

### QUICK START

If you are one of those people who think owner's manuals are included with a product to help absorb shock and vibration during shipment, you are a lot like we are. This section is for you. You want to fire up your equalizer without wading through a bunch of stuff in manuals. Great. Read on. We'll keep it short.

Set the input **LEVEL** control to about **6**. This is approximately unity gain in the **BOOST/CUT** mode. (In the **CUT-ONLY** mode the level control should be set to **2** for unity gain.) Your sound system should be set up such that gain or loss is not required in the equalizer(s). Set the **EQ MODE** switch on the rear for the desired operating mode, **CUT-ONLY** or **BOOST/CUT**. The LEDs on the front illuminate, telling you which mode you are in. Set the **OUTPUT MODE** switch on the rear for the desired output coupling mode (**ACTIVE** or **TRANSFORMER COUPLED**). Adjust the **LOW CUT** and **HIGH CUT FILTER** controls on the front for the desired low and high cut frequencies. Full counterclockwise on the **LOW CUT** control and full clockwise on the **HIGH CUT** control essentially defeats these functions.

If you read only this section, we assume you know how to set up an equalizer. So set the sliders where you want them and you're outta here.

**Never connect anything except an RS 1 or other approved Rane AC power supply to the thing that looks like a telephone jack on the rear of the GE 30.** This is an AC input and requires some special attention if you do not have an operational power supply **EXACTLY** like the one that was originally packed with your unit. See the full explanation of the power supply requirements elsewhere in this manual.

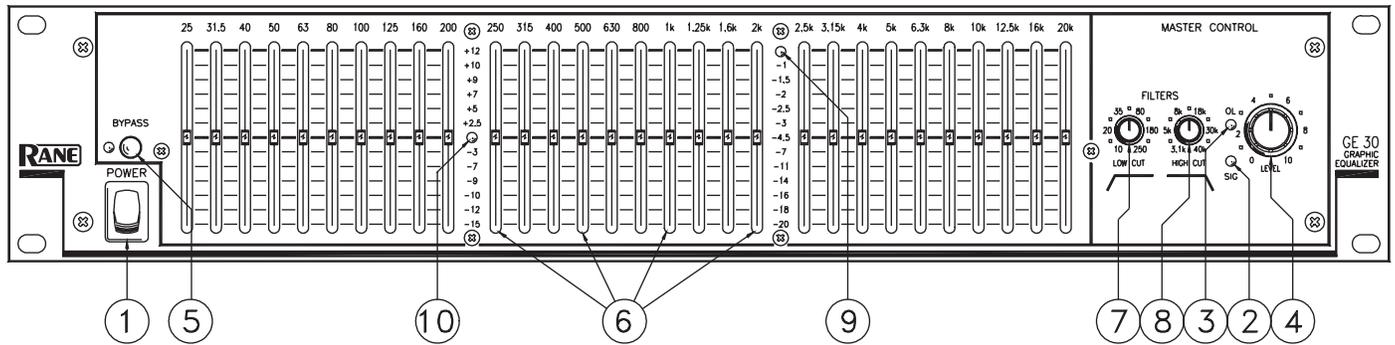
### GE 30 CONNECTION

When connecting the GE 30 to other components in your system for the first time, *leave the power supply for last*. This will give you a chance to make mistakes and correct them before any damage is done.

**INPUTS** on the GE 30 are balanced. They may be connected for either balanced or unbalanced operation. This product offers the choice between going in and out of it using either the 3-pin connectors or the handsome black #6 terminal strips with the finely plated screws. We will describe here the use of the 3-pin connectors. The terminal strips are connected in parallel and are used in the same way. Only the names have been changed. Pin 2 is hot "+", pin 3 is return "-", and pin 1 is chassis ground. Balanced inputs require the use of pins 2 and 3. Pin 1 is unnecessary unless you are using it for shield ground. For unbalanced operation, pins 1 and 3 must be shorted together to prevent 6 dB of gain reduction. Drive pin 2 as hot and the combination of 1 and 3 as ground.

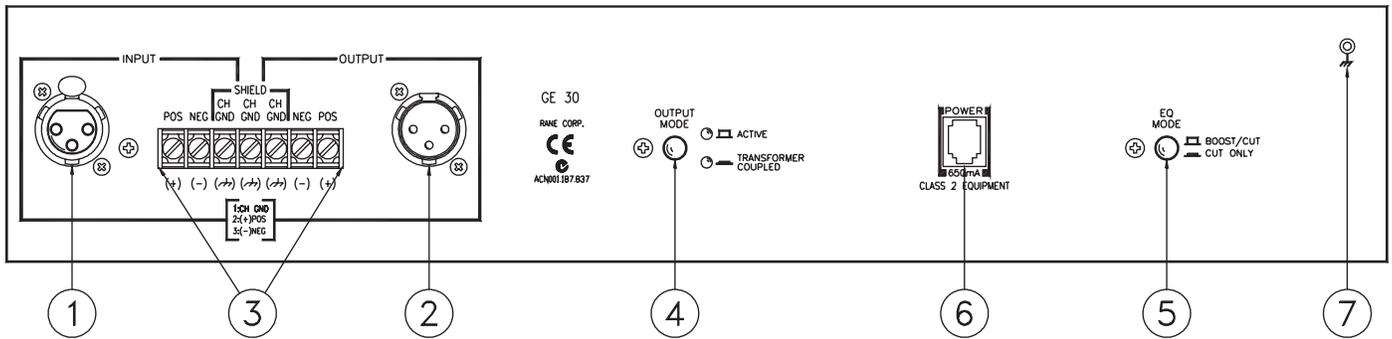
**OUTPUTS** are balanced as well and follow the same convention as the inputs. There are some tricky things to be careful of at the output. If active balanced operation is your preference, hot "+" and return "-" should be all that is required. It does not take three wires to conduct a signal from one unit to the next. Connect the shield to case or chassis ground. Transformer balanced outputs are connected in the same manner. Active unbalanced output requires "+" and ground only. Use pins 2 and 1 respectively. In this mode, do not short pins 1 and 3. If, however, you are using the transformer coupled mode and are running unbalanced, *do* short pins 1 and 3 or you will get little or no output. In case you haven't noticed, if you plan on throwing the selector switch very often it's a good idea to connect everything in a balanced configuration.

## FRONT PANEL DESCRIPTION



- ① **POWER switch.** Pressing the top half of this switch causes the mechanism contained within to connect power from the remote power supply to the circuitry of the unit causing it to operate (ON). Pressing the bottom half snaps the switch to the opposite operating mode (OFF).
- ② **SIGnal present indicator** illuminates green when an input signal greater than -20 dBm is applied to the unit, regardless of the position of any controls on the unit, including the BYPASS switch.
- ③ **OverLoad indicator** glows or flashes red when the signal passing through the unit is within 4dB of the maximum allowable level at some point in the circuitry.
- ④ **LEVEL** sets the Level of the signal coming into the GE 30. Turn this control down if the OVERLOAD LED lights up steadily (meaning too strong an Input signal). Since actual unity gain depends on varying slider settings (which is why we have not marked a unity gain position on the front panel), use the BYPASS switch to determine the exact unity gain position of this LEVEL control by comparing EQ and BYPASS loudness. Full counterclockwise rotation of this control provides full input attenuation (signal off), full clockwise rotation yields a minimum of +6 dB of gain in the BOOST/CUT mode, or a minimum of +20 dB of gain in the CUT-ONLY mode.
- ⑤ **Overall BYPASS switch and indicator.** Pressing this button to its *in* and locked position provides a complete “hard-wire” bypass of all active circuitry in the GE 30, including grounds. The GE 30 automatically switches to the Bypass mode in the event of a power failure. This insures that should something fail in the power supply of the unit, signal passes to the rest of the system. The indicator illuminates red when the GE 30 is placed in the Bypass mode via the switch.
- ⑥ **Equalization controls.** These 60 mm slide controls set the relative level of boost or cut at each 1/3-octave frequency location. The effect of each control is indicated by one of two calibration scales, the selection of which is denoted by an illuminated yellow LED located at the top of the CUT-ONLY scale and at the center of the BOOST/CUT scale.
- ⑦ **LOW CUT filter** control rotates in a clockwise direction to increase the frequency of the low filter cutoff. The calibrations on the front panel indicate the -3 dB point of the filter. Rotating this control to its full counterclockwise position effectively bypasses the filter.
- ⑧ **HIGH CUT filter** control rotates clockwise to increases the frequency of the high cut filter cutoff. Like the low-cut filter, the calibrations reflect the -3 dB point of the filter. Full clockwise rotation effectively bypasses the filter.
- ⑨ **CUT-ONLY indicator** illuminates yellow when the EQ MODE select switch on the rear panel is depressed, placing the GE 30 in its CUT-ONLY mode.
- ⑩ **BOOST/CUT indicator** illuminates yellow, advising the operator that the rear mounted EQ MODE function select switch is in its OUT position, placing the GE 30 in the + 12 BOOST/ -15 CUT mode.

## REAR PANEL DESCRIPTION



- ① **XLR INPUT connector.** This is a fully differentially balanced Input, connected such that pin 2 is hot “+”, pin 3 is return “-” and pin 1 is chassis ground. For unbalanced operation, drive pin 2 as hot, and pin 3 as return. For grounding and shielding information, consult the RaneNote 110, “Sound System Interconnection” section for expanded details.
- ② **XLR OUTPUT connector.** Again, a fully differentially balanced socket, pin 2 is hot “+”, pin 3 is return “-” and pin 1 is chassis ground. Balanced output configuration should use only pins 2 and 3. Ground is not required in this mode. Use the case for shield. If unbalanced operation is your cup of mud, use pin 2 as hot and pin 1 as return or ground *unless you are running unbalanced output in the TRANSFORMER coupled mode, then you must short pins 1 & 3 together*. This is not recommended, however, for the active unbalanced mode. Again, see the “Sound System Interconnection” section for further clarification.
- ③ **Screw terminal INPUT and OUTPUT connector.** These #6 terminals directly parallel the pins in the XLR Input and Output connectors. Their use or disuse is completely up to the judgement of the installer.
- ④ **OUTPUT MODE switch.** Pressing this switch *in* to its locked position places the output stage into its TRANSFORMER COUPLED balanced mode, and illuminates the yellow LED. Pressing the switch again to release it from its *in* position causes the GE 30 to be placed back into its ACTIVE balanced output mode, extinguishing the yellow LED and lighting the green LED.
- ⑤ **EQ MODE switch.** Pressing this switch to its *in* and locked position selects the CUT-ONLY mode, a fact attested to by the CUT-ONLY LED indicator on the front panel. Pressing the switch again to release it to its out position places the unit back into the BOOST/CUT mode, which reconfigures the LEDs on the front panel.
- ⑥ **Remote power supply input.** Use only an RS 1 or other remote AC power supply approved by Rane. The GE 30 is supplied from the factory with a remote power supply suitable for connection to this input jack. *It is not a telephone jack*. The power requirements of the GE 30 calls for an 18-24 volt AC center-tapped transformer only.
- ⑦ **Chassis ground point.** A #6-32 screw is used for chassis grounding purposes. See the note below.

### CHASSIS GROUNDING

If after hooking up your system it exhibits excessive hum or buzzing, there is an incompatibility in the grounding configuration between units somewhere. Your mission, should you accept it, is to discover how your particular system wants to be grounded. 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. This unit's outboard power supply does not ground the chassis through the line cord. Make sure that this unit is grounded either to another chassis which is earth grounded, or directly to the grounding screw on an AC outlet cover by means of a wire connected to a screw on the chassis with a star washer to guarantee proper contact (see #7 above).

Please refer to the RaneNote, “Sound System Interconnection” included with this manual for further information on system grounding.

# OPERATING INSTRUCTIONS

## HYPERBOLE

The GE 30 is, as are all Rane equalizers, a constant bandwidth device. This guarantees that the  $Q$  (a measure of bandwidth) of all the 1/3-octave filters will be maintained regardless of the position of the filter's slide control. This is accomplished by completely isolating the center frequency and bandwidth parameters of each filter from the variable resistor connecting the filter to the signal path. The sliders simply act like mixer faders would; they sum the outputs of the filters to one of four different buses—two boost buses and two cut buses. This sort of careful attention to design allows Rane equalizers to perform as no others.

A further benefit of the constant- $Q$  approach is the ease with which 0dB of boost or cut can be guaranteed when the control is set at zero. The filter slide controls feature a grounded center tap in the Boost/Cut mode and a grounded 0dB position in the Cut-Only mode. This ensures that none of the filters will affect the response of the unit when their contribution is unwanted.

The automatic Bypass function of the GE 30 guarantees that if power is lost, signal will not be. The Bypass relay automatically closes the bypass loop when either the POWER switch is turned off, the line cord is disconnected, or some other power interruption occurs.

The Rane Model GE 30 is a professional equalization tool, and as such, it would not be wise for us to recommend that you "Fiddle with it 'til it sounds good." It is because of this that we offer the following:

## MEASUREMENTS

We highly recommend that a real time analyzer be used to display the combined sound system/room response so intelligent adjustments may easily be made without a lot of trial and error. Of course, Rane Corporation builds a very nice one (the RA 30), at a very reasonable price if you are not already in possession of one.

## DICE OR SLICE?

Deciding whether the GE 30 should be operated in the Boost/Cut mode or the Cut-Only mode is a bit of a sticky problem. For that matter, referring to the Boost/Cut mode versus the Cut-Only mode is bound to cause some debate among more than a few readers. There are those that believe it makes no difference which mode you use, and there are just as many others who believe that one or the other is the *one and true way* to go. This is exactly why the GE 30 offers the options it does. There are situations where a person of the Cut-Only persuasion needs to use the "other" type EQ in certain selected locations. If this is the case, all this person needs to do is get around behind the rack (hopefully this isn't too difficult) and press the EQ MODE selector. There are others who are not as convinced that one or the other modes is better, but wish to withhold the decision until the job is installed and ready for test. Whichever the case, the GE 30 performs its duty better than any other product of either type.

## AMPUTATION

Setting the corner frequencies of the High Cut and Low Cut filters is a function of the type of system and the type of material that passes through the system. For most installations, a setting of 40Hz on the low end and 15 to 20kHz on the high side will be adequate for protecting expensive drivers and associated equipment. Should the user prefer these filters have no effect at all, rotating them to their respective high and low frequency extremes effectively removes them from the signal path. In all cases, a somewhat careful study should be made of the overall system requirements so that the individual 1/3-octave controls are not used to correct for an improper setting of these filters.

## ISOLATION

Finally, select the output configuration (Active or Transformer) which suits your requirements. In most situations, the ACTIVE option is probably the best, since it offers the highest linearity and bandwidth. The degradation caused by the transformer is very slight, and will not contribute anything audible to the system if this mode is selected. The differences are more theoretical than practical.

## ENLIGHTENMENT

See the RaneNote "Constant- $Q$  Graphic Equalizers" for an awareness of the benefits of the GE 30's constant- $Q$  interpolating filters, available from Rane's website.