The Orban 674A Stereo Equalizer

The versatility of a parametric; The economy of a graphic... More flexible than either.

PERFORMANCE HIGHLIGHTS

- ☐ Eight bands per channel, each with TUNING AND BANDWIDTH controls
- ☐ Each band tunes over 3:1 frequency range
- ☐ "Q" typically variable between 0.3 and 20 (center TUNING)
- ☐ ±16dB equalization range
- ☐ EQ controls are long-throw dust-shielded slidepots for good resolution
- ☐ TUNING and BANDWIDTH controls marked with "tics" indicating typical settings
- ☐ Narrowband notching capability ideal for sound reinforcement
- ☐ Bands totally non-interacting
- ☐ A dedicated stereo device with controls arranged for optimum ease of maintaining stereo balance

HP/LP Filter Sections

- ☐ Each section continuously tunable over 100:1 range in 2 decades
- ☐ Each section independently switchable
- ☐ 12 dB/octave slopes
- ☐ Filters follow graphic section. Separate main/lowpass and highpass outputs allow use as filters or as full electronic crossover

General

- ☐ Very low noise and distortion
- ☐ High slew rate for minimum TIM (SID)
- ☐ Front-panel GAIN controls; 12dB gain available
- ☐ "Peak-stretching" overload lamps warn of clipping anywhere in equalizer
- ☐ Active balanced inputs; unbalanced outputs. Transformer-balanced outputs optional
- ☐ RF suppression on inputs, outputs, and power leads
- ☐ 115/230V, 50-60Hz transformer is standard
- ☐ Industrial-grade parts and construction including socketed IC's
- ☐ Highly cost-effective

A MONO VERSION OF THIS PRODUCT IS ALSO AVAILABLE AS MODEL 672A

Introducing the 674A Stereo Equalizer

The Orban 674A is a cost-effective, professional, quasi-parametric equalizer with the convenience of graphic-type EQ controls. Wide-range high- and low-pass filters with 12dB/octave Butterworth slopes follow the EQ section for added versatility. The 674A has two outputs per channel, arranged so that these filters can also be used as a fully tunable electronic crossover.

The space-saving 674A offers the facilities of two complete mono 672A's in a single chassis. Ganged, concentric controls make one-hand stereo operation of bandwidth and tuning a snap. Graphic-style EQ controls are split parallel for each of the eight bands. Separate high-and low-pass filters on each channel offer stereo two-way electronic crossover capability.

While it is possible to operate the unit with two unrelated mono program sources, under some circumstances high-frequency crosstalk may be experienced. Therefore, crosstalk requirements should be evaluated in such applications. (See Specifications)

The 674A is a professional product designed to provide a large measure of versatility, convenience, and quality at a very attractive price. While it meets the requirements of the demanding professional, it is also designed and priced to make it understandable and available to the advanced audiophile.

To make the 674A easy to use in situations where its full versatility isn't needed, "tic" marks have been included on the dial calibrations of the TUNING and BANDWIDTH controls. When these controls are set to the tics, the 674A behaves like a standard octave-band graphic equalizer with the eight bands on ISO frequencies from 63 to 8000Hz.

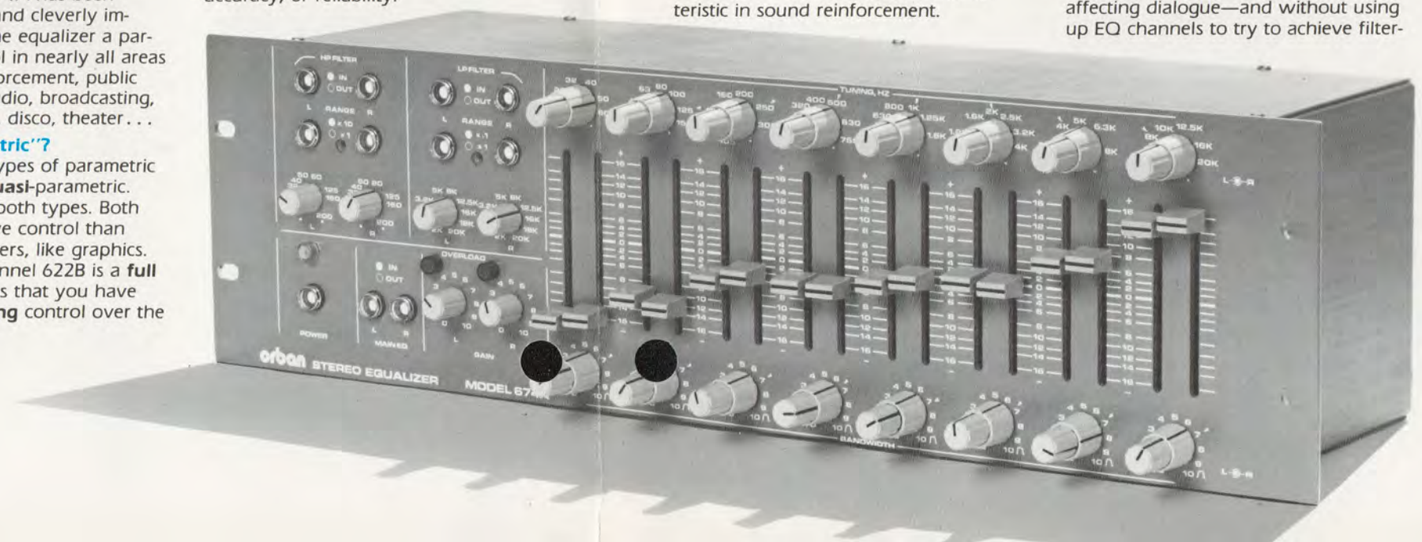
Each feature of the 674A has been thoughtfully chosen and cleverly implemented to make the equalizer a particularly powerful tool in nearly all areas of audio: sound reinforcement, public address, recording studio, broadcasting, motion picture sound, disco, theater . . .

Why "Quasi-Parametric"?

There are two basic types of parametric equalizer: **full**- and **quasi**-parametric. Orban manufactures both types. Both offer far more effective control than other kinds of equalizers, like graphics. Our popular dual-channel 622B is a **full** parametric. This means that you have **totally non-interacting** control over the three fundamental **parameters** of equalization: the **amount** of peak boost or cut (in dB), the **tuning** (the frequency most affected by the equalization), and the "Q" (which relates to the sharpness of the EQ curve—the degree to which frequencies on either side of the peak frequency are affected by the equalization). As opposed to our 622B Equalizer, the 674A is **quasi**-parametric. This means that the "Q" changes when you adjust the TUNING and/or EQ controls. Other control adjustments are completely non-interacting: TUNING and EQ do not affect each other.

The other important performance difference between the full-parametric 622B and the new 674A is that the 622B's EQ curves are "**constant-Q**"; the 674A's curves are "reciprocal". "Constant Q" curves are valuable in that they permit infinite-depth notches to be created; reciprocal curves limit the maximum cut to the same number of dB as the maximum boost. In the case of the 674A, 16dB of cut is available. This is fine for tuning out ring-modes in sound reinforcement systems, but might not be adequate in all circumstances to remove hum or other fixed-frequency interference from a signal. On the other hand, some people prefer reciprocal curves because the boost and cut are mirror images of each other, thus permitting previous equalization to be readily "undone" later. Careful design of the circuitry gives the 674A **in boost mode** a characteristic similar to the 622B's desirable "constant-Q" curve family.

Why did we choose the quasi-parametric technique for the 674A? Because it offers a way to produce a very high quality, stable equalizer at low cost without compromising distortion, noise, accuracy, or reliability.



Applications

Sound Reinforcement and Monitor Tuning

There are many ways to use the 674A in sound reinforcement and monitor tuning:
1) In an economy biamped installation, replace both the third-octave equalizer **and** the electronic crossover with the 674A. The 674A's narrowband, tunable notches can deal with ring-modes more effectively than the third-octave unit could. Use three or four of the 674A bands for narrowband notching; leave the rest for wideband EQ.
2) In a higher budget biamped installation, use the 674A as an electronic crossover plus a narrowband, tunable notch filter for ring-mode suppression; incorporate a separate third-octave equalizer to correct the house curve.
3) Use variations of (1) and (2) above **with** an electronic crossover; the 674A's highpass and lowpass filters can then be used to roll off the frequency response of the system in a controlled manner.
4) In a **non-biamped** system (like a stage monitor), use the 674A to equalize the monitor, and use its filters to restrict response in the extreme high and low frequencies.
5) Use the 674A as a **partial** electronic crossover plus equalizer/filter by devoting one channel of 674A equalization to each driver; one filter is required to perform the crossover function; the other can be used for its normal highpass (or lowpass) function.
6) For super power in mono reinforcement applications, connect both channels in series. You'll then get **sixteen** EQ/notch filter bands, an electronic crossover, and an extra set of filters to limit system bandwidth.

In all cases, the BANDWIDTH control can be adjusted to make the totally non-interacting (series-connected) bands "combine"—a most desirable characteristic in sound reinforcement.

Any way you cut it, the 674A's economy and extraordinary versatility make it one of the sound reinforcement practitioners' most useful tools.

Recording Studios

Every recording studio needs a few channels of 674A equalization to handle the tough chores that the internal console equalizers can't deal with. Patch that problem track through a 674A: its fine-tuning ability lets you clean up the track far more effectively than you could with a graphic or "three knob" console equalizer. Use the tunable filters to help eliminate rumble, cymbal splash, kick drum leakage—you name it!

If you need to correct the equalization of a track because of second thoughts during or after the mix, the 674A can create the finishing touches as no ordinary equalizer can. It's better than a third-octave graphic, because the 674A can generate broad, non-ringing boosts, whereas the graphic is much more colored and ringy.

The 674A is also an ideal adjunct to an electronic music synthesizer—you can create high "Q" formats and shape the spectrum so that the sound comes alive.

Motion Picture Sound

The 674A is an ideal replacement for the graphic equalizers ordinarily used for dialogue equalization in motion picture sound. Set the TUNING and BANDWIDTH controls to the "tics" on the panel, and you get the equivalent of a familiar easy-to-operate graphic. But when you **need** the extra control and flexibility—such as notching out the extraneous sounds that always seem to plague location recordings—that power is there instantly, without patching or the use of external dip filters. The high- and lowpass filters are invaluable for cleaning up noise and rumble without affecting dialogue—and without using up EQ channels to try to achieve filtering. In addition, many "effects" (such as telephone, pocket radio, or "old time" recordings) can be easily created with the 674A alone.

In addition, the 674A can be used to equalize the "B-chain" in the re-recording theater to the acoustic response specifications of the studio. The lowpass filter can effectively simulate the "Academy Rolloff" or its current modifications.

Stereo Broadcasting

Use the 674A in the production studio to enhance the announce mike, "sweeten" stereo music, and to create special production effects that make your station stand out among its competitors. Meanwhile, another 674A can be quietly and efficiently equalizing the stereo program line for maximum punch and brightness on the air. Use the 674A to equalize phone or remote lines for flat response—it's much more versatile than the standard phone company equalizers. In the main studio, use it on the announce mike channel to equalize for maximum presence, and also to notch out sounds like mechanical hum from cart machine motors or air conditioning noise. Whatever your application, the 674A's RF suppression and optional output transformer mean problem-free installation in high-RF environments.

Dance Bars

The 674A is an excellent dance bar stereo equalizer. The sound contractor installing the system can offer the management exactly the sound desired—including solid, punchy bass free from muddiness and boom—and an aggressive, sizzling top free from ringing and coloration typical of a full-octave graphic equalizer. The eight bands permit substantial work to be done in flattening out undesired response deviations in the upper bass and midrange. Narrowband notches can even deal with the difficult resonances sometimes encountered in high-efficiency horn-type loudspeakers. In biamped installations, use the separate lowpass and highpass filter outputs as a complete electronic crossover. No other crossover is necessary.

The 674A costs a bit more than an octave-type graphic. But, unlike a graphic, it really **solves** the problem.

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Technical Description

The 674A Equalizer consists of a balanced input buffer amplifier, eight main equalization amplifiers connected in series, and tunable lowpass and highpass positive feedback 12dB/octave Butterworth filters. The output of the highpass filter is buffered to drive 600 ohms, and is available separately. By suitable switch settings, the main output can be made to carry a lowpassed signal. Thus the 674A can be used as an equalizer cascaded with a full electronic crossover, or as an equalizer cascaded with lowpass and highpass filters.

Each amplifier in the equalizer section provides equalization for one band only, assuring no interaction between bands. The total equalization is simply the sum (in dB) of the equalizations provided by each of the sections.

Peak boost is accomplished by adding the output of a two-pole bandpass resonator to the main signal; reciprocal dip occurs when this resonator is symmetrically connected as a feedback element in the main equalizer amplifier.

The EQ IN/OUT switch bypasses the last seven main amplifiers and defeats equalization in the first amplifier. Gain and signal polarity are equal in the IN and OUT modes. As the BANDWIDTH control is operated, the skirts of the equalization curve move in and out, but the peak gain and peak frequency remain constant. As the EQUALIZATION controls are operated, the frequencies of peak gain remain constant. However, as the TUNING control or EQUALIZATION control (in **dip** mode) are operated, the bandwidth ("Q") will change, because of the simplifications in the "quasi-parametric" bandpass resonator. Careful design has enabled us to produce curves (in **boost** mode only) essentially identical to the desirable "constant-Q" curves provided by our 622B **true parametric** equalizer in its **boost** mode.

The EQUALIZATION controls all produce peaking curves; if shelving curves are desired, they can be approximated by tuning the lowest band to 20Hz and the highest band to 20kHz. The breakpoint of the shelving characteristic is then adjusted with the BANDWIDTH control.

Summary

Many people are now aware of the **power** of parametric equalization: the almost sensual satisfaction of getting the sound really **right.** These same people are also demanding professionals, insisting on inaudible noise and distortion, human engineering, quality "feel", and uncompromising reliability.

Orban is well-known for its line of fine parametric equalizers, like the 622B. Now with the 674A, it brings equalization of the same rigorous quality to applications where it could never before be afforded. The 674A is inexpensive enough to qualify it for serious consideration in applications which would otherwise be given by default to a much less able graphic equalizer.

The 674A rounds out the line of Orban "Professionals' Parametrics." Between the 622B **true parametric** and the 674A **quasi-parametric,** there is an equalizer for virtually every need and budget. The Orban "Professionals' Parametrics" are available at your authorized Orban dealer.

Specifications:

All specifications apply when driving 600 ohms or higher impedances. Noise measured on an average-reading meter through a 20-20,000Hz bandpass filter with 18dB/octave Butterworth skirts.

ELECTRICAL

Input:
Impedance, Load (each leg): 100K in parallel with 1000pF, electronically balanced
Impedance, Driving: Ideally 600 ohms or less, balanced or unbalanced
Nominal Input Level: Between −10 and +4dBm
Absolute Overload Point: +26dBm

Output:
Impedance, Source: 47 ohms in parallel with 1000pF, unbalanced (Optional transformer balanced 600 ohm outputs)
Impedance, Load: Should be 600 ohms or greater—will not ring into any capacitive load
Nominal Output Level: +4dBm
Max. Output Level Before Clipping: greater than +19dBm, 20-20,000Hz

Frequency Response:
±0.25dB; 20-20,000Hz: EQ controls set at zero detents

Available Gain:
+12dB; adjustable to -infinity by means of front-panel GAIN control

Slew Rate:
Varies between 6 and 13V/us depending upon setting of GAIN controls; slewing is symmetrical. Internal bandlimiting assures that slew rate limiting will not occur even with the most severe equalization and program material.

Square Wave Response:
Square wave exhibits no spurious ringing at any output level. The only ringing observable is that theoretically associated with any given equalization curve.

Total Harmonic Distortion:
Less than 0.08%, 20-20,000Hz (+18dBm)

SMPTE Intermodulation Distortion:
Less than 0.05% (+18dBm: 60/700Hz, 4:1)

Noise at Output:
Less than −78dBm (EQ in, filters out, controls centered)

Overload/Noise Ratio:
Better than 113dB for any single bandpass filter, for any settings of TUNING or BANDWIDTH controls.

Equalization Ranges:
±16dB peaking EQ, Reciprocal

Tuning Ranges:
20-60Hz; 40-150Hz; 110-310Hz; 230-750Hz; 480-1900Hz; 1.1-4.5Hz; 2.8-9.0kHz; 5.9-21kHz. Dials calibrated at ISO preferred frequencies.

Crosstalk:
Typically better than −55dB @ 20kHz; improves at 6dB/octave below that frequency.

"Q" Range:
Greater than 0.5 to 10 for any setting of the TUNING control.

Low Pass Filter Section:
Tunable in 2 ranges: 200-2000Hz or 2.0-20kHz, 12dB/octave, (2nd-order Butterworth)

High Pass Filter Section:
Tunable in 2 ranges: 20-200Hz or 200-2000Hz, 12dB/octave, (2nd-order Butterworth)

Overload Indicator:
Lamp lights for 200ms if the instantaneous peak output of any amplifier rises to within 1dB of its clipping point.

Active RC realized with FET-input opamps. Line driver employs discrete transistor current booster.

Operating Temperature:
0-50° C

Power Requirements:
115/230VAC ±10%; 50/60Hz; 12 watts

PHYSICAL

Operating Controls (each channel):
EQUALIZATION, TUNING, and BANDWIDTH for each of eight bands. TUNING, RANGE (×1; ×10), and FILTER IN/OUT for each filter. EQUALIZATION IN/OUT, POWER ON/OFF, and GAIN for entire equalizer.

Panel:
19" × 5¼" (48.3 × 13.3cm): 3 units

Chassis Depth Behind Panel:
5¼" (13.3cm)

Weight:
Net: 11lbs. (5 kg); Shipping: 13½ lbs. (6.1 kg)

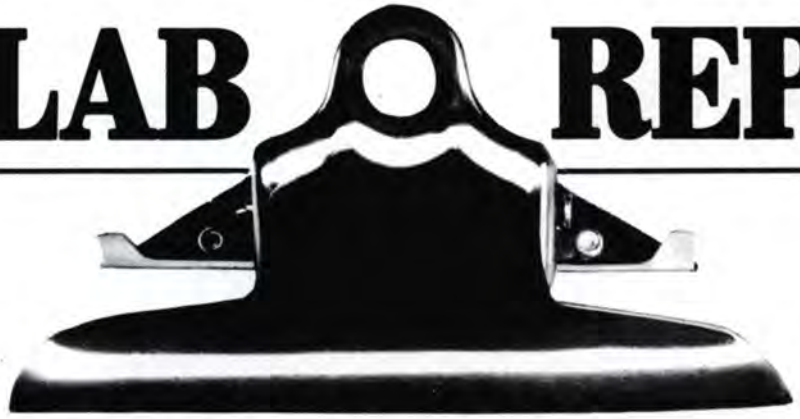
AC Cord:
3-wire U-ground to USA Standard

Connectors:
140 type barrier strip (5# screw); holes punched for XLR-type connectors (Switchcraft D3F and D3M or equal)

Circuit Ground:
Available on barrier strip; normally jumpered to chassis.

Options:
1) Plexiglass security cover for EQ and filter sections
2) Balanced transformers in two or four outputs
3) XLR-type connectors on input and two or four outputs
4) Phone jacks on input and two or four outputs

MODERN RECORDING LAB REPORT



NORMAN EISENBERG AND LEN FELDMAN

ORBAN 674A STEREO EQUALIZER

"...an engineering tour-de-force which, as far as I know, is unmatched by any other single device." *Comment by Norman Eisenberg*

"...making this the most powerful equalizing tool for pro audio work that I have yet to come across." *Comment by Len Feldman*

Orban 674A Stereo Equalizer

General Description: The Orban 674A is a stereo version of the Orban 672A (*MR&M*, November 1979). Each channel is divided into eight frequency bands, each band with its own slider for graphic equalization. As in the former model, parametric operation is provided by continuously variable controls for adjusting center frequency and bandwidth of each frequency segment. In addition, each EQ section is followed by wide-range low-pass and high-pass filters (12 dB/octave). The filters also may be used as an electronic crossover in bi-amped systems.

Each of the sixteen EQ sliders has a nominal boost/cut range of ±16 dB, marked in gradations of 2 dB and with center detents for 0 dB. Above each pair of sliders is a dual-concentric knob control for left- and right-channel tuning of the center frequency. Each knob has six frequencies marked, with a box around the ISO frequency for that particular range. Below each pair of sliders are additional dual-concentric knobs for varying the bandwidth ("Q") separately on each channel. These knobs are labeled from 0 to 10, representing a range from a very steep Q to a very broad Q. The average Q of 7 is denoted by the box marking.

Each filter section has individual controls for left and right channels. The HP filter controls include in/out and selectable range buttons plus continuously variable frequency selector knobs. The markings for the knobs indicate frequencies of 20, 25, 32, 40, 50, 80, 125, 160 and 200 Hz. Pushing in the range button, of course, multiplies these frequencies by 10.

Similarly, the LP filter section has its own input and range buttons and tuning knobs. Here the knobs are marked 2 K, 2.5 K, 3.2 K, 5 K, 8 K, 12.5 K, 16 K, 18 K and 20 K. Pushing in the range button here multiplies these frequencies by 0.1—that is, it reduces the range to a span of 200 Hz to 2 kHz. Thus, when the HP range switch is set for "X 0.1" and the LP range switch is set for "X 10" both filters cover the same range of 200 Hz to 2 kHz which facilitates the device's use as an electronic crossover for any frequencies within that range.

Below the filter controls are the unit's power off/on switch and indicator; separate EQ in/out buttons for each channel; separate gain controls with overload indicators for each channel. The panel is colored light blue with white markings, and is rack mountable.

Signal input and output connections are made via screws on a barrier strip. As supplied, the unit is ready for use with two-conductor shielded cable. However, it also may be used with optional XLR connectors which may be installed and wired behind a removable plate on the rear of the chassis. In addition, the owner's manual includes instructions for using single-conductor shielded cable and ¼-inch phone-plugs. Each channel's input is balanced. The output is unbalanced, although it can be changed to balanced with an optional transformer. A block diagram showing signal paths is printed on the rear, which also contains the unit's fuse-holder and the AC power cord fitted with a three-prong plug.

The Orban 674A may be used as a stereo graphic/parametric equalizer with stereo high- and low-pass filters, or as a stereo equalizer followed by stereo electronic crossover for two bi-amplified speaker systems. Among its suggested applications, covered in the owner's manual, are stereo matching; sound reinforcement, including "house tuning" and notch filtering; full and partial electronic crossover (the latter involves equalizing individual drivers in a given speaker system); special uses in dance bars, recording studios, motion picture sound, broadcasting and electronic music.

Test Results: Neither the temporary operating manual which arrived with our test sample, nor the full manual that came a bit later, contained a formal list of performance specs for the model 674A.[1] There were some references to a few items such as the ±16 dB EQ range and so on, and a statement of "very low noise and distortion." Without formal specs, but mindful of the fact that the 674A is essentially a stereo version of the 672A which had been tested some time ago, we were not "in the dark" with this service, and between bench tests (see "Vital Statistics") and 'scope analyses we did run a comprehensive series on the new Orban and came up with very favorable results that confirm the model 674A as a most versatile, clean-performing, equalizer of impressive capabilities.

Figs. 1 and *2* show our plots of the high-pass (low cut) and low-pass (high-cut) filter sections. The slopes are 12 dB per octave (as claimed), and the overlap (from about 100 Hz to 2 kHz) does allow these filters to be used as adjustable electronic crossovers, with frequencies of your own choosing.

Fig. 3 shows the wide range of adjustment of center frequency possible for one of the device's eight bands (the one chosen for this test was nominally centered at

Manufacturer's Notes

[1] Specifications have been included in the Operating Manual in response to this appreciated criticism.

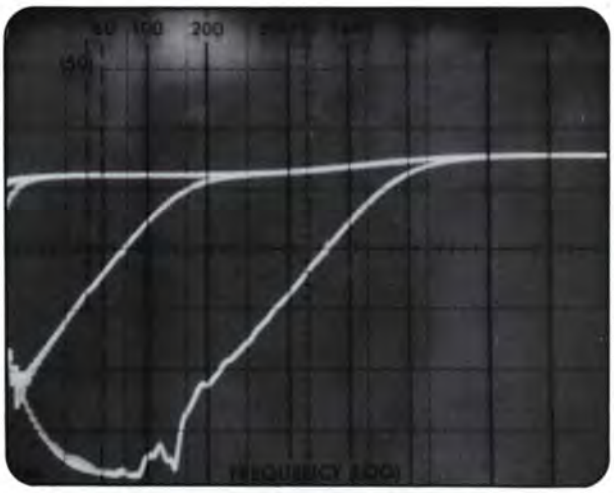


Fig. 1: Orban 674A: Extreme and intermediate frequency settings of high-pass (low-cut) filter yields these curves. Slopes are 12 dB per octave.

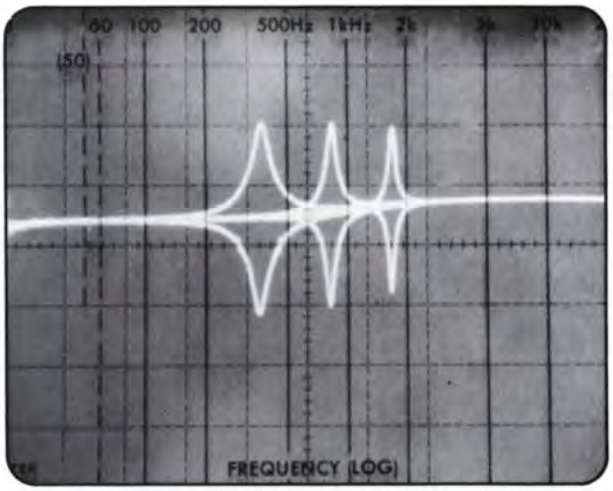


Fig. 3: Orban 674A: Each band of this quasi-parametric/graphic equalizer can be tuned over a range of approximately 3:1 in frequency. Boost and cut response curves shown are for two of the extreme settings and a mid-frequency setting of the nominal 1 kHz band control.

1 kHz). Again, the results confirm the manufacturer's claim of a 3:1 range in actual frequency for the band.

The variable bandwidth or "Q" characteristic was examined as shown in *Fig. 4*. For the multiple response curves shown here we allowed the center frequency to remain fixed at around 800 Hz, and we varied the "Q" control for that band from its narrowest (about 0.5 Q) to its widest (about 10).

For use as a simple graphic equalizer, we ran the test whose results are shown in *Fig. 5*. In this instance we set all of the frequency controls at their indicated marks on the front panel, which puts the centers approximately an octave apart. We then adjusted the Q-controls to their front-panel indicated marks. Then, by varying each band's slider control (as we normally do for plotting the response of any graphic equalizer), we obtained the multiple response curves shown in *Fig. 5*. We did note that by using the suggested settings shown on the front panel we did not end up with equal values of Q (bandwidth) for each of the band filters. However, with a bit of experience, we could have readjusted the Q settings to make all of them more nearly equal. The point here was merely to show how the 674A could be used as a simple graphic equalizer.

As a final test of the tremendous flexibility of this combination graphic/parametric equalizer/filter set/crossover network, we decided to create the kind of complex response curve that many acoustic environments might make you wish you could do with a less "powerful" equalizer. This is shown in *Fig. 6*. Those experienced in room equalization might appreciate what can be accomplished with this one instrument: For instance, a narrow bass peak that needs

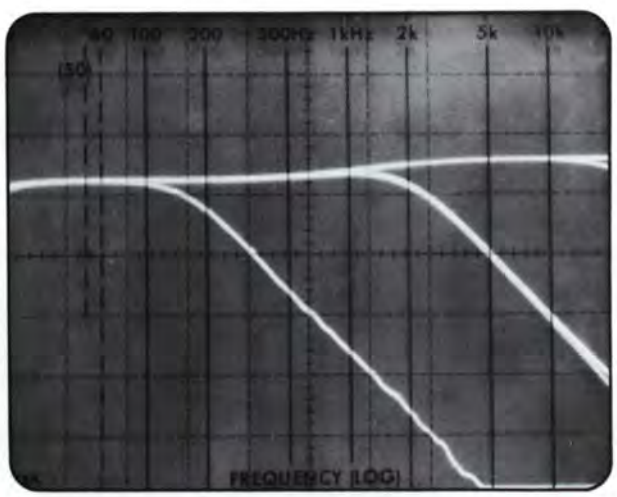


Fig. 2: Orban 674A: Extreme and intermediate frequency settings of low-pass (high-cut) filter yields curves shown. Slopes of this filter are also 12 dB per octave.

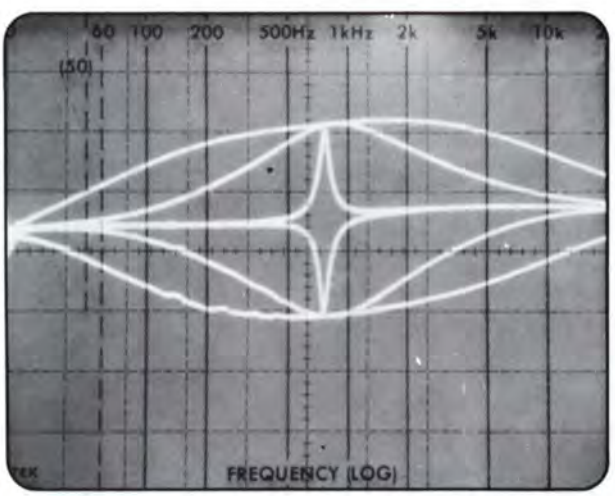


Fig. 4: Orban 674A: The "Q" or bandwidth of each of the 8 bands of the unit is variable between 0.5 (narrowest display) and 10 (broadest looking curve covering the entire audio spectrum).

"sucking out" (without losing a good deal of the music); the desirability of a more gradual bass boost below that frequency to get another fraction of an octave from the speaker system; a smooth dip in the upper midrange to take care of midrange drivers that may sound a bit "squawky;" and finally, a gradually rising response to perk up the top of the tweeter's range.

General Info: Dimensions are 19 inches wide; 5¼ inches high; 5¼ inches deep (behind panel). Weight is 13.5 lbs. Price: $1179.

Individual Comment by L.F.: I can't help thinking that manufacturers of semi-pro and pro audio consider it a sacred obligation to send out first production units of any new product with "temporary" operating manuals and the usual letter of apology telling us that if we will but be patient, the final fancily printed (and more complete) owner's manual will be along in due time. Perhaps I've become so accustomed to these omissions because most manufacturers want us to get a chance to evaluate new equipment as quickly as possible. Still, it is rather a pity that this Orban equalizer did not come with its final booklet during our tests, because there is so much more about this magnificent and flexible equalizer that I'd like to know.

Since no central listing of basic specifications were supplied with the unit, we measured the usual things such as distortion at several frequencies, signal-to-noise and frequency response. These measurements, though, do not tell you anything about the true worth of this unit. As far as I'm concerned, the debate over whether parametric or graphic equalizers are more useful in pro audio work can stop right now. With the Orban 674A you have the best of both EQ approaches, plus lots more, such as continuously adjustable electronic crossovers.

Most parametric equalizers we have tested previously had three, four or—at most—five control bands. Here is a unit that has eight bands, all of them totally controllable in terms of boost and cut, center frequency and bandwidth or "Q." And the range of the control for each of these parameters is awesome, making this the most powerful equalizing tool for pro audio work that I have yet come across. Especially revealing is the curve shown in *Fig. 6*—I can't think of any equalizer I have ever checked out that could create such a response curve. I think, in a way, that curve tells it all. By the time this appears in print, the Orban 674A will come with its "permanent" owner's manual, which should increase my enthusiasm for this device—if that's possible.

Individual Comment by N.E.: As I commented earlier on the Orban 672A (the mono forerunner of the 674A), the parametric options for eight bands were most impressive and "ear opening" and handling the device really gives you a feel for its utter flexibility and professionalism, covering a whole span of possible tonal variations from subtle to major. Offering all this for stereo is something of an engineering tour-de-force

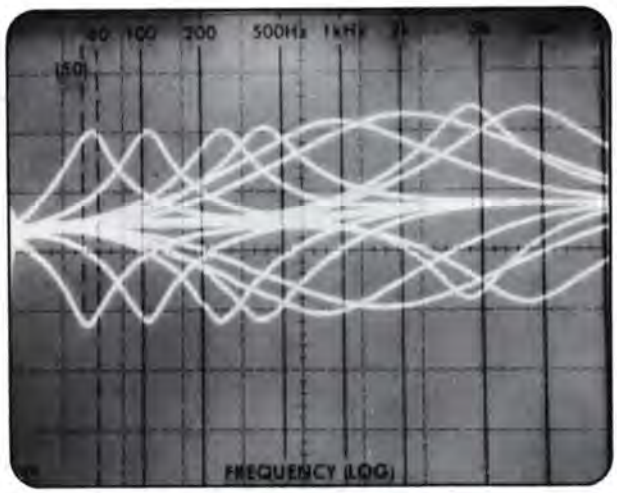


Fig. 5: Orban 674A: By following the suggested "Tic" marks on tuning and bandwidth controls for each band of the equalizer, we obtained the eight boost and cut curves shown above. Note that "Q" seems to be broader at high-frequency of the display.

which, as far as I know, is unmatched by any other single device.

As with any "combination" unit, the old question comes up of its merit in any of its numerous functions vis-a-vis other devices that specialize in only one or two of those functions. In other words, as a pure parametric equalizer, how does the Orban stack up against others that are basically parametric? How does it compare to others that are purely graphic equalizers? How does a stereo unit of this type compare with two otherwise equally competent mono units? The last question is somewhat answered by Orban in the owner's manual—and it strikes me as an honest statement of its "limitations." Since the corresponding "A"

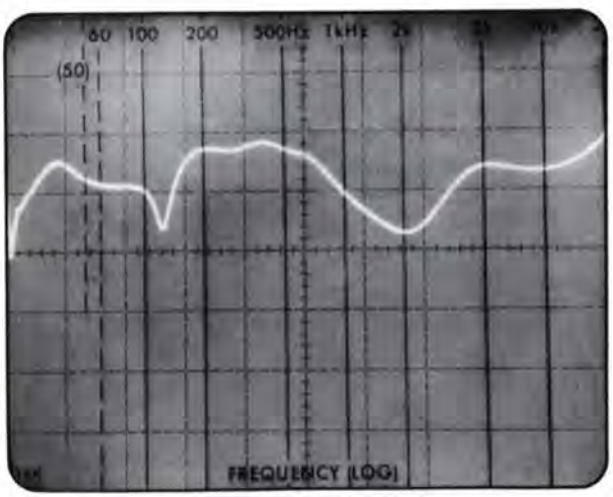


Fig. 6: Orban 674A: Neither a simple 8-band graphic equalizer nor the typical three or four band parametric equalizer could have produced the complex and precision overall response curve obtainable with this Orban EQ, which attests to its extreme flexibility of control.

and "B" controls had to be placed physically close to each other, "there is slight crosstalk between the channels at very high frequencies (typically better than −55 dB at 20 kHz, falling at 6 dB/octave at lower frequencies). A small amount of leakage from one channel to the other may be heard if you attempt to use each 674A channel to equalize entirely independent program material, and we recommend that the 674A be used only with stereophonic program material. If you require absolute isolation between the two channels, we recommend use of a pair of 672A equalizers instead."

Orban says this right up front, to its credit. As to parametric options, the 674A is clearly in a class of its own, what with eight frequency bands rather than the customary three or four. Are eight bands of parametric "too much?" I don't know. There are many audio pros who feel that really good low-pass and high-pass filters combined with three or four bands of parametric are all that they need. And yet, there is that "weird" response curve we were able to get (*Fig. 6*) with this device that documents a complexity and precision that seem unprecedented for a single-unit equalizer. As a straightforward graphic equalizer, the eight bands of the Orban are, of course, two less than the usual ten octaves found on pro-grade units. How important those extra two segments are, as against all the other versatility of this model (including its electronic crossover options), is something you'll have to decide for yourself. Whatever, the Orban 674A merits very serious consideration.

ORBAN 674A STEREO EQUALIZER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Frequency response (−3 dB)	NA	10 Hz to 70 kHz
Harmonic distortion		
1 kHz	NA	0.12% (1 V input)
20 Hz	NA	0.10% (1 V input)
20 kHz	NA	0.13% (1 V input)
IM distortion (SMPTE)	NA	0.13% (1 V input)
Signal-to-noise ("A" wtd)	NA	85 dB (1 V input)
All stated operating parameters		Confirmed

CIRCLE 20 ON READER SERVICE CARD

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ORDERING GUIDE & SUGGESTED LIST PRICES

Professional Audio Products

Revision 15; Effective 1 February 1986
Changes: Add 275A, 275A/RC
No price changes
Change Security Cover from "GY" to "WH"

Model	Description	Suggested List
111B/1	Spring Reverberation (2 channels)	$899.00
245F	Stereo Synthesizer	$399.00
275A	Automatic Stereo Synthesizer	$1,895.00
275A/RC	Remote Control for 275A	$295.00
412A	Compressor/Limiter (1 channel)	$425.00
414A	Compressor/Limiter (2 channels)	$799.00
418A	Stereo Compressor/Limiter	$899.00
422A	Gated Compressor/Limiter/De-Esser (1 channel)	$629.00
424A	Gated Compressor/Limiter/De-Esser (2 channels)	$989.00
536A	Dynamic Sibilance Controller (2 channels)	$539.00
622A	Parametric Equalizer (1 channel)	$569.00
622B	Parametric Equalizer (2 channels)	$879.00
672A	Mono Graphic Parametric Equalizer	$689.00
674A	Stereo Graphic Parametric Equalizer	$1,299.00

Prices are domestic U.S. only; F.O.B. San Francisco. Prices based on Buyer's acceptance of Orban Standard Terms & Conditions of Sale are subject to change without notice. All units are supplied for 115V, 50/60 Hz operation unless otherwise specified.

See reverse side for accessories.

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