAK INDICATOR is occasionally blinking, the optimum send level for your effects will be provided.

CAUTION: DO NOT CROSS PATCH EFFECTS BETWEEN EFFECTS LOOPS #1 AND #2! DAMAGE TO THE EFFECT DEVICE AND DOWN LINE EQUIPMENT COULD RESULT!

After the EFFECTS LOOP #1, the signal will go to the voice selector. The switch on the front panel will control which voice is in operation. The red LED indicates the TUBE VOICE is in operation, while the green LED indicates the CLEAN VOICE is in operation. Normally, you will achieve about the same relative loudness of the two voices with the level controls for TUBE and CLEAN both set at the 12 o'clock position. Should you desire one voice to be louder for solos, simply increase that level control. In this manner the switching also provides a type of preset volume feature for your use. The actual effect of the TUBE VOICE can be varied by using different input levels, different equalization settings, and different playing techniques. A little experimentation will make you a master of this effect.

The second effects loop is located after the TUBE VOICE circuit. This loop is the same as EFFECTS LOOP #1 except for its

position in the signal flow. Should you wish to use effects such as phase shifters or flangers, you may prefer the sound you get with them in this effects loop. These devices generally perform better with a more complex signal such as provided by the addition of the TUBE VOICE.

CAUTION: DO NOT CROSS PATCH EFFECTS BETWEEN EFFECTS LOOP #1 AND #2! DAMAGE TO THE EFFECT DEVICE AND DOWN LINE EQUIPMENT COULD RESULT!

The last control is the MASTER VOLUME CONTROL. After you obtain the proper settings for your sound, simply adjust this control for the level necessary to drive your down line equipment.

INTERSOUND would like you to realize that the IVP is a very sophisticated control device. This is excellent in the regard that it can do much more for you than other preamplifiers. However, this also means that to achieve pleasant sounds you must tune this unit properly. This is a consequence of providing so much control to the hands of the user. We bring this to your attention so you can appreciate that the IVP is a relatively complex instrument. It is recommended that you practice with the various controls and become familiar with the capabilities of the IVP. Just a little practice will convince you that this is truly a major advance in electronic control!

APPLICATIONS

INTERSOUND has developed the IVP with one major goal in mind: to provide the most versatile preamplifier in the music industry. The reason for providing so many features in the IVP has been to insure that the IVP would meet the needs of most musical applications. INTERSOUND is confident that most musicians will agree that the IVP provides more features and control for more instruments than previously available.

It should be considered, that in a series or chain hookup, the overall performance is affected by the quality and limitations of all components used in the system. Many people in the computer industry are familiar with the saying: "Garbage in; Garbage out." This means that if you put into the IVP a signal from an instrument that has only a limited response, you can only expect the IVP to process that limited response. The IVP cannot create that which is not there. In a like manner, if inferior quality or improper type equipment is used after the IVP to amplify and reproduce the sound; the final result will only be as good as the weakest component. INTERSOUND recommends that this concept be considered when selecting the system components and evaluating the overall performance.

Perhaps the most significant component in the system which can limit or change the final sound is the speaker system. There are many types of speakers available for use by musicians. These speakers are constructed differently from those for home "hi-fi" use. Even within the group of musical instrument speakers, one can

find many different frequency response ranges and tonal colorations. Truly this can be a confusing problem to the musician seeking his particular sound. The IVP can control the sound achieved to a great extent. But, the incorrect selection of the speaker system may prevent the musician from obtaining the desired results. INTERSOUND recommends that the musician consult his dealer for recommended speakers for the particular application.

A similar situation will occur when using the IVP with a preamplified guitar type amplifier. The musician should insure that the controls on the guitar or bass amplifier are set to provide flat response. This will not necessarily be found with the tone controls set to the indicated flat position. Any variation from the flat response will alter the sound from the IVP.

The concept of the IVP's equalization section should be understood when determining the unit's applications. The IVP is capable of performing different functions in the control of the sound. First, it can even out or smooth out the response of the instrument over its range of fundamental tones. This type of equalization normally will not require large amounts of boost or cut. Secondly, the IVP can dramatically change the overall sound of the instrument. This is usually accomplished by using large amounts of boost or cut primarily in the mid range frequencies. This will result in sounds ranging from a "fat" sound to a crisp, clear tone. The third area of control is more subtle but very noticeable. The IVP will affect the overtone or harmonic structure of the sound. This results in many different tonal colorations which the musician can explore. When using the IVP, keep these three major capabilities in mind as you adjust the equalization.

Although each individual application will vary and each musician's taste may be different; INTERSOUND has a few comments for each general category of instrument application.

GUITAR

The IVP provides an excellent range of control and interfacing features for the electric guitar. The input headroom has been designed to properly match up with any electric guitar commonly found today. The effects loops provide improved performance for the various effects devices used by musicians. The range of tonalities achieved with the IVP extends from clean to down right "funky" dirty and bright to very mellow. Whether your style is clean, natural acoustic folk; smooth jazz; or progressive originality; the IVP will have the sound that you are seeking when used with components matched to your style of playing. Finally, a wide choice of outputs insures proper matching to various systems.

Acoustic guitarists using pickups or microphones will particularly appreciate the wide range of tone control and the output flexability of the IVP which saves the expense of a separate direct box in many cases. The equalization section of the IVP permits excellent balancing of the acoustic instrument to compensate for body resonance, pickup location and charasteristics, as well as voicing the instrument for soft rhythm playing or bright, crisp solo work. The higher output level of the IVP's effects loops enable the acoustic guitarist to effectively utilize volume pedals, even with transducer type pickups.

BASS

The electric or acoustic bass player will find that the IVP has been designed with you in mind. Notice that the range of the low frequency band has been chosen to extend well below the lowest note of a bass. In evening out the response of a bass, the IVP has the flexability needed to please the performer. By using the voicing capability, the IVP can achieve very smooth tones of very "fat" sounds. With the TUBE VOICE, very heavy solid rock tonalities are possible. Again, the effects loops and output selection make the IVP very versatile for any bass setup.

KEYBOARDS

All electro-mechanical design pianos, whether using reeds, tuning forks, or strings are particularly enhanced by the IVP. The equalization section permits very effective balancing of the keyboard's response from the lowest register to the highest. The increased tonal flexability offers many new sounds particularly when used with the TUBE VOICE circuit. Other keyboards, including organs and synthesizers will benefit from the IVP's voicing capabilities to provide the most flexability.

OTHER INSTRUMENTS

The IVP can be very beneficial to the sound from a variety of other instruments. Any wind instrument can be used with a pickup or microphone and controlled by the IVP. Again, the quality of the pickup or microphone will affect the overall quality of the end sound product. Of course, virtually all stringed instruments can be used with the IVP through a pickup device or by direct micing. INTERSOUND has achieved extremely satisfying results using the IVP to record directly into a studio mixing board. The studio engineers report that this application eliminated the necessity for large cabinets in the studio and achieved a very high quality sound range satisfying to performers and producers alike. It is very likely that you or your fellow performers will discover many other special applications for the IVP in your music.

INSTRUMENT VOICING PREAMPLIFIER

SPECIFICATIONS

INPUTS 2 unbalanced switchable low/high gain inputs
- LOW: Nominal input level: 800mVrms (0dBV)
  Minimum input level: 200mVrms (-10dBV)
  Maximum input level: 8 Vrms (+20dBV)
- HIGH: Nominal input level: 225mVrms (-10dBV)
  Minimum input level: 50mVrms (-24dBV)
  Maximum input level: 2Vrms (+7dBV)

EFFECTS SENDS (2)
- RATED LOAD IMPEDANCE: 1K Ohms & higher
- NOMINAL OUTPUT LEVEL: 1.5Vrms (+6dBV)
- MAXIMUM OUTPUT LEVEL: 8Vrms (+20dBV)

EFFECTS RETURNS (2)
- IMPEDANCE: 50K Ohms
- NOMINAL INPUT LEVEL: 1.5Vrms (+6dBV)
- MAXIMUM INPUT LEVEL: 8Vrms (+20dBV)

EQUALIZATION
- BASS: Shelving type, ±15 dB @ 50Hz and below. Turnover: 200Hz
- TREBLE: Shelving type, ±15 dB @ 10KHz and above. Turnover: 1KHz
- FOUR BANDS: Variable frequency peak and dip type, ±15 dB
  30Hz-240Hz, 100Hz-800Hz, 450Hz-3.6KHz, 1.2KHz-9.6KHz

FREQUENCY RESPONSE
- 20Hz-20.0KHz ±1dB

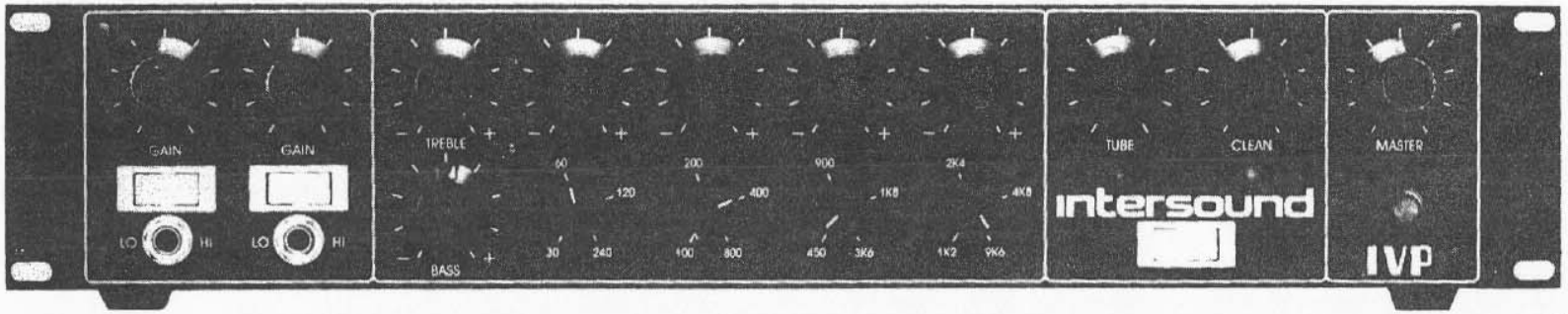
OVERALL DISTORTION (Clean voice)
- Less than .1%

SIGNAL TO NOISE RATIO
- Greater than 85dB with EQ flat and nominal operating levels

OVERALL GAIN
- NOMINAL (EQ flat, all levels nominal) +18dB
- MAXIMUM +36dB

OUTPUTS (Maximum)
- D3M CONNECTOR - balanced, -10dB, 2.5V into 600 Ohms, (+10dBV)
- ¼" PHONE JACK - unbalanced, line level, 8.0V into 600 Ohms, (+20dBV)
- ¼" PHONE JACK - unbalanced, -10dB, 2.5V into 600 Ohms, (+10dBV)
- ¼" PHONE JACK - To footswitch for remote voicing control

POWER SUPPLY
- Regulated, dual polarity, fused


GAIN
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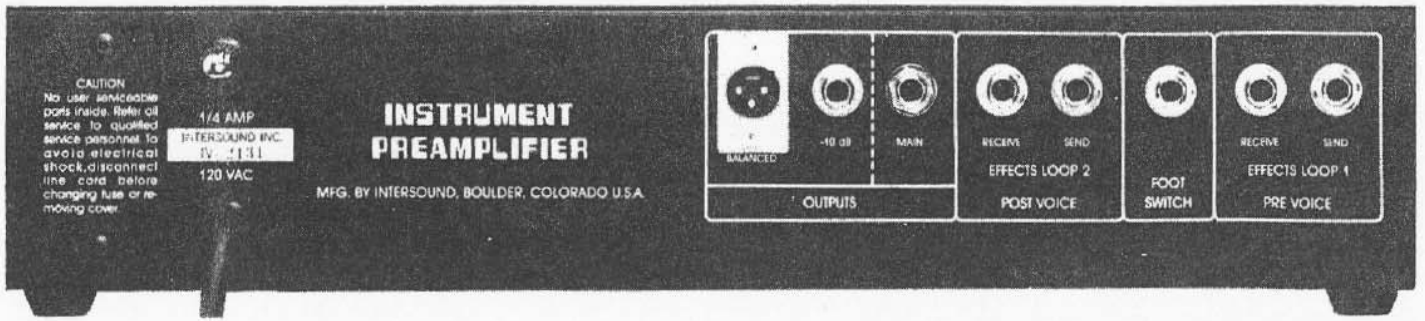
100
800
450
3K6
1K2
9K6
TUBE
CLEAN
intersound
MASTER
IVP


CAUTION
No user serviceable parts inside. Refer all service to qualified service personnel. To avoid electrical shock, disconnect line cord before changing fuse or removing cover.
1/4 AMP
INTERSOUND INC.
120 VAC
INSTRUMENT PREAMPLIFIER
MFG. BY INTERSOUND, BOULDER, COLORADO U.S.A.
BALANCED
-10 dB
MAIN
OUTPUTS
RECEIVE
SEND
EFFECTS LOOP 2
POST VOICE
FOOT SWITCH
RECEIVE
SEND
EFFECTS LOOP 1
PRE VOICE