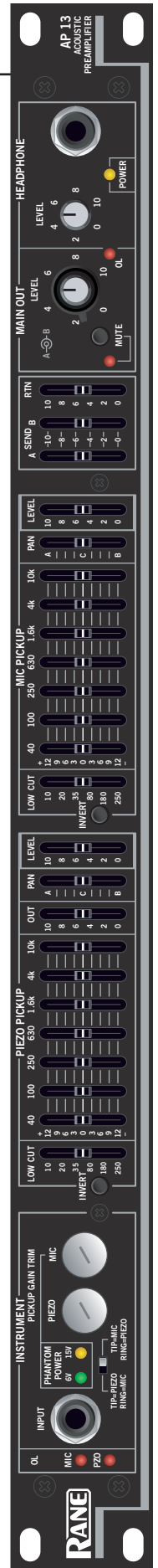




AP 13

ACOUSTIC PREAMPLIFIER



IMPORTANT SAFETY INSTRUCTIONS

For the continued safety of yourself and others we recommend that you read the following safety and installation instructions. Keep this document in a safe location for future reference. Please heed all warnings and follow all instructions.

Do **not** use this equipment in a location where it might become wet. Clean only with a damp cloth.

This equipment may be installed in an industry standard equipment rack. We recommend that all mounting holes be used, providing the best physical support. The equipment may be used as a table top device, although stacking of the equipment is dangerous and not recommended.

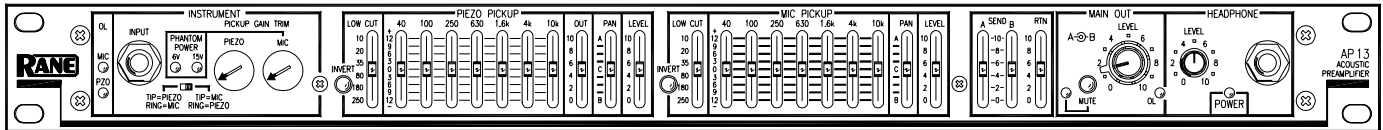
Do not directly block any of the ventilation openings. If rackmounting, please provide adequate ventilation. Equipment may be located directly above or below this unit, but note that some equipment (like large power amplifiers) may cause an unacceptable amount of hum or may generate too much heat and degrade the performance of this equipment.

Protect the power cord and plug from damage caused by being walked on or pinched. Protect the line cord, where it exits the unit, from excessive strain. Only use attachments and accessories specified by Rane.

Unplug this equipment during lightning storms or when unused for long periods of time.

Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug damage, spilled liquid, fallen objects into an opened chassis, exposure to rain or moisture, a dropped unit, or abnormal operation.





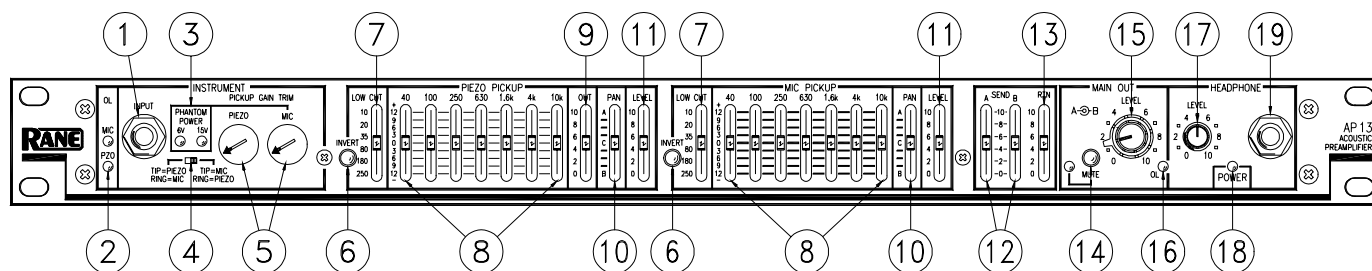
QUICK START

The AP 13 accommodates the signals from two pickups from any acoustic instrument, where the pickups are wired to the tip and ring of a standard stereo 1/4" TRS (Tip, Ring, Sleeve) plug. You do not need internal preamps when using the AP 13. Phantom power voltage is available for electret and other condenser mic pickups. It is assumed one pickup is a piezo-type while the other is some type of microphone.

1. Slide the Input Wiring switch to the correct position agreeing with your pickup wiring situation.
2. If your mic pickup requires Phantom Power, select it using the switch on the AP 13 rear. Make sure the appropriate LED lights by the **INPUT** jack.
3. Turn the **MAIN OUT LEVEL** controls down.
4. Connect the AP 13 to your amplifier using the 1/4" **MAIN OUTPUTS** or use the **HEADPHONE** jack.
5. Initially, turn the **PIEZO** and **MIC PICKUP GAIN TRIM** controls half way up.
6. Move each **LOW CUT** slider to the top (15 Hz); center all EQ sliders; center the **PAN** sliders; leave the **INVERT** pushbuttons out; and position the **LEVEL** sliders to "4"
7. Plug your instrument into the **INPUT** jack on the front of the AP 13 with a stereo 1/4" TRS cable.
8. Power up the AP 13, then turn on your amplifier.
9. Play your instrument and slowly turn up the **MAIN OUT LEVEL** controls. You should hear sound from your speakers.
If not, recheck all settings and wiring, and read the next few pages.

Never connect anything except an approved Rane power supply to the red thing that looks like a telephone jack on the rear of the unit. This is an AC input and requires special attention if you do not have a power supply exactly like the one originally packed with your unit. See the full explanation of the power supply requirements elsewhere in this manual.

FRONT PANEL DESCRIPTION

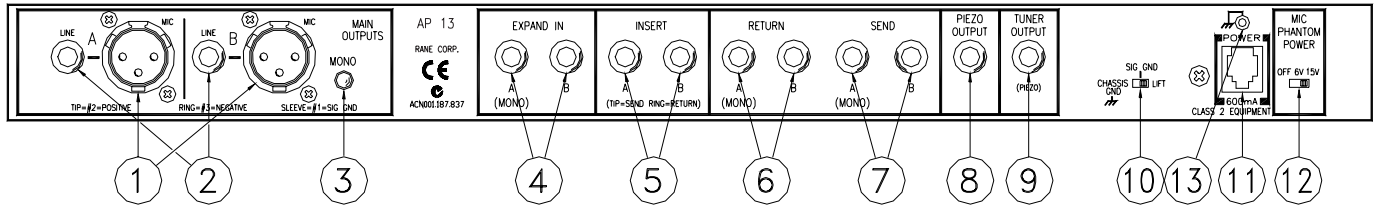


- ① **Acoustic INSTRUMENT INPUT:** is a stereo ¼" TRS (Tip-Ring-Sleeve) INPUT jack for use with any acoustic instrument with two pickups; however, also accepts instruments with only one pickup. When using a mono cable, signal is routed to the TIP selected by the Input Wiring Switch (see ④).
- ② **MIC & PIEZO pickup input OVERLOAD indicators:** An individual red indicator for each type of pickup. Useful in monitoring pickup level and initially in setting PICKUP GAIN TRIM controls. These indicators light approximately 4 dB before actual clipping, so occasional flickering is okay, but they should never be allowed to light steadily.
- ③ **PHANTOM POWER indicators:** are either *Off*=no Phantom Power; *Yellow*=+15 VDC Phantom Power; or *Green*=+6 VDC Phantom Power.
- ④ **Input wiring switch:** allows choice of Input wiring. Either TIP=PIEZO and RING=MIC, or vice-versa. *Proper setup requires careful selection—if in doubt, consult the technician that wired your instrument for the correct choice.*
- ⑤ **Input PICKUP GAIN TRIMS:** set the proper Gain for each pickup. Range is from 6 dB minimum to 60 dB maximum.
- ⑥ **PICKUP INVERT switches:** Invert the polarity (phase) of the piezo pickup with respect to the mic pickup. Either MIC or PIEZO PICKUPS may be individually Inverted.
- ⑦ **LOW CUT frequency:** adjusts the corner frequency of the LOW CUT (high-pass) filter from 15 Hz to 250 Hz. Use to reduce unwanted low frequencies in either MIC or PIEZO PICKUPS.
- ⑧ **7-band graphic equalizer boost/cut controls:** Seven sliders that control the amount of boost/cut for each of the indicated bands in both MIC and PIEZO sections. A grounded center detent guarantees flat response for filters not used.
- ⑨ **PIEZO PICKUP output LEVEL:** adjusts the Level of the PIEZO OUTPUT jack. Located post-LEVEL and pre-PAN, so it is *dependent* on the position of the PIEZO PICKUP LEVEL control and *independent* of the PIEZO PAN control.
- ⑩ **PAN control:** Separate controls for both PIEZO and MIC PICKUP sections allow routing the signal anywhere from A-only to B-only at the Main Output.
- ⑪ **LEVEL controls:** Separate PIEZO and MIC LEVEL controls the overall Level of each signal.
- ⑫ **SEND A/B controls:** adjust the amount of signal at each of the SEND jacks.
- ⑬ **RETURN control:** is a “stereo” Return. Controls the amount of *A and B* entering the RETURN jacks.
- ⑭ **MAIN OUT MUTE button:** Mutes both A and B Main Outputs. Does *not* affect the Headphone Output. The red LED indicates a Muted output.
- ⑮ **MAIN OUT A & B LEVELS:** Concentric controls used to separately set the Main A & B Output Levels.
- ⑯ **MAIN OUT OVERLOAD indicator:** monitors *both* A and B Main Outputs. An overload condition (within 4dB of clipping) on *either* Channel causes this red LED to light.
- ⑰ **HEADPHONE LEVEL:** controls the volume of the HEADPHONE Output jack.
- ⑱ **POWER indicator:** glows yellow when the proper power supply is connected and powered.
- ⑲ **Headphone jack:** Accepts standard stereo headphones rated from 32-600 ohms equipped with a ¼" TRS plug.

AKG Micro-Mic Users

The Phantom Power requirement for these mics demands a minor modification to the inside of the AP 13. Remove the top and bottom covers and replace R220 with a 15k ohm resistor (see layout on the back page). Once modified with the new resistor, the input will not be compatible with other mics.

REAR PANEL DESCRIPTION



- ① **MAIN OUTPUTS—MIC-level:** Two XLR connectors used as a direct feed to mixing console mic inputs. Pin 2 is “+” positive, pin 3 is “-” negative, and pin 1 is signal ground.
- ② **MAIN OUTPUTS—LINE-level:** Two ¼" TRS (Tip-Ring-Sleeve) connectors deliver the Main A & B Line Level Outputs. No surprises here: the tip is “+” positive, the ring is “-” negative and the sleeve is signal ground.
- ③ **MAIN OUTPUTS MONO button:** Engaging this pushbutton combines or Monoes the Main A & B Output.
- ④ **EXPAND IN A & B jacks:** Two unbalanced ¼" TS jacks used to expand the AP 13. These inputs sum (pre-Main Level control) with the Main A & B signals. Mono expansion is done using *only* the EXPAND IN A jack. As long as nothing is plugged into the B jack, the signal from EXPAND A automatically drives EXPAND B. These jacks also provide an auxiliary input path.
- ⑤ **INSERT loop A & B jacks:** Two unbalanced ¼" TRS jacks wired per the tip=send, ring=return convention. Allows placing an outboard signal processor in series with the main signal paths.
- ⑥ **RETURN A & B jacks:** Two unbalanced ¼" TS jacks used as the return path from the OUTPUTS of an outboard signal processor. Mono signals use *only* the RETURN A jack. As long as nothing is plugged into the B jack, the signal from RETURN A automatically drives RETURN B.
- ⑦ **SEND A & B jacks:** Two unbalanced ¼" TS jacks used to connect to the *inputs* of an outboard signal processor. Mono effects units should wire *only* to the SEND A jack.
- ⑧ **PIEZO OUTPUT:** An unbalanced ¼" TS jack gives a direct dry Output signal from the Piezo Pickup only. The PIEZO PICKUP OUT slider controls the amount of signal; however, since this Output is located after the PIEZO PICKUP LEVEL slider, then LEVEL also controls this Output.
- ⑨ **TUNER OUTPUT:** An unbalanced ¼" TS jack used for direct tuner connection, fed by the PIEZO input. Located post EQ but pre-LEVEL, this Output is unaffected by either the LEVEL or OUT controls. For convenience, the tuner may be left connected during performances.
- ⑩ **Ground lift switch:** provides the ability to separate chassis ground and signal ground. Normally, this switch should be in the “grounded” position. In some circumstances, moving it to the opposite position eliminates hum and buzz problems.
- ⑪ **Remote power supply input:** This unit is supplied with a Rane RS 1 Remote AC Power Supply (RAP) suitable for connection to this input jack. The power requirements call for an 18 VAC center-tapped transformer. *This is not a telephone jack. Never use a power supply other than the one supplied or a replacement approved by Rane.* Using any other type of supply may damage the unit and void the warranty.
- ⑫ **MIC PHANTOM POWER switch:** controls the voltage used to power an electret or other condenser mic pickup. Front panel LEDs indicate one of the three positions of this switch.
- ⑬ **Chassis grounding screw:** A #6-32 screw is used for chassis grounding purposes. See CHASSIS GROUNDING below.

CHASSIS GROUNDING NOTE

If after hooking up your system it exhibits excessive hum or buzzing, there is an incompatibility in the grounding configuration between units somewhere. Here are some things to try:

1. Try combinations of lifting grounds on units that are supplied with ground lift switches or links.
2. If your equipment is in a rack, verify that all chassis are tied to a good earth ground, either through the line cord grounding pin or the rack screws to another grounded chassis.
3. Units with outboard power supplies do not ground their chassis through the line cord. Make sure that these units are grounded either to another chassis which is earth grounded (such as the amplifier), or directly to the grounding screw on an AC outlet cover.

Please refer to RaneNote 110, “Sound System Interconnection” (included in this manual) for further information on system grounding.

OPERATING INSTRUCTIONS

OPTIMIZING PICKUP GAIN CONTROLS

The Gain of each pickup input is adjusted via recessed PICKUP GAIN TRIM controls on the front of the AP 13. Unity Gain is located at approximately 9:00. To set the Gain use a screw driver, guitar pick, or other suitable tool to turn the GAIN TRIM clockwise until a very strong input signal (e.g. strumming a loud chord) causes the overload LED to flicker occasionally. For extra headroom, turn the GAIN TRIM slightly counterclockwise.

SETTING UP EACH PICKUP

Start by turning one of the LEVEL controls to off or "0". Now play your instrument and use the LOW CUT filter and EQ sliders to adjust for the desired timbre. (Try rolling off the low end of the MIC for presence, and roll off the high end of the PIEZO to reinforce the sound without shrillness.) Turn this Channel's LEVEL control *off* and repeat the procedure for the other pickup. When through, adjust both LEVEL controls for optimum loudness balance and use the PAN sliders to create a panoramic sound field between the A and B Outputs.

If the sound seems weak or thin when both pickups are turned up, especially a noticeable loss of bass, try using one or the other of the INVERT pushbuttons. This problem often occurs when pickups are out-of-phase and their outputs are canceling instead of combining.

EFFECTS LOOPS

Most often the SEND/RETURN loop is used for a reverb, while something more specialized like a compressor or multi-effects processor fills the INSERT loop.

Hook-up is simple: connect the SENDs to the *inputs* of the reverb and run the *outputs* back to the RETURN jacks. To *send mono and return stereo*, connect only the SEND A (MONO) jack to the input and return both outputs to the RETURN jacks; to *send and receive mono* use just the A (MONO) SEND and RETURN jacks. The AP 13 splits the mono input equally with the A and B Outputs. Adjust the SEND & RETURN sliders as necessary for correct levels.

The INSERT loops are the single 1/4" send/return type where tip=send and ring=return. Use standard stereo (2-conductor) cable with a stereo jack on one end, then split it out into two mono (1-conductor) cables with mono jacks on the other. These are common enough, you shouldn't have to make them. There are no controls to worry about with this loop.

SEND/RETURN vs. INSERT

An effect unit will deliver a full "wet" signal when patched into the INSERT. A standard TRS insert style (tip-send, ring-return) Y-cord gets input and output from the INSERT jack to the effects unit. In the SEND and RETURN loop, the most you can obtain is a 50% effects signal, because the dry signal is internally mixed with the return. See Figure 1 to the right.

Another effects tip: If you want to put one effect on just the mic, and a different effect on just the piezo, but you want a mono output, just pan everything hard left and right for stereo and push the MONO switch on the rear of the AP 13.

CONNECTING TWO GUITARS TO THE AP 13

A Y-cord can be used, as long as you don't try to run two piezo pickups. The impedance of a piezo won't work right in the MIC channel, but it won't hurt anything either. (Qualifier: If you have a piezo system that has *active* circuitry like a battery powered preamp, then run it into the MIC channel with the straight piezo in the PIEZO channel.)

EXPAND JACKS

Signal entering the AP 13 through these jacks sums (post-EQ and effects loops) with the internal signal. Mono signal applied to the A (MONO) EXPAND IN jack sums equally into Main A and B Outputs.

MAIN OUTPUTS

Two sets of Main Outputs exist. Both are fully balanced, both may be used at the same time. The 1/4" TRS jack operates at line-level and should be used to drive additional signal processing, your power amplifier, or any line-level inputs.

The XLR connectors are intended for mic-level inputs on mixers, tape recorders or a snake. This level is 40 dB less than the line-level outputs. It is, in effect, a built-in direct box.

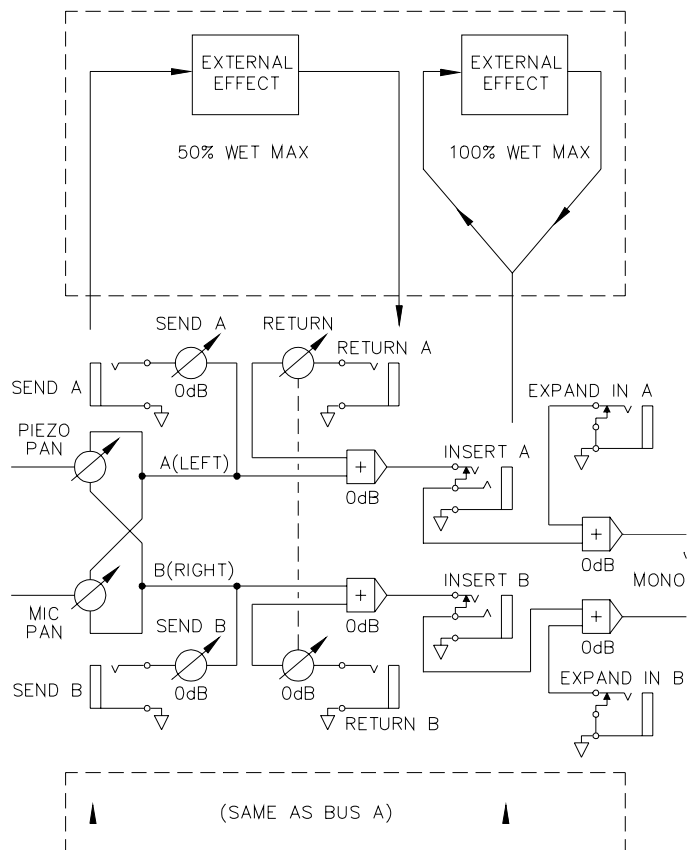


Figure 1. Effects Loop Options.