

Annual **GUITAR RECORDING** Issue

E

THE PROJECT
RECORDING &
SOUND
MAGAZINE

MARCH 1997

**LARRY CARLTON'S
ON-STAGE RIG**

**STEVE VAI'S
PRIVATE
PROJECT
STUDIO**

**SIX-STRING STUDIO
TECHNIQUES FROM:
ALLAN HOLDSWORTH
ROGER NICHOLS
AL KOOPER
NEIL ZAZA**

**EQ REVIEWS:
LINE 6 AXSYS AMP
YAMAHA MIDI GUITAR
APHEX PARAMETRIC EQ
TC ELECTRONIC FINALIZER
TANNOY AMPLIFIER**

JUST THE AXE

Dave Jerden's Studio Tips

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STUDIO 12R

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EQ

PROJECT RECORDING
& SOUND TECHNIQUES
VOLUME 8, ISSUE 3
MARCH 1997



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ON THE COVER:

Dave Jerden works in his project studio. Photo by Edward Colver.

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O2R Praise From Recording Pros.

Phil Ramone:



Grammy award-winning producer of Billy Joel, Frank Sinatra,

Barbra Streisand and others.

"The O2R is a serious invention, a real breakthrough in technology given its size and what it can do sonically. The console plays back warm—I'm very impressed."

Tom Jung:



President of DMP Records: Credits: DMP Big Band "Glenn Miller

Project" and "Carved in Stone."

"We have been using the O2R to record and mix our new big band surround sound CDs. When you consider all the power and flexibility you get for the money, it is truly amazing."

Roger Nichols:



Grammy award-winning recording engineer, producer of Steely Dan,

Rickie Lee Jones, Rosanne Cash, etc.

"With the O2R's total reset of all parameters, I can automate levels, pan, EQ and external effects sends. After I've determined the set-up, I can hit GO and walk away to listen. The automation does it all."

Frank Filipetti:



Recording engineer for James Taylor, Carly Simon, Marc Cohn,

and others.

"I really like the A/D converters on the O2R. They sound very musical, and not at all harsh. I give very high marks to the EQ; it gave me everything I need for tracking."

Hans Zimmer/Media Ventures:



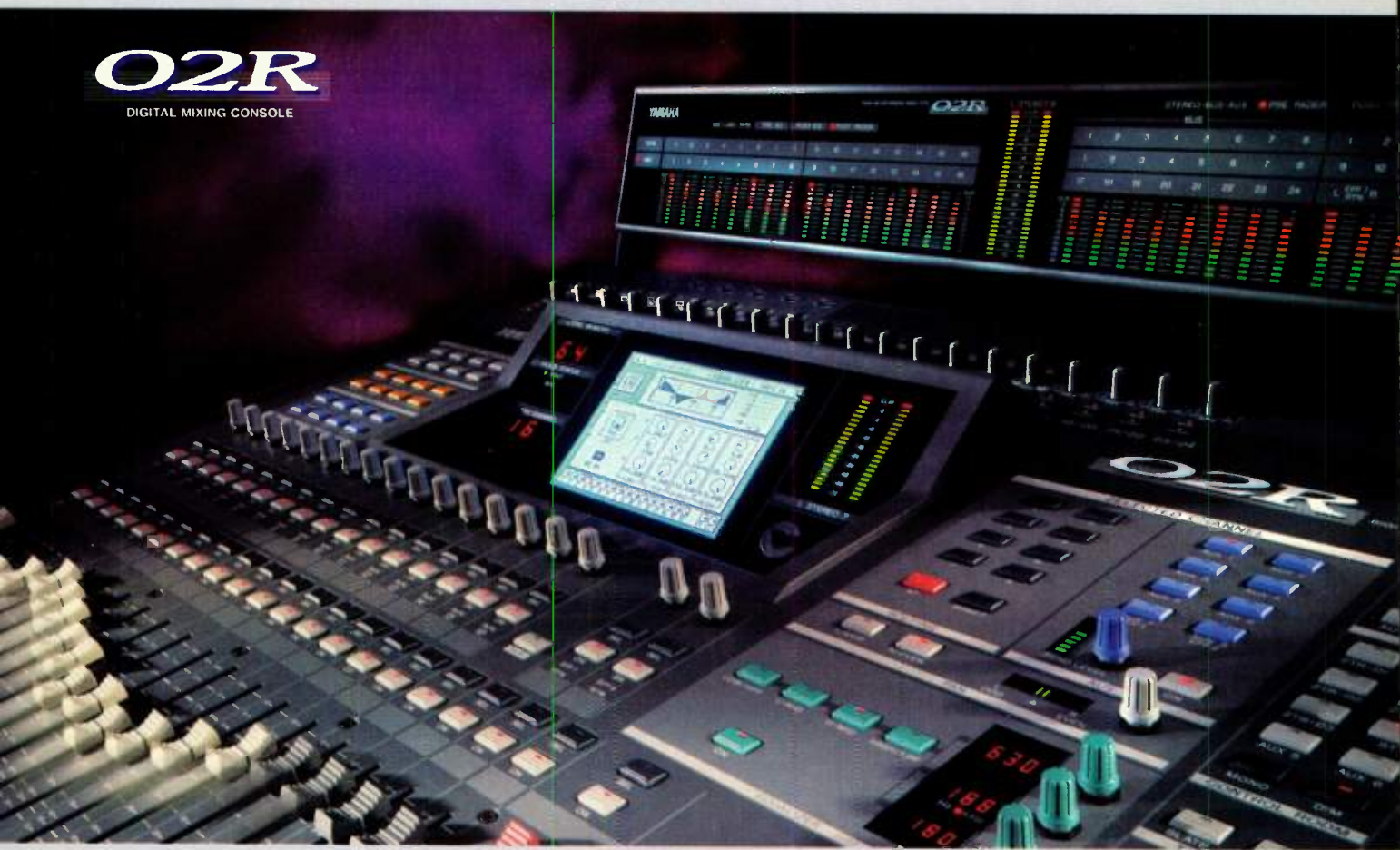
Oscar winning film composer; The Lion King and Rain Man

and others.

"We've put O2Rs into every room at Media Ventures. It's become the essential piece of audio gear for all of us. There are now no less than 16 O2Rs scattered among the facility which are being used on such projects as Chicago Hope (CBS) and The Profiler (NBC)."

O2R

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The Yamaha O2R Digital Recording Console is a breakthrough product at a breakthrough price. For less than \$10,000, O2R is the only recording system that gives you all of these features:

- 44 Channels; digital I/O for ADAT, Tascam and AES/EBU products
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O3D

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The Yamaha O3D, available in the spring of 1997, provides all of the O2R's features in a 26 input package with a smaller footprint and a smaller price—less than \$4000. The O3D also gives you digital aux sends, surround sound, and control of external digital products—like hard disk recorders—directly from the console.

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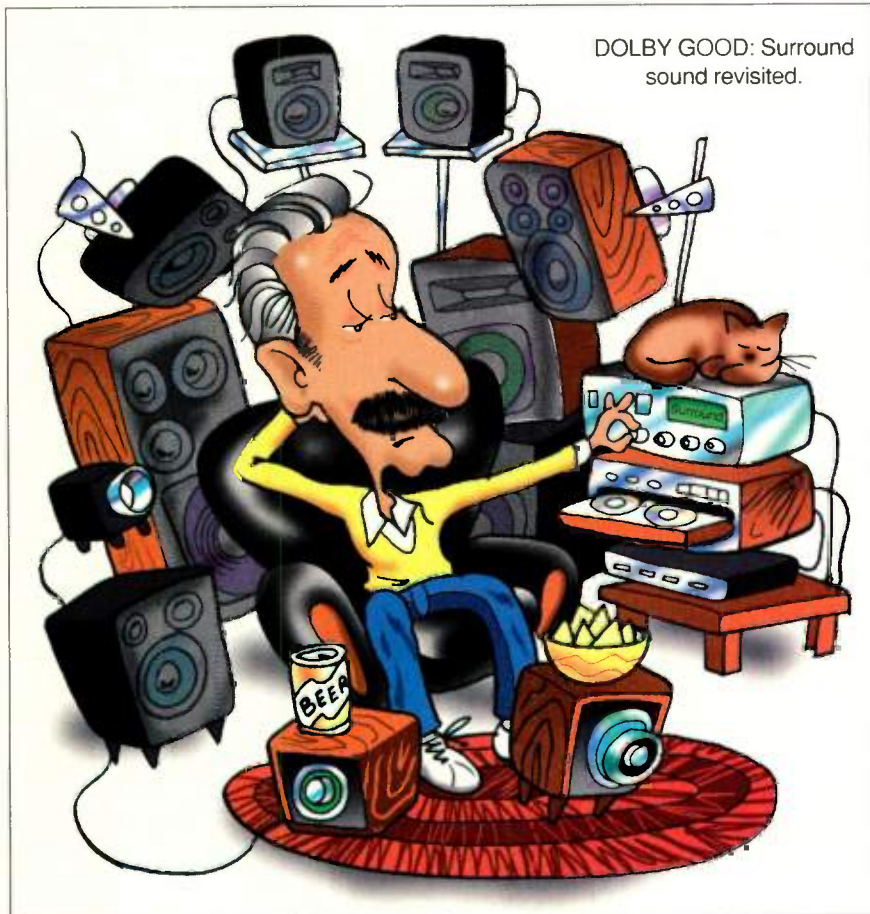


ILLUSTRATION BY MIKE BROWNE

HOOKED ON PHONICS

I just finished reading the January issue and found Roger Nichols's comments on Holophonics very intriguing. I, too, was made aware of this system about 15 years ago in Oklahoma City by an audiologist for whom I had been doing some tape duplication.

I heard the demo tape (I still have my copy) to which Mr. Nichols refers, and was impressed, but I felt that most of the sound images seemed to come from behind me or from the sides. Nevertheless, during one cut I could almost feel the hot air from the hair dryer blowing on my neck and during another cut I tried to brush the mosquitoes from my ears.

A few weeks later, I was invited to a lecture by Hugo Zucarelli (the man responsible for Holophonics) at an audiologists' association meeting. After the lecture, I was invited to my audiologist's client's home where I was treated to a personal Holophonics demo by Mr. Zucarelli.

He had made a recording of the audiologist's grand piano in her living

room and I sat at the piano while listening to the playback. This really was amazing. It was as if I had been seated next to the pianist during the actual performance. All sound images seemed to come from their proper directions, although I thought that, perhaps, the visual cues from being seated at the piano were responsible for this impression. Now, I am not so sure.

*Charles E. Cason, III
Plano, TX*

DOLBY GOOD

I'd like to thank you for featuring the article "A Surround Sound Primer" by Bobby Owsinski in your October issue. As a company that has been offering surround sound technologies for film and video for over 20 years, we are certainly excited by the possibilities that surround brings to music. The addition of the "third dimension" provided by surround will allow artists and producers to create audio presentations that were previously unattainable.

For the benefit of your readers, I would like to comment on a couple of items mentioned in the article. As Mr. Owsinski correctly stated, the 4-channel (left, center, right, and surround) Dolby Stereo format is used extensively for film soundtracks. It would be good to also mention that this system is available for music and video releases in the form of Dolby Surround. In addition to the thousands of movies and television shows produced in Dolby Surround, there have been over 370 albums produced using the system, making it the most popular multichannel format for music. Anyone interested in 5.1 channel audio systems such as Dolby Digital (AC-3) can get started in surround production today using the 4-channel Dolby Surround format.

There is another item later in the article that I feel should be clarified. The comment that, "There is currently no product on the market that can deliver 5.1 surround..." is only correct if the discussion is limited to music-only formats. Laserdiscs with 5.1 channel Dolby Digital surround, along with A/V receivers with Dolby Digital decoders, have been available for nearly two years, and there are currently 150 laserdisc titles available with Dolby Digital soundtracks.

*William Barnes
Manager
Media Licensing*

*Dolby Laboratories Licensing Corp.
San Francisco, CA*

STUDIO SCHOOL

I just finished reading Bennet Spielvogel's article in the November *EQ* entitled "When the Tempo Drags." Since he asked for ideas from the readership...

I am a music teacher in my "day job" and have a project studio in my home in which I compose and record soundtracks for Audiobooks. I've lately been giving afterschool seminars and workshops in recording/sound design and such for music teachers. The school districts often have staff development funds available and are pleased to have professionals present courses for their teachers either in the schools or off-site, in a professional studio. The teachers love to take these courses and often are in a position to funnel work to a studio with which they have a newly established connection.

*Ken Maltz
via the Internet*

We Want To Make Something Perfectly Clear.

You've recorded the best performances yet. Captured on the finest digital recorder. Collected with the ultimate microphones. You're almost done. The only thing left is the mix. You need a great mix, because without it your project is lost in a fog. Stay crystal clear with the **20/20bas Direct Field Monitors** from Event.

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But these are just features. The sound these monitors deliver is the important thing. A sound truly pleasing and amazingly accurate.

"The sweet high end and the massive tight bottom made me think I was listening to a much larger cabinet."—FRANCIS BUCKLEY, EQ MAGAZINE

"I heard details in imaging and ambience that I had never noticed before. ...the 20/20bas is exceptional."—ROB SHROCK, ELECTRONIC MUSICIAN MAGAZINE

"The Event 20/20s turned out to be damned fine monitors."—PAUL WHITE, SOUND ON SOUND

"If the 20/20 monitors are any indication of what we can expect from Event Electronics, this is a company worth keeping a close eye on."—LOREN ALLDRIN, PRO AUDIO REVIEW

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EQ IN REVIEW

I have been a faithful reader/subscriber of *EQ* since the beginning. I really like the magazine and find it informative and useful. However, your staff should check out an audiophile magazine called *Stereophile* to find out how to really do reviews. Hold the manufacturers accountable. Use brand names in your comparisons, don't just say, "I had a compressor from another manufacturer on hand for comparison." Make these companies squirm and compete

for our dollars. I must admit, you're getting better in that regard. But check out *Stereophile* to see how it's really done.

Also, in your Product Views section, which has helped me locate and purchase many great products, please include the list price with the mention. Tell the manufacturers that it is necessary to furnish that info or they don't get a listing. Nothing's more frustrating than to read about something great and not know how much it is. (I know, that makes us contact them. But if I'm in-

terested, after reading the price, I'd do it anyway.)

Randy
via the Internet

HI FROM HI

I'm not much of a letter writer, but I just wanted to say I think you guys have a great mag going here. I've been in the business for about nine years, and have read you guys pretty frequently through those years. I feel I've learned a lot from your practical tips and how to's. Roger's column is very informative — you should let him just go off with more studio essentials! Aloha!

Rob Onekea
Kapolei, HI

CORRECTIONS

In the Earthworks mic review in the December '96 issue, we mistakenly reported that the mic was tested with an ADL (Anthony DeMaria Labs) mic preamp. The mic was actually tested with a Neve 1272 preamp. It was with that preamp that problems were experienced, and not the ADL.

Also, in the February issue, a figure was run with Craig Anderton's *M1 Insider* column that should have been run with the Peavey Spectrum reviews later in that same issue. The figure refers to the paragraph under the heading "Faster, Faster" on page 124, which should have read:

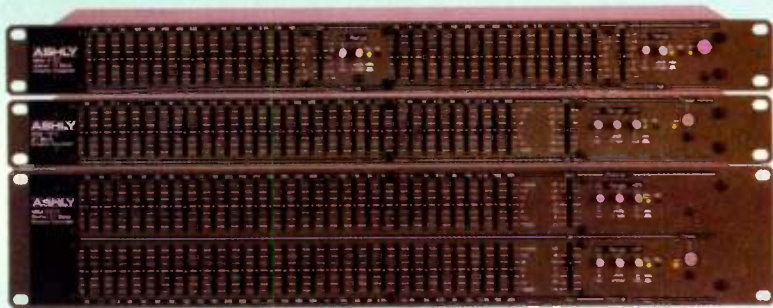
"The SB2 responds very rapidly to incoming MIDI data. Referring to fig. 1, the lower red waveform is a click from a sequencer that begins when the sequencer sends data out MIDI. The upper black waveform shows the Spectrum Bass II audio output, while the blue region highlights the time difference between the two (4.20 milliseconds). This is definitely a cut above average; most synths I've tested have an 8 to 10 ms delay."

Lastly, the February issue's Product Views section listed the price of Rane's GE 215 graphic EQ as \$599, when the cost is really \$559.

We apologize for any confusion these errors may have caused.

SOMETIMES BIG THINGS COME IN SMALL PACKAGES

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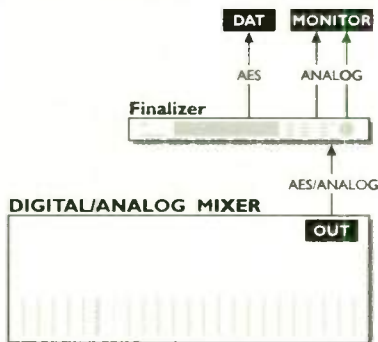
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The Finalizer creates that extra energy boost that you otherwise only can get from a professional mastering house. With its powerful multiband processing it will make *your* mixes sound **punchier, louder, crisper, warmer**, spectrally balanced, more "in your face"... it's your choice!

The Finalizer's 'Wizard' function easily finds the optimum setting for your mix: Simply enter the type of music you are mixing and to what extent you want it processed... and you are done! The more experienced user may "tweak" the signal path extensively, with over 75 parameters to choose from. You will also find additional signal analysis tools including a Phase Correlation Meter, Peak-Hold Meter, Level Flow Meters, and a Digital Format Analyzer.

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THE NIGHT IT WON THE AWARD EVEN THE SOUNDWOMAN

January 19th, 1996... Anaheim Hilton Ballroom. The SR24•4 edges out some very impressive competition to receive Music & Sound Retailer magazine's Most Innovative Mixing Console Award. We're especially proud of receiving this honor since final voting is conducted among thousands of audio professionals across America.

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Then join the live sound professionals who have discovered that \$5,000 worth of mixer for just \$1599* is the best award of all.

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PHANTOM POWER globally switchable and available on every XLR,

it lets you power condenser microphones.

VLZ - VERY LOW IMPEDANCE a unique, and frankly expensive, approach to circuit design. VLZ cuts down on internal thermal noise (hiss) and crosstalk by making internal impedances as low as practical, within the mixer. It's expensive because it takes a lot of power to drive a VLZ-designed

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MONO MIC/LINE CHANNEL STRIPS. 28 on the SR32•4, 20 on the SR24•4.

STEREO LINE CHANNEL STRIPS. 2 on both the SR32•4 and SR24•4

3-BAND SWEPT EQ (Mono Channels) 80Hz Lo Shelving and 12kHz Hi Shelving, plus swept midrange with a wide 1.5-octave bell and sweepable from 100Hz to 8kHz

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SIX AUX SENDS PER CHANNEL. Auxes 1 & 2 are pre-fader; Auxes 3 & 4 are switchable pre/post; Auxes 5 & 6 are post-

fader. 15dB extra gain above Unity on all sends.

4-BAND FIXED EQ on stereo channels feature 80Hz Lo Shelving and 12kHz Hi Shelving, as well as 800Hz Low-Mid EQ and 3kHz peak Hi-Mid EQ.



FOR MOST INNOVATIVE MIXER OF THE YEAR, WAS USING A MACKIE DESIGNS SR24=4.



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- ★ STEREO AUX RETURNS with global solo. Aux Return 4 can also be assigned to subs 1-2 or 3-4.
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- ★ 6 AUX SEND MASTERS each with individual solo switches. Aux Sends 1 & 2 are pre-fader, great for monitor sends in live mixing, Aux Sends 5 & 6 are post-fader, which are helpful during studio mixdown. Aux Sends 3 & 4 are switchable, so you can have as many as 4 aux sends pre- or post fader on any channel. Talk about flexible.

- ★ EFX RETURN TO MONITOR level controls for Aux Sends 1 & 2.
- ★ TAPE RETURN level control.



- ★ TAPE RETURN TO MAIN MIX not only routes Tape Returns to Main L/R outputs, it also disables all other inputs to mains. That way you can play a CD/tape between sets without messing up your channel and sub settings.
- ★ TAPE RETURN TO CONTROL ROOM/PHONES & Control Room/Phones level control, to monitor and control the level going to your 2-track recorder (or to the two sets of Phones you can plug in via jacks on the back).

- ★ SOLO SECTION WITH AFL/PFL with level control, global AFL/PFL switch, and separate aux and sub out LED indicators. PFL (Pre-Fade Listen) allows you to listen to a signal before it hits the faders, like when trying to cue up a tape. AFL (After Fade Listen, or Solo In-Place) lets you effectively adjust a channel's place in the stereo horizon.

- ★ TALKBACK SECTION with level control, LED, separate Main Mix & Aux 1-2 assign switches. XLR mic preamp input on console back panel.

- ★ LOW CUT FILTER helps eliminate mic thumps, wind noise, etc. by inserting an 18dB/octave high-pass (low cut) filter at 75Hz. That way you can use Lo Shelving EQ on the sounds that matter, instead of wasting it on noises you don't want in your mix.

- ★ -20dB SIGNAL PRESENT & OL LEDs on all channels.
- ★ AFL/PFL SOLO with LED indicator.
- ★ BUS ASSIGN switches.



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We've packed 24 inputs, 3-band swept EQ, 6 aux sends, four submix buses and a whole slew of other goodies into a rugged chassis just 31 inches in width and 31 pounds in weight.

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particulars about other Mackie Designs mixing systems.

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MR. DESTINY

Q Greetings from the sunny Caribbean and the MIS "Carnival Destiny."

I have been a longtime reader of the maintenance column in EQ magazine, and find it very useful. I have a question in reference to a previous article; I am far from my past issues collection and I hope you will repeat some info you gave.

Several issues back you wrote about the Alesis BRC and several ways to restart/reset it from scratch. Could you tell me the various combinations of buttons to press for the different restart modes? A BRC we have here was dropped, and now it will not take auto-locate points among other things. I hope a cold restart will do the trick, as the process of signing off equipment for repair simply takes so long.

Adam D. Sperry
Sound Technician
MIS "Carnival Destiny"

A To reboot the BRC, power up while simultaneously holding down Play and Record.

You can perform a switch test by powering up while holding down track buttons 1 & 7, which will get you into diagnostic mode. Then, press 4 on the keypad. The display will say "4: SWITCHES." Next, press Play to begin the test. Upon pressing the various switches on the BRC, their corresponding function should read on the display.

If it can be determined the unit is in need of repair due to physical damage, you will need to have it sent in to an authorized service center. If the BRC was purchased from a domestic dealer, the unit will have to be serviced at the factory or at one of our service centers. If the unit was purchased through a distributor, you will have to contact the distributor to arrange for service.

Please let us know if you have any questions or comments.

Adam Brisben
Technical Support
Alesis Corporation

TAPE IT EASY

Q At work I use a type of DAT tape labeled DDS. The tapes cost a bit more than the ones usually obtained through audio/video retailers, and I am assuming that they are somewhat better in quality. Is there any reason why I should not purchase and use this type of tape for use on an audio DAT recorder?

Gordon Gidluck
via the Internet

A So far as I know, there is no problem using Data (DDS) DAT tape in an audio DAT machine and vice versa. Is one more reliable than the other? Well, your guess is as good as mine. All tape manufacturers have good days and bad, and so do tape machines. Ex-

ercise your tapes, store them either heads or tails (not in-between), and leave one to five minutes at each end for a safety pad (preferably with a tone so the tape won't be mistaken for blank).

Eddie Ciletti
Manhattan Sound Technicians
NYC, New York

CALL HIM THE SEEKER

Q I've tried for a long time now to get some information on speakers built by two companies. First, who builds the Intersonic Bass Tech-7? Next, how can I contact a loudspeaker company called Ohm, makers of the Ohm BR series? (This is not the U.S. Ohm loudspeaker company, which informed me that the BR series is made by another company in the U.K.)

Louis Obando
Obando Audio Systems
1071 N Koke Mill Rd.
Springfield, IL

A Our research drew a blank, but we'll keep searching. Chances are that these speakers are, in fact, made outside North America and perhaps distributed by a company in North America.

If the makers of Intersonic speakers and the U.K. Ohm are out there reading, drop us a line. Readers?

Hector La Torre
Executive Director
EQ Magazine

QUICK ENOUGH?

Q I'm in the middle of building a bunch of +4 balanced fanouts for TASCAM DA-38's, and I've found that TASCAM does not provide the pinout for the 25-pin D-sub connectors in their literature. (Score one big point for Alesis for printing it on the back of the machine.)

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CIRCLE 25 ON FREE INFO CARD

EQ & A QUESTIONS & ANSWERS

Do you know where I might be able to access this info “quickly”?

Sean McClintock
 Remote Recording Services, Inc.
 Lahaska, PA

A Here’s the pinout for your D-sub connectors. Good luck.

Ch/Hi, Lo

1/24, 12

2/10, 23

3/21, 9

4/7, 20

5/18, 6

6/4, 7

7/15, 3

8/1, 14

Ground is 25, 11, 22, 8, 19, 5, 16, 2.

Eddie Ciletti
 Contributing Editor
 EQ Magazine

LEXI-CONNECTION

Q My company owns a Lexicon PCM 41 that we purchased used. I have seen information for a Lexicon PCM 42, but have never seen any reference to a ‘41. I was wondering when it was made and where I might get my hands on a manual for it.

I really enjoy reading your magazine.
 Brian Cassell
 Celebration Productions
 Sykesville, MD

A The rack-mountable PCM 41 digital delay processor was released around 1980. Its partner, the PCM 42, differs in that the ‘42 provides longer delay times and a numeric display. The ‘41 offers up to 800 milliseconds of delay, while the ‘42 offers up to 2.4 seconds (expandable to 4.8 seconds with optional memory). The PCM 41 provides input/delay mixing with recirculation (feedback), switchable polarity inversion of the feedback and delay signals, high- and low-pass filters, and discretely switchable and continuously variable delay time adjustments. Bandwidth is 16 kHz.

You’ll find foot-control jacks on the ‘41 to switch the effect in and out, as well as to capture and indefinitely repeat a musical phrase and to control the VCO (time base) in sync with the music.

The PCM 41 uses Pulse Code Mod-

ulation to accomplish its tasks. At the time it was released, Delta Modulation and analog BBD (Bucket Brigade Delay) technology were the word, so this technology favorably raised some eyebrows.

Lexicon’s Gregg Perry has graciously secured one of the last PCM 41 owner’s manuals for you. Please give EQ a call (516-944-5940) and we’ll put you in touch with Lexicon.

Hector G. La Torre
 Executive Director
 EQ Magazine

WEB WATCHER

Q I own a DigiTech Studio Quad 4 and would like to get in touch with DigiTech on line via e-mail? Their address (digitech.com) doesn’t seem to work.

Chris
 via the Internet

A I went to www.eqmag.com to find DigiTech particulars. Although currently there are not links to all manufacturers from our site, I did find DigiTech’s POT (Plain Old Telephone) number and snail address.

DigiTech
 8760 South Sandy Pkwy
 Sandy, UT 84070 USA
 Tel: 801-566-8800
 Fax: 801-566-7005

The parent company is Harman International. On a whim, I typed in “<http://www.harman.com/>” with success. Their site is beautiful, but (like ours) still under construction. It is a start! (Keep trying the DigiTech site; you may find it hot-linked from the Harman site.)

Eddie Ciletti
 Contributing Editor
 EQ Magazine

ASK US!

Send your queries to:
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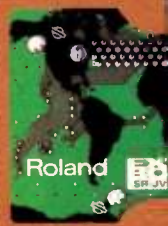


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CIRCLE 44 ON FREE INFO CARD



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Use 3 insert effects simultaneously, each with 40 effects selections in addition to reverb and chorus.

insert effects and 3 stereo outputs provide a flexible production environment that just may leave you speechless. So check out the JV-2080 at your local Roland dealer. And to audition the full line of Roland Expansion Boards, call (800) 386-7575 ext. 753 to get our Expansion Board demo CD (\$5.00). Chances are, you won't stay silent long.

Roland JV-2080 Synthesizer Module

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Roland Canada Music Ltd., 5480 Parkwood Way,
Richmond, B.C. V6V 2W4 (604) 270-6626
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CIRCLE 51 ON FREE INFO CARD

EQ PRODUCT VIEWS

MONITOR LAND

The ATC SCM20A from HHB is an active, two-way speaker system housed in a die-cast aluminum cabinet. The ATC SCM20A's bass amplifier offers 200 watts of RMS power with the treble amplifier offering 50 watts RMS, yielding up to a 110 dB sound pressure level at one meter. The input is balanced and features an input level trim for performance matching. The Super Linear Magnetic Material that's incorporated into the design of the mid/bass driver helps to increase the ATC SM20A's low-end accuracy while improving THD performance by up to 15 dB. A low-frequency contour control is offered preset on the rear panel to "factory references," with five additional boost positions for room equalization. The SCM20A has panel selectable power input voltage settings for 230-, 110-, and 100-volt operation. For more information, contact HHB Communications, Inc., 43 Deerfield Road, Portland, ME 04101-1805. Tel: 207-773-2424. E-mail: hhbcomm@gwi.net. Circle EQ free lit. #101.



STEP ON IT

Zoom's 8080 "flagship" multi-effects system features 47 individual effects produced by two ZFX-2's, Zoom's new proprietary DSP chip, in a compact floor unit. Ten effects can be combined for simultaneous use to create a wide array of sounds. The 8080 comes equipped with dedicated analog circuitry for realistic distortion effects and also includes three real-time control circuits; two control pedals that can be used for pedal wah, pedal pitch, and any other effect parameter or level setting; and built-in amp simulation. The delay module offered by the 8080 provides four types of effects including an ultra-long delay of up to four seconds and an analog-type delay. The 8080's internal memory holds 150 Zoom preset programs, as well as 50 user-programmable patches. Zoom has also included an "intelligent" 2-voice

pitch shifter into the design of the 8080, which actually divides the signal into two parts (left and right) and offers individual pitch-shift settings. The suggested list price of the Zoom Player 8080 is \$799. For further details, contact Samson Technologies Corp., P.O. Box 9031, Syosset, NY 11791-9031. Tel: 516-364-2244. Circle EQ free lit. #102.

FROM A TUBE TO A CUBE

Acoustic Sciences Corporation (ASC) has redesigned its traditionally cylindrical Tube Trap into a new package — the Cube Trap — which closely resembles a Hi-Fi loudspeaker. With a square footprint of 15 inches and a height of 40 inches, the Cube Trap is screened around with black grille cloth and capped top and bottom with black lacquer end caps. The Cube Trap is a result of ASC's new emphasis to provide aesthetic options in corner-loaded bass trap upgrades. Price is \$739/pair. For more information, contact Acoustic Sciences Corporation, P.O. Box 1189, Eugene, OR 97440. Tel: 541-343-9727. Web site: www.tubetrap.com. Circle EQ free lit. #103.

BEST OF BOTH WORLDS

Summit Audio's EQP-200A is a dual program equalizer that boasts a hybrid design utilizing both vacuum tubes and solid-state technologies. The



voltage insertion loss of the passive equalizer section is redeemed by a vacuum-tube amplifier stage that helps to give the EQP-200A its distinctive sound quality. The EQP-200A's three-pin XLR-type input connectors are electrically balanced, while the XLR output connectors are balanced or unbalanced, offering a maximum output level of +25 dBm. The front panel offers a silent operation "channel in" and "channel bypass" switch; continuously variable boost or cut and switch selectable frequencies for the low- and high-frequency stages; high-frequency bandwidth or "Q" control; and a selectable high-frequency shelf control. For further details, contact Summit Audio, P.O. Box 1678, Los Gatos, CA 95031. Tel: 408-464-2448. Circle EQ free lit. #104.

SWEET LITTLE 16

Akai has designed its DL16 Locator for the DR8/DR16 digital disk recorders to operate through the optional IB803M MIDI interface and control up to eight machines from a single control surface. The user-friendly layout provides access to all record, edit, and mix functions while also offering the user an alphanumeric display that duplicates the display found on the recorders, providing real-time feedback on the operation of the remote recorders. The DL16 also provides the user with standard transport functions, a jog/shuttle wheel, and a numeric keypad for entering locate points. There are also dedicated keys for each edit function. The DL16 provides additional controls for operating the onboard 16-channel mixer, including 16 faders and 16 pan pots for real-time control of level and pan for each of the 16 channels. The DL 16 has a suggested retail price of \$1795. For more information, contact Akai Musical Instrument Corp., 1316 East Lancaster Ave., Forth Worth, TX 76102. Tel: 817-336-5114. E-mail: akaiusa@ix.netcom.com. Circle EQ free lit. #105.



THE MAIN EVENT

In addition to two 100-watt power amplifiers, Event Electronics' 20/20p powered studio monitors feature the proprietary woofer, tweeter, port, cabinet, and crossover designs of Event's passive 20/20 models. The amplifiers are based on Event's 20/20bas circuitry and offer the same extended low frequency response and protection as the bas series. The 20/20p's back panel features left and right inputs, independent left and right volume controls, and satellite speaker connector. The 20/20p cabinet is paired (shipped) with a standard passive 20/20 monitor and a high-power speaker cable to go between the 20/20p cabinet and its satellite. The 20/20p's have a list price of \$599. For more information, contact Event Electronics, P.O. Box 4189, Santa Barbara, CA 93140-4189. Tel: 805-566-7777. Circle EQ free lit. #106.



DOWN WITH PHATT

Planet Phatt the Swing System from E-Mu combines over 17 different 6-pole filter types, MIDI synchronized LFOs, and an in-

teractive groove mechanism called BEATS Mode into a single-rack-space unit. Catering to the needs of hip-hop, rap, acid jazz, and trip-hop musicians, Planet Phatt is 16-part multitimbral and features 32 notes of polyphony and 640 presets. Planet Phatt's BEATS Mode features 100 drum loops that can be synchronized to their own internal clock or to an external MIDI clock. The BEATS Mode also gives users the ability to transpose (X-Factor) the entire beat, creating a completely new groove. Planet Phatt offers 28 user songs and 28 factory songs, which can have up to ten events linking beats together. Both songs and beats can be accessed via the front panel or remotely by using MIDI Song Start/Stop and Song Select commands. All functions can be sent out by E-mu's compact performance controller, Launch Pad. For further details, contact E-mu Systems, Inc., P.O. Box 660015, Scotts Valley, CA 95067-0015. Tel: 408-438-1921. Circle EQ free lit. #107.

THE FUTURE OF GUITAR

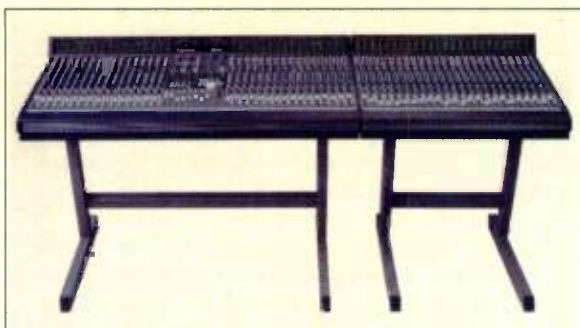
Roland's GR-30 is a four-pedal, floor-based compact guitar synth that can be used with any steel-string guitar outfitted with a Roland GK-2A divided pickup. The GR-30 features 8 MB of 384 tones specially selected for guitar, including new sounds such as vintage analog synths, thick synth pads, nylon string acoustic guitars, and various ethnic instruments. Roland has incorporated "Play Feel" settings into the GR-30 comprised of five different response curves to accommodate various guitar playing styles. These settings can even be set per individual patches. The GR-30's Synth Harmonist can add three-part harmonies for single notes or full chords as desired. The "Intelligent Harmonist" feature allows the guitarist to preset the song key for musically correct harmonies within the selected key signature. The GR-30 also features an arpeggiator that creates various arpeggiator patterns that can be sync'd to a MIDI sequencer or rhythm machine via MIDI clock. Rounding out the GR-30's features are a number of spatial effects, as well as a "Pitch Glide" function and a Hold pedal. Price is \$895. For more information, contact Roland Corporation U.S., 7200 Dominion Circle, Los Angeles, CA 90040. Tel: 213-685-5141. Circle EQ free lit. #108.



EQ PRODUCT VIEWS

SPOOKY SIDEKICK

Offering the same channel strip functionality as the original Ghost consoles, as well as the same ultra-low noise mic preamps and 4-band parametric EQs,



Soundcraft's new 24-channel expander module for Ghost and Ghost LE boards is set to roll out. When an expander is added to a Ghost console (with CPU), the expander's mutes and MIDI-note functionality are integrated with, and controlled from, the main console's master section. By adding the expander to an existing 32-channel console, users are given the ability to control 120 separately controllable inputs at mixdown. Installation is simple thanks to a simple D-type and ribbon cable connection. Price is \$5095. For more details, contact Soundcraft, Harman Pro North America, Inc., 1449 Donelson Pike, Suite 12, Nashville, TN 37217. Tel: 615-399-2199. Circle EQ free lit. #109.

DIGITAL MISSIONARY

Designed to replace low-resolution A/D and D/A converters found in digital audio workstations or recorders, the ADA1000 from Lucid Technology interfaces via standard S/PDIF or AES/EBU connectors. The ADA1000, as an external unit, helps to eliminate noise from the signal path and allows the converters to be used without a computer. Three conversion sample rates — 48 kHz, 44.1 kHz, and 32 kHz — are offered by the ADA1000. The ADA1000 has a suggested retail price of \$599. For more details, contact Lucid Technology, P.O. Box 1583, Edmonds, WA 98020. Tel: 206-742-1518. E-mail: lucid@lucidtechnology.com. Circle EQ free lit. #110.



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107: The award winning, #1 selling Tubessence mic preamp is the perfect marriage of solid state and vacuum tube circuitry. Upgrade the sound of all your mics with uncolored detail, presence and warmth.

These products are covered by one or more of the following U.S. Patent numbers: 4150253, 5359665, 5334947, 5450034, 5424488, 5483600.

CLONE AT HOME

The CD2CD from MediaFORM allows one-button cloning of your CDs. The stand-alone system houses the MediaFORM smart controller, which recognizes many formats, including ISO, CD-Audio, hybrid, mixed mode, and HFS. It does this on the fly and without the use of an internal hard drive. The CD2CD also has a track extraction feature that allows tracks from various discs to be mixed at 4X speed for specific jobs. The unit can support up to three 4X recorders, as well as the CD-2500 Autoloader. The CD2CD base model has a list price of \$3995. For more information, contact MediaFORM at 400 Eagleview Blvd., Suite 104, Exton, PA 19341. Tel: 610-458-9200. E-mail: info@mediaform.com. Circle EQ free lit. #111.



DOUBLE TEAMED

Featuring two independent stereo multieffect processors built into a single-rack-space unit, Peavey's DeltaFex Twin offers a complete set of independent features, including stereo inputs and outputs and default switch jacks. Each processor of the DeltaFex Twin offers 16 different effects types, including seven reverbs, four delays, a paralleled delay + reverb multieffect, chorus, flange, phase shift, and rotary speaker with switchable morphing speed control that allows the speed to ramp up and down. Each effect has two adjustable parameters. Front-panel controls include wet/dry mix control, input and output level controls, and a bicolor clip LED. The DeltaFex Twin also allows reverb and delay tails to carry over when the effect is defeated. Price is \$279.99. For more information, contact Peavey Electronics Corporation, 711 A Street, Meridian, MS 39301. Tel: 601-482-5365. Circle EQ free lit. #112.

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109 ApheX Tubessence Parametric Equalizer



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105 ApheX Logic Assist™ - 4 Channel Gate

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Foreign patents issued or pending. ApheX, Aural Exciter, Big Bottom, Logic Assist and Tubessence are trademarks of ApheX Systems Ltd.

EQ

PRODUCT VIEWS

IT'S IN THE CARDS

Soundtracs USA has introduced the Solitaire 24-bus automated production console in response to the growing trend towards smaller, high-performance, studio environments. Each module of the Solitaire features dual inputs, each with mute automation and EQ, as well as optional moving fader or VCA automation. Soundtracs has incorporated its FdB parametric EQ on all channels, as well as a 2-band EQ on monitor inputs. The Solitaire offers a number of onboard dynamics processing abilities including gating, compression, expansion, limiting, modulation, and autopanning functions on every channel. Automation options include up to 80 automated faders using (touch-sensitive) moving faders and VCA control; up to eight VCA groups; and an interface with an optional external PC. For more information, contact Soundtracs USA, 316 South Service Road, Melville, NY 11747. Tel: 516-393-8520. Web: www.soundcraft.com. Circle EQ free lit. #113.



UNDER YOUR FEET

MIDI Solutions Pedal Controller provides a 1/4-inch stereo jack input for connection to a pedal or other variable resistance [device] that can be used to control the value of a selected MIDI parameter in real time. The data type is programmable and includes Controller, Aftertouch, Pitch Bend, and System Exclusive messages (up to 20 bytes/System Exclusive Message). MIDI Echo parameter may be selected on/off and Polarity parameter is selectable up/down. The Pedal Controller lists for \$99. For more information, contact MIDI Solutions Inc., P.O. Box 3010, Vancouver, BC Canada V6B 3X5. Tel: 1-800-561-MIDI. E-mail: info@midisolutions.com. Circle EQ free lit. #114.

32 FLAVORS

The Studio 32 Recording Console from Alesis is a 16-channel, 4-group inline monitor recording console. The Studio 32 lets you send 16 audio signals to a recorder and monitor 16 channels coming back from tape without repatching. Alesis has endowed the Studio 32 with 16 hybrid/discrete phantom powered mic preamps that offer more than 60 dB of gain. There are also 16 individual XLR inputs for ease in routing multiple audio sources simultaneously. The EQ section on the Studio 32 provides low and high shelving controls and a fully parametric midfrequency control set. The Studio 32 also offers six aux sends, two prefader and four postfader, for effects and cue mixes. For more details, contact Alesis Corporation, 3630 Holdrege Avenue, Los Angeles, CA 90016. Tel: 800-5-ALESIS. E-mail: alecorp@alesis1.usa.com. Circle EQ free lit. #115.

LINK UP

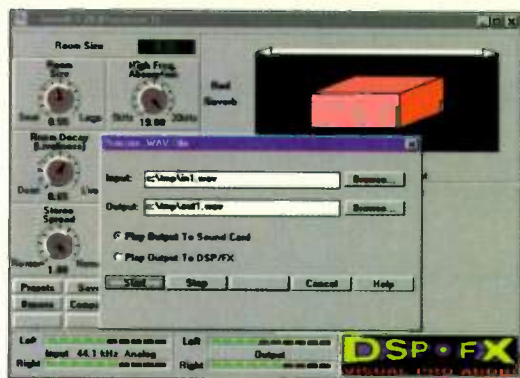
Jointly developed by Korg USA and Boston Acoustics, the SoundLink DRS RM8 reference monitors were designed to accommodate digital audio applications. The monitors use a special window-pane bracing to minimize cabinet resonance and reduce distortion. The cabinets are also ported to improve low-frequency performance. The RM8 reference monitors utilize 7-inch long-throw woofers with Deep Channel Design to increase travel for improved low-frequency response. The RM8's also use a 1-inch tweeter made with a proprietary Kortec dome for an increased transient response. The monitors are magnetically shielded to ensure perfect operation in close proximity to computers and video monitors. For more information, contact Korg USA, 316 South Service Rd., Melville, NY 11747. Tel: 516-333-8737. Circle EQ free lit. #116.



EQ STUDIO WARE

WIN WIN SITUATION

Power Technology's Win•FX Software interface package is a set of software interfaces that allows the DSP•FX real-time effects processing system to be accessed from all the popular PC digital audio workstation programs, including Cakewalk Pro Audio, SAW Plus, Sound Forge, Samplitude, Wavelab, and Emagic Audio. Win•FX supports the direct real-time processing of WAV-format PC audio files. While processing the files, the DSP•FX graphical control interface is fully functional, providing glitch-free adjustments of the processing effect. For more information, contact Power Technology, 100 Northhill Dr., Bldg. #24, Brisbane, CA 94005. Tel: 415-467-7886. E-Mail: dspfx@dspfx.com. Circle EQ free lit. #117.



THE FRENCH CONNECTION

Ensoniq's PARIS—Professional Audio Recording Integrated System—is a 128-track, 24-bit professional disk-based digital audio recording system. The core system is made up of the Ensoniq EDS-1000 PCI card and a CD-ROM with software that can be run under either MacOS or Windows 95/NT operating systems. PARIS provides an intuitive and responsive graphic interface for the system's automated 128-track digital mixer, complete with dynamics processing, 4-band parametric EQ, aux sends, and real-time effects including reverb. The EDS-1000 PCI-compatible card is equipped with connectors for an Expandable Input/Output system and a dedicated Hardware Control Surface. The EDS Hardware Control Surface features 16 channel faders; a master stereo fader; a high-resolution jog/shuttle wheel; transport controls with autolocate; numeric keypad; and Mute Plus Solo buttons. For more details, contact Ensoniq Corp., 155 Great Valley Parkway, Malvern, PA 19355. Tel: 610-647-3930. Circle EQ free lit. #118.

**WITH SONY, WHAT YOU PLAY
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Picking the right tape can help make your performance. Inventing much of the DAT format was not enough. So we unleashed the technology behind Sony Pro DAT Plus™ tape. Manufacturing more DAT than all other companies combined, we create audio products that you can trust. For more information, call 1-800-955-SONY.



SONY

Two built-in amplifiers—one for the woofer and one for the tweeter. The result—while the bass is pounding, the high frequencies and vocals are crisp and clear.

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Heat is the #1 enemy of loudspeakers. EON has a die-cast aluminum baffle that absorbs heat away from the woofer and amps and quickly dissipates it to keep them running cool. The more you crank it, the better the system works.

The highly durable and versatile EON polypropylene enclosure allows the speaker to stand upright tilt back for stage monitor use, hang on a wall or mount on a tripod speaker stand.

EON's flattened voice coil wire allows for 22% more wire in the magnetic gap than most speakers using round wire. More wire = higher efficiency = plays louder.

Patented Differential Drive™ results in a woofer that weighs less than 3 lbs, yet plays louder than similar woofers weighing in at more than 16 lbs! More power, more punch... less weight.

Need more? Every EON Powered Speaker has features such as an XLR input for easy connection...a peak indicator that alerts the operator before a problem starts...a button that gives you instant PA when you plug in your microphone...a daisy chain output jack that gives your sound system room to grow...and an ergonomic carrying handle mounted at the center of gravity.

JBL Professional's low mass titanium diaphragm provides extended high frequency for sharper transients. Lighter mass = higher efficiency = You can play louder.

New, low-distortion Bi-Radial® horn provides smooth high frequency coverage so you'll sound as good in the cheap seats as you do up front.

Built-in thermal protection. If the amplifiers overheat, they shut themselves off before any damage can be done—and we guarantee it!

Aluminum fins cast into the ports provide active cooling to the whole system. The louder you play, the more it cools!!

EON woofer cones are computer-designed using Finite Element Analysis techniques to develop a lightweight cone without sacrificing strength.

Neodymium magnets are ten times lighter yet yield the same strength as the conventional ferrite magnets used by our competitors.

Torroidal transformer powers the amplifiers without adding excessive weight. EON Powered Speakers—the lightest in their class.

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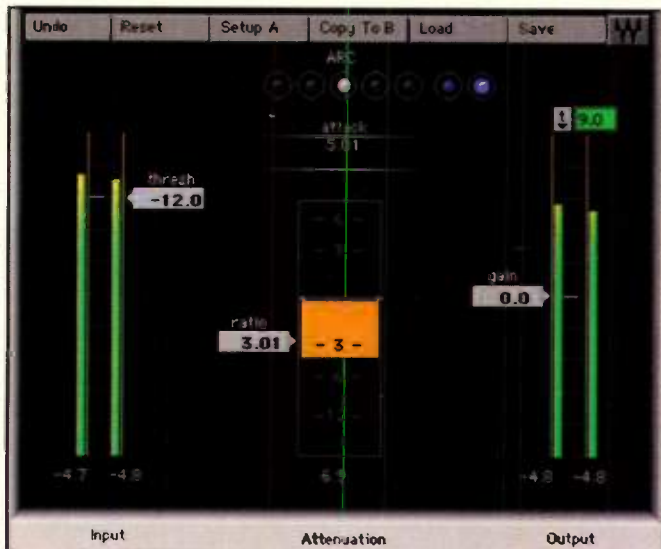
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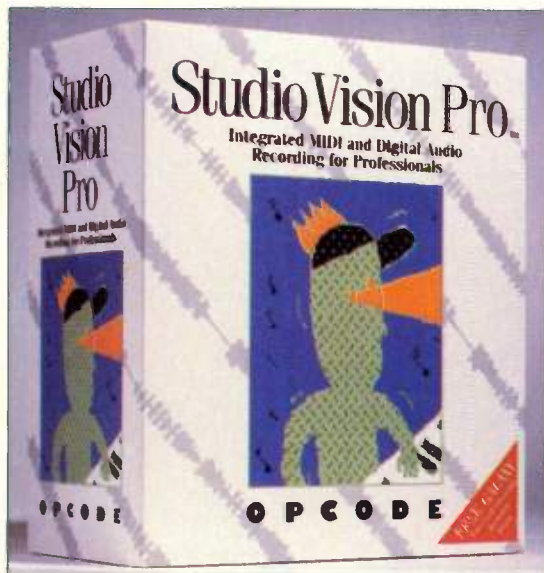


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**WAVE
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The Renaissance Plug-Ins from Waves are a series of digital audio processors that attempt to re-create the warm sound qualities and simple operation of classic analog hardware in the digital domain. The Renaissance Compressor features a classic 5-knob interface — Threshold, Ratio, Gain, Attack, and Release — plus a Mode control. The Waves Renaissance Compressor is available for an MSRP of \$850 for both Digidesign TDM and Waves MultiRack DSP/PDI Systems. For more information, contact Waves, 6716 Central Avenue, Suite 8, Knoxville, TN 37912. Tel: 423-689-5395. E-mail: waves@waves.com. Circle EQ free lit. #119.



**20/20
VISION**

Studio Vision Pro 3.5 from Opcode Systems features PowerMac Native code, full support for Digidesign TDM bussing, new DSP features, enhanced integration with Apple Quick-

Time, and support for Sonic Solutions audio hardware. The new upgrade also supports Digidesign's Pro Tools III PCI cards. Studio Vision's Consoles now provide 8 aux busses and address line inserts, sends, and SampleCell TDM while also increasing the number of Audio Instruments from 16 to 64, providing up to 64 channels of I/O. Studio Vision is the first sequencer to directly support and write QuickTime audio and music (MIDI) files, and even features an integrated QuickTime movie window. The upgrade will also include "Audiomorf," which renders futuristic resynthesis over time. The Studio Vision upgrade will cost registered users \$129.95 and can be ordered from Opcode's Web site (www.opcode.com). Registered owners of Studio Vision Pro who purchased the product after Oct. 1, 1996 will receive a free upgrade to version 3.5. The suggested retail price of Studio Vision Pro is \$995. For more details, contact Opcode Systems, Inc., 3950 Fabian Way, Suite 100, Palo Alto, CA 94303. Tel: 415-856-3333. Circle EQ free lit. #120.

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Mother of Invention

Steve Vai's Mothership lets the creative guitarist play to his heart's content without the whopping studio bill



PHOTO BY EDWARD COLVER

STUDIO NAME: The Mothership
LOCATION: Hollywood Hills, CA
KEY CREW: Steve Vai; Mike Lattanzi; Marcelo Gomes
PROJECTS RECORDED: Steve Vai's *Passion and Warfare*, *Sex and Religion*, *Alien Love Secrets*, and *Fire Garden*
CONSOLE: API 40-input with GML Automation, 34 monitor returns with four echo sends per channel, 10 sends per input, 16 effects returns, and 2 stereo cues
KEYBOARDS AND SYNTHS: Roland D70 controller, JV-1080, and D-550; Yamaha TX-802 and TX-81Z; Alesis D4
SAMPLERS: Roland S760 (with an extensive library)
MONITORS: UREI 813; Yamaha NS-10; Auratone
AMPLIFIERS: H&H; Yamaha Power Amps
COMPUTERS & SOFTWARE: Apple Power Macintosh 8100/110; Opcode Studio Vision Pro, Overture, and Galaxy Plus Editors
DAWs: Studer Dyaxis Stereo Digital Editing System
RECORDERS: Studer A827 and A800; Otari 32-track digital recorder; Alesis ADAT-XI; Ampex ATR 102 2-track 30 ips (with 1/4- and 1/2-inch heads)
DAT MACHINES: Panasonic SV-3800; Sony 2509 Pro
OUTBOARD GEAR: Pultec EQP-1A; Massenburg EQ; Helios Dual Parametric EQ; Lexicon 480L, 300, and PCM-80/70/60; EMT 250; AMS RMX-16 and DMX15-80S; Yamaha REV-1 and D1500; Roland SRV-2000 and SIDE-3000; TC Electronic 2290; Eventide H3000 (with sampler), H3000-D/SX, H969, GTR-4000, and

DSP-4000; Neve stereo comp/limiter; SSL stereo comp/limiter; UREI LA2A, LA3A, and 1176; Gainbrain II; dbx 160x and 160; Drawmer DS-201 Dual Gate; Keyplex II

MICROPHONES: AKG C24, C12, 414, 452, D12, D112, and C1000E; Neumann KM-84; Sennheiser 421, 441, and 427; Electro-Voice RE-20; Shure SM57, SM58, SM54, and SM81; Sony ECM-50
GUITARS: Ibanez JEM (7, 77, 777) [15], Universe 7-string [2], Floral [2], and Heart (3-neck guitar) [2]; Fender Stratocaster [2]; Gibson Les Paul; Paul Reed Smith; Tom Anderson Custom; Choral Sitar; Guild 12- and 6-string acoustics; Carvin acoustic/electric
GUITAR AMPS: Bogner Ecstasy 3-channel 100-watt head; Eggnotor 3-channel 100-watt head; Marshall Dual-Channel 30-watt combo; Fender Deluxe 30-watt combo; Marshall 4x12 cabinets
GUITAR EFFECTS: Cry Baby wah-wah; MXR Distortion, Phase 90, and Phase 100; Boss Distortion; Maestro Phase Shifter; Mutron BI Phase; DigiTech Whammy Pedal

STUDIO NOTES: Engineer Mike Lattanzi states: The Mothership is such a great place because it's very private and it's extremely intimate. It really is a great environment to create in. Steve has done all his albums since *Passion & Warfare* here, and I don't think he'd ever think of recording anywhere else. Steve's heavily modified API console really makes this place very special, as well. It's got 40 channels of Massenburg automation and it's probably the warmest, most natural-sounding board I've ever heard. Unlike the newer boards that might have compression or noise gates built in, the API's signal path is very direct and offers a really warm, direct, in-your-face sound.

EQUIPMENT NOTES: Lattanzi continues: The Studer Dyaxis is Steve's main rig when it comes to digital editing. Its editing capabilities are enormous. It offers him a very hands-on approach to digitally editing his compositions. Steve used it to create a lot of the intros on *Fire Garden*. **EQ**

THERE'S NO



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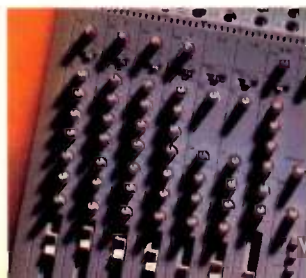
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Killer arrangements with exclusive Index Programming

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It's all here; high quality mic preamps, responsive faders and pots, 3-band EQ with mid sweep, 2 Aux Sends and more. The routing flexibility makes it incredibly easy to Bounce Forward, overdub, monitor, even transfer tracks to another machine for sweetening. All this and only on the 564 Digital Portastudio.

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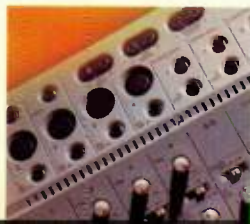
Imagine the perfect solo. Only the 564 gives you five takes per track to create it. With Auto Punch you can set frame accurate punch-in and out points, even do hands-free punches! To rehearse, just repeat between any two index markers for continuous playback. Only the 564 lets you choose from 0 to 9.9 seconds between repeats. You've got the licks. The 564 helps you make the most of them.

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Instant gratification. It's the fastest!

The 564 leaves other MD multitracks in the dust. It's so fast, it doesn't even need a pause button. With the only transport exclusively designed for digital multitrack recording, it continuously loads data for lightning-fast index trimming and song arranging, plus smooth multiple-speed shuttling capability.

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CIRCLE 93 ON FREE INFO CARD

And Then There Were Three

A look at the new digital consoles specifically designed for project studio multitracking

BY STEVE LA CERRA

When Yamaha introduced its 02R 8-bus digital recording console, there was a lot of discussion about whether or not the multitrack project studio was ready for such a mixing desk. Yamaha had obviously done their homework in designing the 02R, and it has quickly become the de facto standard for project studios that are multitracking with digital tape and disc recorders and want their audio signals to remain in the digital domain.

Of course, the 02R's acceptance wasn't so widespread just because it was "digital" — it was because the unit offered a rather amazing array of features including total recall, SMPTE synchronization, automation, and extensive on-board DSP. Owners of the 02R can look forward to an expanded feature set when Yamaha introduces a new software upgrade for the 02R later this year. While Yamaha isn't quite ready to pull the wraps off yet, they will be showing the new 02R software at the upcoming NAB convention and you can be sure that we'll keep you posted.

Later this year, Yamaha is to be joined in the multitrack digital console arena by two other major audio manufacturers: TASCAM and Mackie.

The TASCAM digital mixer which, oddly enough, is called the TASCAM Digital Mixer has 48 faders arranged in 24 inline pairs. In the upper fader row, faders 1 through 16 control balanced analog XLR mic/line inputs. Those 16 can be switched to accept TDF

signals (thus providing digital tape returns for two TASCAM DA-88's), or faders 9 through 12 can be switched to accommodate either AES/EBU or S/PDIF digital inputs, while faders 13 through 16 can be switched to accommodate AES/EBU input. The last eight faders on the upper row are stereo channels and provide control for a total of eight stereo returns: six of these are intended to be used as stereo aux returns (one of the six can be switched to AES/EBU digital input) and two are multipurpose returns that might be used (for example) as 2-track returns. The lower row of 24 fader channels are intended as TDF-format tape returns for the output from three DA-88's (or compatible machines).

This total complement allows the TASCAM Digital Mixer to accept returns from five 8-track machines for a total of 40 tape returns on mixdown. Rumor has it that the TASCAM Digital Mixer also provides six

analog auxiliary sends, two of which are switchable to AES/EBU output, providing a bit stream directly into your AES/EBU-compatible effect boxes. Automation of the console can be either via MIDI or computer control using dedicated software. Included on the control panel of the TASCAM Digital Mixer is an integral transport control that can communicate via MMC, Sony 9-pin protocol, or TASCAM sync, and a meter bridge. Expected to ship this summer, the price of the TASCAM Digital Mixer is projected at under \$10,000.

To make the game even more interesting, a third console in this price range is also expected later this year. With its feet firmly entrenched in the analog 8-bus camp, it was only a matter of time until Mackie produced a digital 8-bus desk. Its new 48 x 8 x 2 Digital 8•Bus includes 24 channels of balanced analog I/O, brought up on three pairs of DB25 connectors on



MACKIE MAKES THREE: With its Digital 8•Bus, Mackie joins the affordable digital console ranks with Yamaha and TASCAM.

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It's always been important to make sure that the front end of the recording chain is as clean and pure as possible. Today's digital technology reveals any weak link in the chain. This means you must chose a microphone that is quiet (*no self-noise*) and a monitoring headphone that will reveal the accuracy of your signal.

The beyerdynamic **MC 834** pure condenser with its natural frequency response, exceptional signal to noise ratio (*non existent self-noise*) and high SPL capability is the answer to digital technology.

Easily outperforming the competition, it ensures your recordings contain the original sound without any added noise or hiss. That's why it has become a regular feature in studios around the world just like some of our other products.

For example, the legendary beyerdynamic **DT 770** pro headphone, seen wherever musicians are at work. Their exceptionally wide and flat frequency response allow you to hear everything in the mix (*including the hiss*).

So next time you visit your Pro Audio dealer ask for a demonstration of beyerdynamic microphones and professional studio headphones.

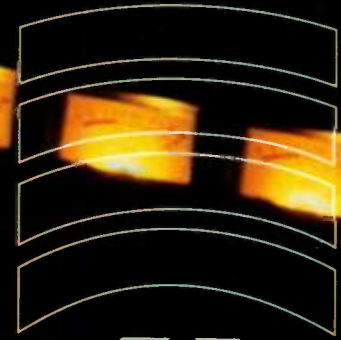
Unless, of course you want to carry on taping the hiss....

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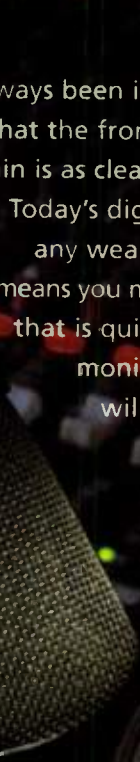
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the rear panel. Input channels 1 through 12 have balanced XLR mic (with individual phantom power switches) and line-level inputs, as well as analog TRS insert connectors (tip=send, ring=return). Mackie has cleverly designed upgrade-ability into the Digital 8•Bus—the rear panel can accept digital I/O cards (each card has 8 channels of digital input and output) that can be installed in place of the analog DB connectors. Cards will be available for AES/EBU, S/PDIF, TDIF, or ADAT Optical interfaces. Each channel of the console has a 100 mm motorized fader, a V-Pot (Mackie's proprietary variable data encoder), a record-ready switch for the appropriate track, and a write switch to record-enable Ultramix II automation

Along with the usual signal routing I/O accouterments, the Digital 8•Bus also includes some very hip data control features. There's a built-in 33.6k baud modem with internal dial-up software for phoning Mackie Central to update the OS, MIDI in and out (we expected that), a D-sub output to drive a 1024 x 768 SVGA monitor, a serial expander port that can accept a joystick for 5.1/7.1 surround, a mouse port, and an ESAM II port for connection to compatible video editing systems. If that wasn't enough, there's also transport control with an autolocator and shuttle wheel. Automation on the Digital 8•Bus comes in two flavors: dynamic automation and scene snapshot-type recall. To facilitate use of UltraMix II, Mackie is building in a 500 MB hard drive as well as a high-density floppy drive: external computer not required. Mackie expects the Digital 8•Bus to ship in the second quarter of this year at a price that is under \$8000.

We really could go on for a few pages touting the abilities of these three new desks, but the point is not to compare their bells and whistles one for one. The point is that, once again, project studio technology is making a major step in the digital direction. It was only a few years ago that affordable digital multitracks and analog consoles changed the face of the recording industry forever. Now, with consoles like these coming in at prices under the \$10,000 barrier, project studios are taking a big step in the direction of putting audio into the digital domain and keeping it there. **EQ**

For more information, contact Yamaha at 714-522-9011 (circle EQ free lit. #121); TASCAM at 213-726-0303 (circle EQ free lit. #122); and Mackie at 206-487-4333 (circle EQ free lit. #123).

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World Radio History

CIRCLE 55 ON FREE INFO CARD

beyerdynamic M88 Classic Limited Edition

beyer debuts a
"Classic" 24 years
in the making

MICROPHONE NAME: beyerdynamic M88 Classic Limited Edition

PRICE: \$499

TYPE OF MIC: Dynamic moving coil

OPERATING PRINCIPLE: Pressure gradient

POLAR PATTERN: Hypercardioid

FREQUENCY RESPONSE: 30 Hz to 20,000 Hz

OPEN CIRCUIT VOLTAGE: 2.3 mV/Pa, equivalent to -53 dBV (@1 kHz, 0dB=1 V/Pa)

NOMINAL IMPEDANCE: 200 ohms

LOAD IMPEDANCE: Equal to or greater than 1000 ohms

DIMENSIONS: 48.5 mm diameter head (25.5 mm shaft) x 175 mm length

WEIGHT: 320 grams

MIC NOTES: The beyerdynamic M88 was originally introduced to the audio world back in 1963. What you are seeing in this photo is beyer's Limited Edition "Classic" version of the M88, the design of which exactly matches the weight and materials of the original introduced in '63 (beyer also offers the M88TG "Tour Group" version for road use). The basket of the M88 Classic is made of chrome-plated stainless steel and is engraved with the serial number, while the barrel of the mic is made from solid brass and plated with a combination of nickel and chrome.

USER TIPS: The beyer M88 Classic makes a very cool choice for use on kick drum. Try miking the drum with a hole of about six or seven inches in diameter cut off-center in the front head. Place the head of the M88 Classic just inside the hole and point it towards the beater. This will yield a good balance between the attack from the beater and the bottom end from the shell. If you have a second M88 available, place it at the same height as the first, pointing directly towards the center of the drum, but vary the distance of the second mic from about 10 to 24 inches away from the front of the drum. Mix the two mics together and bus them to one tape track. By varying the distance of the second mic, you will create phase cancellation and can "EQ" the sound of the drum acoustically instead of electronically. Having an assistant move the second mic around while you listen in the control room will help you find the sweet spot much more quickly. **EQ**

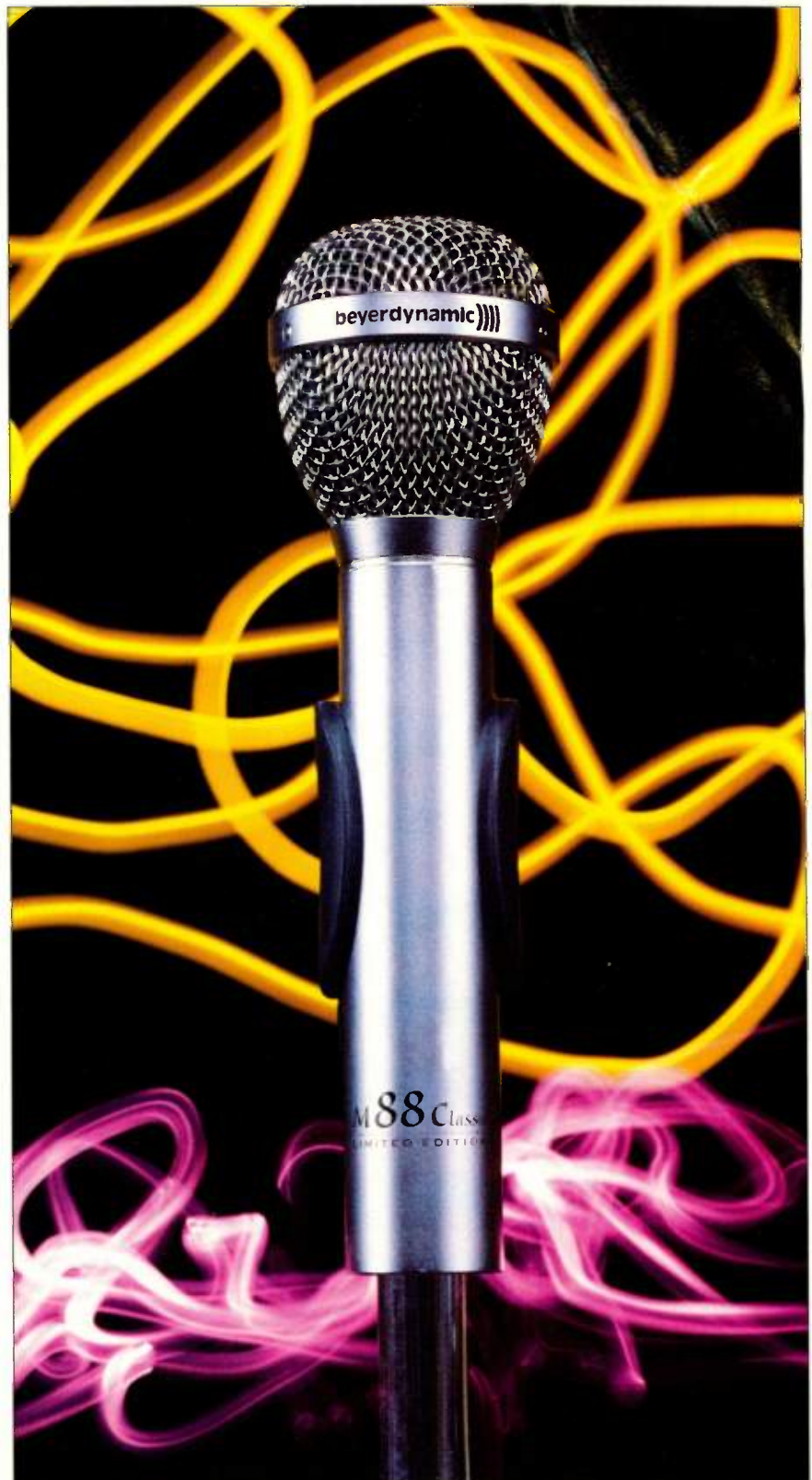
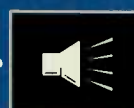
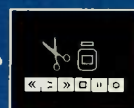
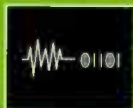


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The 168RC is the first truly affordable, fully digital, 8 bus recording console. Use it with your ADAT or other digital recorder equipped with the ADAT optical interface to create the best sounding recordings you've ever made.

168RC Digital Recording Console

The heart of a new, component-based Digital Recording System from Soundlink

The 168RC is the first digital console to feature two ADAT optical interfaces (yielding 16 channels of digital input) and eight analog inputs as standard equipment. It makes the creative control and sound quality of an all digital, fully automated recording system an affordable reality.

Powered by Korg's proprietary MSP processor, our SoundLink DRS 168RC offers instantaneous control, processing and routing of all 24 inputs, 16 channels of mixing and 8 bus outputs.

With its combination of analog, ADAT optical and S/PDIF I/Os, the 168RC easily functions as the heart of a fully digital recording system while interfacing with any of your existing analog gear.

- The 168RC is equipped with three-band EQs



SoundLink DRS brings the reality of all digital, fully automated, component based recording to everyone working on the next great recording. For more information about the 168RC Recording Console or any of the SoundLink DRS components, just call (516) 333-8737.

featuring semi-parametric high and low bands, fully parametric mid bands and 30 memories for EQ setups.

The 168RC also boasts two internal effects processors that run some of the finest algorithms available. Choose from 32 effects types and 50 preset programs.

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Affordable, fully integrated digital recording is finally here. So check out SoundLink DRS and the 168RC today. You can't beat this system.

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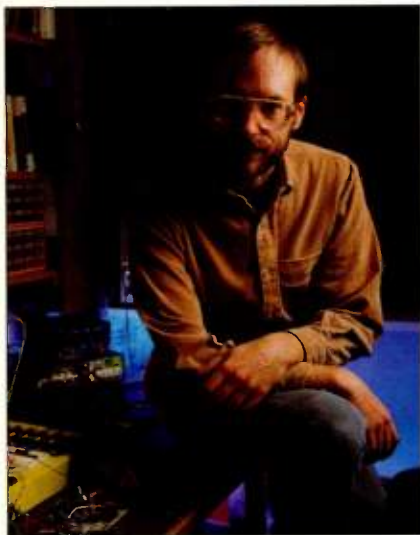
Affordable, fully integrated digital recording
Down to a System.

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CIRCLE 57 ON FREE INFO CARD

10 Hot Guitar EQ Tips

Achieving
better guitar sounds
through tweaking



BY CRAIG ANDERTON

The most important signal processors for any guitar are distortion and EQ. If you don't agree, then consider this: what is a guitar amp but a distortion box, coupled with EQ from the cabinet/speaker combination?

Although amps are fun, they tend to specialize in one particular sound, which is why rack preamps and parametrics (or a good multieffects) can be invaluable. With a little tweaking, you can shade the sound to best suit the music at hand — something that's a bit more difficult to do with an amp. Following are some tips on how to use EQ to better integrate your guitar with your overall mix.

MORE EXPRESSIVE DISTORTION

Patching EQ before distortion can make the distortion seem more "touch-sensitive." Generally, distortion clips all frequencies more or less equally. Adding a gentle midrange boost before the distortion causes the notes in the boosted range to distort at lower levels, which makes the distortion seem more responsive at the selected frequencies.

Start by boosting in the range of 200 Hz to 1 kHz.

You can also use this technique to "clean up" a guitar sound somewhat by adding a bass cut prior to distortion. The lower strings will cause less intermodulation distortion, creating a cleaner, more "biting" sound.

PEAK FUZZ

Using a sharp, narrow boost prior to distortion adds an effect that is almost like a synthesizer's "hard sync" option. Being able to sweep the boost frequency is even better, as it dramatically changes the guitar's timbre — sort of like a wah-wah, except that the distortion adds a sort of "resonant toughness."

LEAD GUITARS THAT LEAD

Many times, making a lead guitar stand out in a track has nothing to do with turning up the volume. A rock guitar can be a pretty broad-bandwidth instrument, and overlap with the frequency ranges of vocals, piano, upper bass range, etc. If you turn up the volume too much, you run the risk of drowning out other important sounds.

EQ can accent a range of the guitar that doesn't overlap other instruments, thus letting the guitar stand out without disturbing the rest of the track. A few dB boost at 3 to 4 kHz can really accentuate a guitar lead; as that's above the range of the toms, bass, and most rhythm-oriented keyboard parts, there's no interference with these instruments. During solos where no vocals appear, a 1 to 2 kHz boost can often give the guitar a more "vocal-like" quality, as well as make it stand out a bit more in the track.

VOCAL SUPPORT

Here's another example of using

EQ to make an instrument a "better neighbor" in an arrangement. Suppose you're playing rhythm guitar behind a vocalist, but the guitar and voice conflict because they occupy a similar frequency range. If you add a shallow, fairly broad midrange cut to the guitar, it opens up more bandwidth for the vocal frequencies. The guitar's high and low frequencies "frame" the vocals.

HUM BANISHMENT

Sixty Hz hum is a drag, but a parametric equalizer can help remove it. Simply set the equalizer for maximum cut and sharpest bandwidth, then dial in 60 Hz (you'll know you're at the right frequency because the hum will disappear). If there's also an harmonic component at 120 Hz, use a second parametric stage to take care of that.

QUIETING VINTAGE EFFECTS

A stereo graphic or shelving EQ can help reduce hiss in older effects by using one channel to boost treble going in to the effect and the other channel to cut treble after the effect by an equal but opposite amount.

Start the boost at around 2 to 5 kHz and boost a reasonable amount (6 to 10 dB) short of overload. Cut starting at the same frequency, and by the same amount. This will reduce any hiss coming out of the effect and, in theory, the

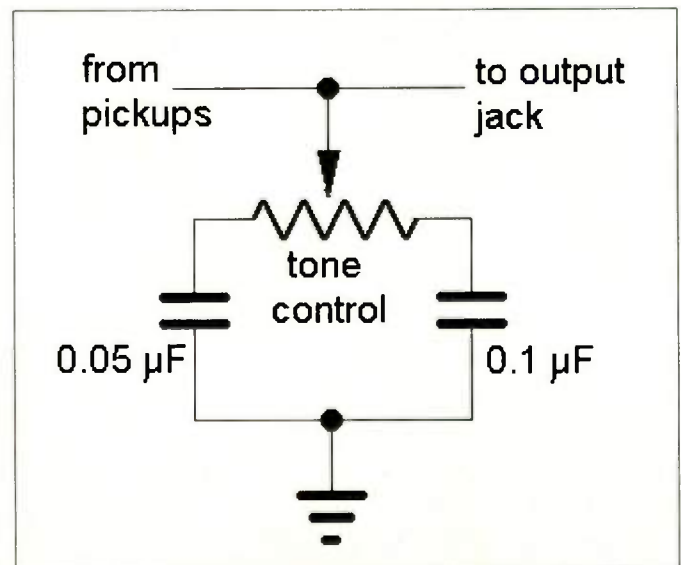


FIGURE 1

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original signal will sound unaltered if the boosting and cutting are symmetrical.

ARTIFICIAL STEREO

One problem with using delays to create stereo is that sometimes, unless you're careful with the delay settings, strange phase cancellation problems can occur. An alternate approach is to use EQ to spread the signal. For example, suppose you use a Y cord to send a guitar signal to two graphic equalizers (left and right). If you boost the odd-numbered channels and cut the even-numbered channels in one equalizer, and do the opposite with the other (cut odd-numbered channels and boost even-numbered channels), you'll create a stereo spread without any kinds of timing delays.

Although this doesn't create as dramatic a stereo effect as stereo miking, it does help fill out a mono guitar part when mixing.

TAME YOUR ECHOES

You don't always want a meaty, substantial echo; something subservient to your main guitar sound might be more

appropriate. To trim your echo's frequency response you'll need a mixer and Y-cord. Split the guitar into two paths; one goes directly to the mixer, and the other to an equalizer/delay line combination before it hits the mixer. Cut the bass and lower midrange going to the delay line, and the echo will shimmer on top of your main sound

FIXING DEAD SPOTS

You know how basses (and guitars) sometimes have "dead spots" on the neck that just don't quite seem to have the same power as the other notes? This is a job for parametric equalization. Turn the volume down on your amp and turn the EQ's boost and bandwidth controls up full. Play the dead note repeatedly while sweeping the parametric's frequency control; when the parametric hits the right frequency, the note will jump out (in a possibly obnoxious fashion, which is why a low monitoring level is important).

After finding the right frequency, reduce the amount of boost until the dead note is the same level as the other

notes. If the note sounds too "peaky," reduce the bandwidth control as well.

DON'T FORGET THE GUITAR ITSELF!

There are a lot of modifications you can do to a stock guitar to greatly alter the sound, such as using tapped pickups, rewiring the tone control, changing pickup phase, and so on.

For example, fig. 1 shows a simple way to get two different tone options from a single tone control. Hook up two different capacitors (the values shown are just suggestions; adjust to taste); turning the control clockwise connects to one capacitor, counterclockwise to the other capacitor, and centering the control effectively takes both capacitors out of the circuit. The tone control can range from 250k to 1 Meg — the higher the value, the more you can be assured that the center position does indeed take both capacitors out of the signal path.

But remember, no matter what EQ techniques you use, tweak until the thing sounds great — that's what tone control is all about. The sound you want lies somewhere in those dials; you just have to find it. **EQ**

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The Recording of "Do What, Now?"



PHOTO BY JIM HERRINGTON

The story of an album fourteen years and two days in the making

BY AL KOOPER

When I first starting playing as a session guitarist in the early '60s, recording sessions were completely different than they are today. The entire band and singers were recorded live (as in no overdubs), and three songs were required in three hours. Nowadays this sounds ludicrous, foolish, or damned near impossible, but those weaned on that methodology can revert to that consciousness at the drop of a flat-pick.

Recently, I found myself in that situation as a result of budget *and* style. I did not have the financial luxury of fawning over each song by overdubbing, but at that same time I was attempting to hearken back to the sonic stylings of those halcyon days when men were men, and albums were cut in two or three days. This is the story of an album recorded in 1996 in the style of 1962.

Fourteen years ago, I met guitarist Jimmy Vivino for the first time. It was musical love at first sight. He became my musical director and has remained so ever since. Jimmy's unique guitar approach has also enhanced the work of Felix Cavaliere, Laura

Nyro, Johnny Rivers, Phoebe Snow, Lowell Fulson, Johnny Johnson, and Cissy Houston. He eventually wound up scrapping six-strings and writing the wonderful arrangements nightly on the *Conan O'Brien Show*, where he currently resides, modestly, in the shadow of drummer Smilin' Max Weinberg. In addition, we formed a crack quartet called The Rekooperators about 5 years ago. We both had a pipe dream about one day making a solo album for Jimmy. Well, now it's here and *it took 14 years to get together and only two days to record!*

Sometimes, a great idea on paper becomes almost impossible to realize in reality. This was the case of Jimmy's album. After the musicians, studio, and engineers were booked, the record company unceremoniously sliced the budget in half, forcing some amazing decisions and cutbacks. Jimmy and I waived our usual fees as musicians and I cut the producer's fee down to \$1500 despite a lot of bellyaching from the producer himself (me). We now had to record the entire album, live in the studio, in *two days!* Since this was a blues album of somewhat obscure covers, we got into a "retro-head." We convinced ourselves that since the original recordings were cut under those conditions, why couldn't we emulate them now on an authenticity-seeking quest?

tos of his bare legs have appeared in this very magazine during a behind-the-scenes Lou Reed article that also took place on his premises (see fig. 1).

The problem was how to record The Rekooperators (which consisted of me on keyboards and mandolin, Jimmy on guitars and vocals, Harvey Brooks on bass, and Anton Fig on drums) totally live with vocals and instruments screaming, while minimizing leakage and maximizing tape saturation.

Steve had recently installed a wall of sliding glass doors that isolated the whole back of the studio. Anton was relegated to the back of the bus. While sonically quarantining the drums in that space, it afforded Anton a clear view of the proceedings as well. This was half of our problem solved. Harvey plugged in direct and had a miked amp that faced the wall. Jimmy's amp was in an isolation booth right next to him. The Leslie speakers for the organ were baffled in an intricate, peculiar fashion that precluded even *seeing* them! In addition, a wooden, blonde vintage Wurlitzer piano was placed by the organ, and its built-in speaker was miked from underneath. The moment of truth was when we put up Jimmy's vocal mic and soloed it while the band wailed. Negligible leakage was heard, but not any that would by



PHOTO BY BETH GROUBERT

FIGURE 1: The legs in question.

We selected The Magic Shop in lower Manhattan for our studio, as it had already been the scene of our last few crimes. Steve Rosenthal, who is also the owner of said magical place, was chosen as engineer. Pho-

any means harm the final vocal sound.

At the last minute, an old friend of Harvey and mine, Paul Harris, came by to visit. He was quickly deputized to play acoustic piano on a few selected tracks. The sound-

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World Radio History

board of the piano was buried in bunting and baffling while the band played on.

For two "unplugged" tracks, Jimmy played a National Steel guitar and I switched to mandolin. These were the only tunes that vocals were overdubbed later on. About 14 songs were recorded during the two-day stint, and 12 survived.

Five days of mixing and editing were set up a week later in Nashville at Sound Emporium studios. Jimmy came to visit on the weekend, and we cut *one more track*, simply because we ambushed Sam Bush,

who had just finished working in another studio on the premises. I played acoustic piano, Jimmy played acoustic guitar, sang live again, and Sam played mandolin. We did two takes and I edited the best of the two into one. The whole session lasted 20 minutes! John Sebastian was in town and came over and overdubbed harmonica on one of the unplugged tracks. The icing on the cake was bouncing in ace blues pianist Reese Wynans, guesting on one of the previously recorded NY tracks.

Oh, by the way, it's important to men-

tion that the whole record was recorded on a Studer 827 24-track, 2-inch tape (Ampex 499 stock) machine at the unpopular speed of 15 ips with *no* Dolby at +8. The intention was to duplicate the sound of the late '50s and early '60s. I think we were successful. In Nashville, Giles Reaves assisted with the editing and Dave Sinko assisted with the mixing. Allen Tucker mastered in New York City. The end result is released March 11th on MusicMasters entitled *Do What, Now?* by Jimmy Vivino & The Reko-operators. I hope you enjoy it! For those of you who are interested, the sidebar contains the song list, as well as the microphone information. **EQ**

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"DO WHAT, NOW?" NOTES

THE SELECTIONS ARE AS FOLLOWS:

- Birds Nest On The Ground
- How Come My Bulldog Don't Bark
- Strange Things Happenin' (w/Reese Wynans)
- God Don't Never Change (acoustic)
- Operator (w/Paul Harris)
- Sugaree
- Stranger Blues (acoustic w/ Sam Bush)
- Life Is Suicide
- Got To Move
- I Get Evil
- Little Geneva (acoustic w/John Sebastian)
- What Have I Done Wrong (w/Paul Harris)
- Too Tired

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- Wurlitzer Piano: Neumann 67 tube
- Hammond Organ: AKG 414 EB [2] and AKG D12
- Bass Amp: E-V RE-20
- Bass DI: Avalon Class A
- Acoustic Piano: Neumann KM 56 tube mics [2]
- National Steel: Neumann 47 tube
- Mandolin: AKG 535
- Drums:

 - Kick Drum: Neumann FET 47
 - Snare: Shure SM57 on top, and SM57 (out of phase) on bottom
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Suzanne Vega



PHOTO BY ED FREEMAN

Behind the scenes with the Coffeehouse Queen

BY MR. BONZAI

BONZAI: You started performing at 16. Is it good to start so young?

VEGA: In fact it felt late to me because I'd started writing songs when I was about 14. I had been really interested in The Beatles, and they were all massively famous by the time they were 18. I remember feeling that at 16 time was running out and I better get out there if I wanted to do anything with myself. I think 16 is a good time to start.

Had you been warming up?

Yes, by the time I was 16 I had about 75, 100 songs, so I was a very ambitious teenager. I was rejected in a lot of

places because that was the '70s and folk music wasn't exactly in vogue. But it's good to be rejected, too, because you build character and you can take whatever life has to give you after that.

Did you have a guitar teacher?

We had a guitar in the house, a little nylon string, six-string guitar, and I watched my stepfather play. I basically taught myself from a book called *Pop Songs of the Sixties*.

Did you have any heroes?

Bob Dylan, Leonard Cohen. I loved Laura Nyro — that's who I wanted to write lyrics like. Those people.

You have a degree in literature. Would you advise songwriters to pursue an education in literature and poetry?

No. [Laughs.] I wouldn't. I learned more from just reading. I loved to read, and had loved to read since I was five or six years old. That's really important

— to read and figure out what you like for yourself. And working in the theater was very helpful. That probably helped me more than anything.

Has making records changed since you first started out?

Definitely. In the very beginning we had a formula we would follow. First you do the drums and the bass, and you do it all to the "click," and it's all professional and very structured. That was a formula for about eight years. Once I met Mitchell [Froom] and Tchad [Blake], of course, they threw all the formulas out the window. Working with them is a real experience — a whole different perspective and way of working.

Is your initial vision achieved more clearly?

It's achieved more clearly because there is more feeling to it. My first three records — we worked on them so

SUBJECT: Suzanne Vega, U.S. citizen.

GEOGRAPHY: Born in Santa Monica. Raised in Spanish Harlem.

HUSBAND: Mitchell Froom

DAUGHTER: Ruby

OCCUPATION: Singer/songwriter, guitarist, dancer

GUITAR: Taylor

BREAKTHROUGH SONG: "Luka," 1987

NOTABLE: "Tom's Diner"; "Caramel," *The Truth About Cats and Dogs*; "Woman On The Tier," *Dead Man Walking*

NOTES: After a decade of coffeehouses, Vega gained worldwide recognition in 1987 with "Luka," the story of an abused child. Continues to evolve with Neo-Folk flavors, inventive productions, and provocative poetry.

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SUZANNE VEGA PHOTOS BY MR. BONZAI

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of my style, to sort of talk some of the songs, or not to have a chorus. But I think in the long run you need to grapple with yourself and get a good melody. I wouldn't say that's my strong point; that's something that I've really had to work on.

I work on it by listening to Elvis Costello, and hearing what he does with the notes and how he makes an arc, a shape, with the melodies. He's got a natural talent for it. For lyrics I listen to Lou Reed. I don't listen to Lou

Reed for melody [laughs] or Bob Dylan. I listen to Lou Reed when I feel like I really want to make a point, and I listen to Bob Dylan when I really want to let my mind go, when I want to push myself to be more imaginative.

How has being a mother affected your musical career?

I sing a lot more than I ever used to, because it's the one thing that will always calm her down and something that immediately gets her attention. I've spent

hours singing and making up tunes and inventing things. I'm just singing a whole lot more than I ever have. She requires her own little mini-concerts at night.

What's your strangest characteristic as a human being?

Probably my ability to stay calm — most people look at me and say, "Oh, she's very calm."

Do you know any good business tricks?

Yeah — get a lawyer and get a good one. And listen to him. Let him do his job. That's probably the best thing. You always need your own person to fight for you. And sometimes you need several to keep them in balance with each other. If you rely on one person too much, you can get into trouble. I think you always need a team of people with you.

Any advice for a formative artist?

You have to feel within yourself that you have something to offer. You have to be able to continue throughout being rejected or disappointed. If you don't feel that you really have something that you need to say, then you should try another profession. If you can make it through those times where you're rejected and depressed and you're not in fashion, you're not trendy, you're not hip — then you really know that you're cut out for it.

Yet, you have to love it for itself. You have to love writing songs, and the rhymes and the guitar — you have to love those things for themselves. If you get into it because it's cool, or you want to be like whoever the current person of the year is, then it won't last and you're taking up everybody else's time.

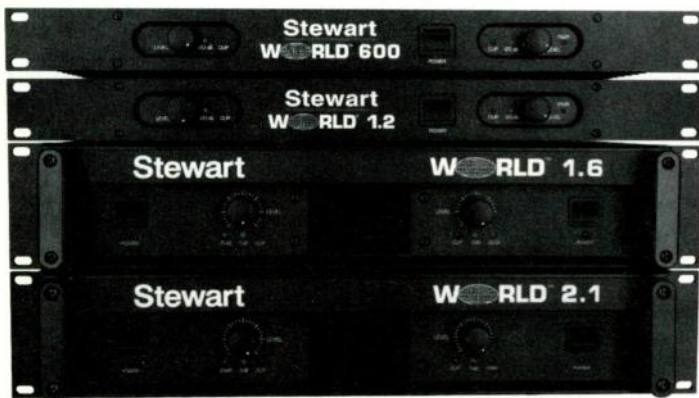
Mr. Bonzai once tried making it as a folk singer, but his Gucci work-boots gave him away.



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CIRCLE 95 ON FREE INFO CARD

World Radio History

Building a Studio That Delivers

Skid Row guitarist Dave "The Snake" Sabo provides a sneak preview of his new project studio, dubbed Mona Lisa's Pizza Palace

BY STEVE LA CERRA

"When I bought this house six years ago, the thought of building a studio here had never occurred to me. I started doing little recordings on a 4-track, and



Mike Thompson and Snake Sabo sit in front of the diffusor wall.

then all of a sudden I thought, 'Hey I want to be able to record in my house.' All this time we've had to look for outside facilities to record in and I realized I'm paying a mortgage here anyway, so if I build a studio I'm not really creating any more overhead other than services that need to be done."

So begins Dave "The Snake" Sabo, guitarist for Skid Row, when discussing reasons for building his new home studio: Mona Lisa's Pizza Palace (MI.PP). "I wanted to record for real. One day [producer] Bob Rock and I were playing golf and talking tape machines and he told me, 'Dude, if you're going analog, get a

Studer A800.' " Next thing, Snake and MI.PP chief engineer Mike Thompson (with some help from the Germanos at the Hit Factory) are buying an A800 from Studer. In addition to the analog 2-inch, TASCAM DA-88's were also installed due to their widespread use in postproduction. "I just did the score for an independent film called *Dreamland* — which Mike engineered and coproduced here with me — and the DA-88 seems to be the machine everyone is using for film. We can either run the DA-88's or the A800, or both if we need to. For demos, it's easier to run the DA-88's. It's more cost-effective and we don't go through a lot of tape."

IN THE BEGINNING

Engineer Thompson (who has worked with Skid Row both in the studio and live) explains how it really all began. "We were moving gear or something

and I whacked a snare drum in the garage. Snake freaked out because it sounded so great and said, 'Holy @!##%, we have to record that! Let's bring down the ADAT and the Mackie.' Next thing you know we're bringing an MCI console down here."

The live room at Mona Lisa's Pizza Palace is what used to be Snake's garage: a square, cinder-block room

about 30 by 30 feet. Problem number one was the garage door. Mike was trying to "talk Snake into taking the door off and sealing it up, but thank God we didn't because we would have violated the local building code and could have been fined. So we built an outside wall on the garage made out of four 4 x 7-foot panels. Each panel is a sandwich with 1/2-inch particle board and 5/8-inch Homasote™ (on each side) around a 2 x 4 frame. The center is filled with R30 insulation. Then we put aluminum over the panels to weatherproof them and for cosmetics. We wanted to leave the garage accessible, almost like bay doors, so two of them swing open for loading gear in and out. On the inside of the garage door we put one-inch Styrofoam covered with black felt; that took care of the little bit of rattle that was there and we packed the spring on top to kill any noise from that."

Interior studio walls are staggered-stud construction floated on neoprene and made of Homasote stuffed with R30. The walls aren't particularly thick since the exterior is concrete block, which serves well to isolate the room from outside noise and vice versa. Contractor Joey Mascarello (Quality Contracting, Parlin, NJ) built two of the corners out by about two feet to eliminate the square nature of the room. To achieve a balance between acoustically live and dead surfaces, one-inch Sty-



PHOTO 1



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SNAKE'S GARAGE: The converted garage door is shown at rear.



PHOTO 2: Note the Studer meter bridge behind the wall.



rofoam panels were glued to the Homasote, black felt was stapled over them and then 1 x 4 slats were placed over the seams (see photo 1). Windows in the garage were covered with thick, pull-out panels, "in case we ever outgrow the studio or if I sell the house and somebody wants a really nice garage," says Snake.

To reduce leakage through the ceiling, the original garage ceiling was left intact and a sub-ceiling was built underneath it. Three-inch pieces of stud were floated from the existing ceiling and a frame for the new ceiling was floated from the stud pieces. The entire ceiling was packed with R30 insulation and then layers of sheet rock and Homasote were screwed into the studs.

MAKE A LEFT DOWN THE HALL

The live room is connected to the house through a small narrow hallway that has

a staircase leading upstairs. In order to keep sound from traveling upstairs, a pocket door was installed at the foot of the stairs and the walls of the hall were lined with 4-inch acoustical foam from Auralex Acoustics (Fisher, IN; formerly known as USAFoam). The other side of the hallway is an outside wall, so leakage there is not an issue.

Interestingly, there was a planting trough along one of the walls in this area, which Thompson and Damaged Sounds, Inc. (Weehawken, NJ) took advantage of by removing the plants and using it for audio wiring and the head-

phone cue distribution amps (eventually the studio monitor amplifier will live there as well). "There is a bit of flutter here from the floor and ceiling being parallel," says Mike, "but we'll use more foam on the ceiling to kill that. It's almost like a little iso booth — you could put a bass cab or do vocals in here. We ran speaker wires and video lines through the trough into the studio, and we'll mount a power amp in here for the studio monitors. There's also extra cables to tie an amp head from the control room to a speaker cabinet in the studio and do guitar overdubs with the guitar player sitting in the control room."

The control room, amp closet, lounge, and machine room are located off of the opposite end of this hall, meaning that there is no direct visual communication between the control room and the studio. As a result, video lines were run between the studio and control room; a camera will be installed in the studio and a monitor in the control room. Snake doesn't see this as a problem: "When we did the first Skid Row record with Michael Wagener, we were completely separated and communicated with Rob (Affuso, drummer) via video. It doesn't seem like the most orthodox way to do things, but that record sold seven million copies. Not bad, eh? With our last record, *Subhuman Race*, a lot of times we couldn't see

PHOTO 3: The front control room wall.



Bob or Randy (Staub), or any of the engineers — everything was done via talkback. It really didn't hinder the process."

LA MACHINE ROOM

Squeezing a Studer A800 into the control room was not going to be an easy feat, so Mike and the crew arranged for some of

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the gear to be remotely located. The four MCI power supply units and the Crown power amps for the studio monitors (Yamaha NS10M's and UREI 813's) were located in a closet off the lounge near the control room, but that still didn't leave comfortable space for the Studer. They thought about using the bathroom behind the right control room wall, but Snake thought, "What if something happens here and I have to sell this house. How many people are going to want a machine room in their shower?"

Behind the left control room wall was a closet that was just large enough to fit the A800. They thought about putting the machine in there, but the meters would have been inaccessible. Then Mike considered taking the meter bridge off the machine and putting it in the control room, but that, he says, "Would have been a major pain in the ass." Their solution was to modify the closet wall — which was 14 inches of solid concrete block. This is a structural wall and couldn't be removed so they came up with the idea of drilling through the concrete block until enough of the meter bridge showed to read the meters (see photo 2). Snake jokes "It could have been kind of like that game Kerplunk!" Thompson placed a large floor fan blowing directly on the rear panel of the Studer to dissipate heat.

CHAOS TO CONTROL

Construction of the control room took some special considerations. The front control room wall was flat with windows on either side and a fireplace in the cen-

ter (see photo 3). Thompson thought about "just hanging a smaller pair of UREIs from the ceiling, but we would have lost a lot of low end so we decided to build soffits. First we packed the window areas with R30 insulation and sealed them off. Then we started working on the angles of the soffits based on where the sweet spot would be and built the soffits roughly at that angle. Then we built walls around the soffits. The walls were floated, the soffits are floated inside the walls, and the speaker cabinets are floated inside the soffits, all with neoprene.

"To tweak the angle of the speakers, we put a mirror on the acoustic center of each '813, sat behind the board, and adjusted the cabinet until we could see our ears. Eventually we'll put a video monitor in between the UREIs for communication with the studio. The rest of the control room walls are floated and the side walls are sawtoothed to break up any standing waves (they were parallel to each other). The control room ceiling was pitched down a bit towards the center of the room, then back up as it nears the engineer's head. Just above the mix position is a covered duct that is at a 90-degree angle to the floor. To break up any reflections from the duct soffit, Eric Smith at Auralex Acoustics fabricated foam diffusion panels for the face of the duct soffit."

The back wall of the control room provided yet another problem. Due to the fact that it was a straight, flat surface, a diffuser was built on that wall. Quarter-inch Luan was mounted on the wall and then

PATCHING AT THE PALACE

Engineer Mike Thompson describes how the studio wiring path at Mona Lisa's Pizza Palace was modified to overcome the patchbay limitations of the MCI JH500 console.

The MCI JH500 series console basically has only one microphone patch point that comes *after* the microphone preamp — it's labeled "preamp out" on the bay. To crosspatch a microphone to a different channel, you'd have to use the mic preamp out of the first channel and patch to the line input of a second channel, which makes things really messy. So we added an extra TT bay in our outboard rack, and even before the mic gets to the console, it makes a stop at this bay. Mic signals coming in from the studio are wired to points in the top row. Those points are normalled to points in the bottom row, which feed the microphone inputs on the MCI console. We can access the signal directly from the mic at this bay and patch into an outboard mic pre, or, if we want, we can cross-patch a mic to a different number input without having to run out to the studio. For example, now we can easily take a mic signal coming in from the studio on mic channel 15 and cross patch it to input number 1.

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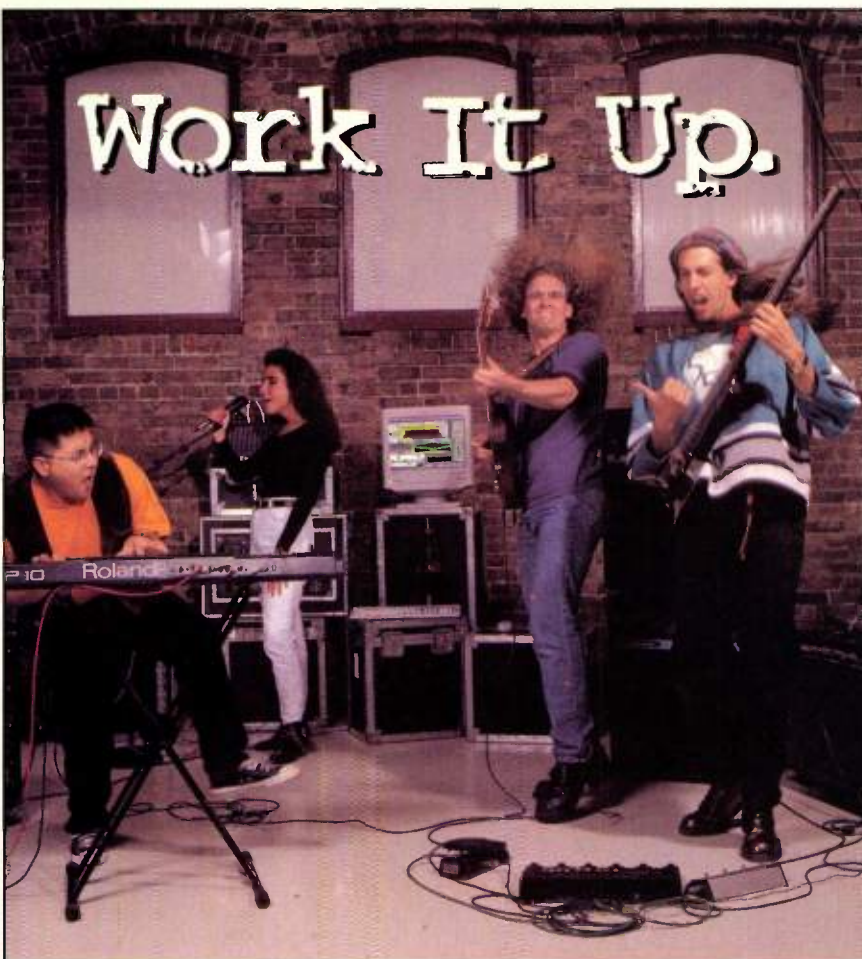
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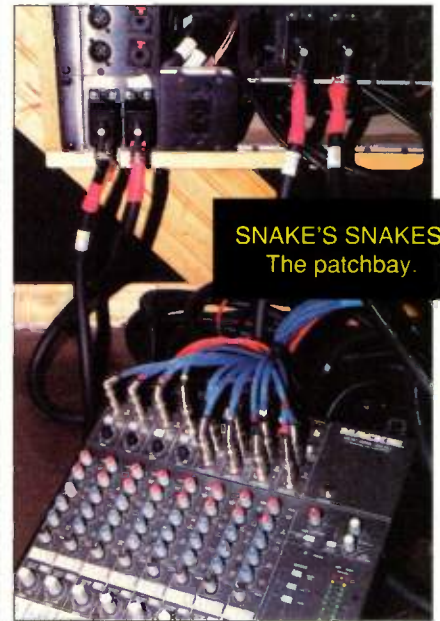
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1 x 6's were attached on edge to the Luan. Each 1 x 6 was spaced three inches apart, leaving a series of cavities three inches across and six inches deep. Birch plywood was cut into three-inch strips and used to build up the cavities into varying depths. Thompson recalls that "Snake did the staining, because none of us could stand it anymore!"

The effects racks were pre-assembled to spec by Joey Mascarello and then brought in. Both racks sit on a small platform that hides the cabling; a ground bus wire runs from the console through the effect racks (each rack unit is tied to the bus) and out to a dedicated ground stake. Mike says, "We installed Furman IT-1220 power conditioners with isolation transformers and balanced power output and they work unbelievably. We had a Roland Jazz Chorus amp and when we plugged it straight into the wall, the buzz was terrible. We brought the IT-1220 in here, plugged the Roland into that and it was clean. Now we run all our gear from IT-1220's."



CUEING UP

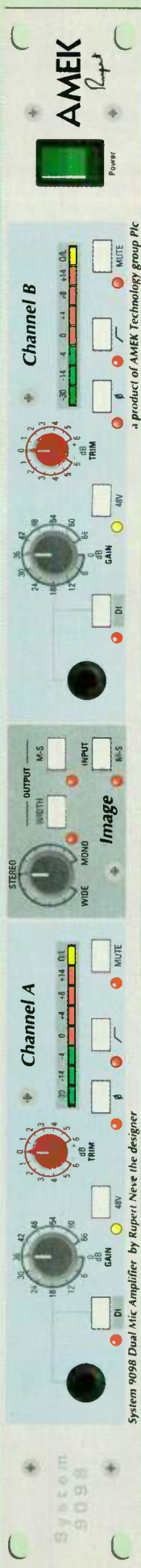
Thompson states, "We designed the cue system at MLPP to accommodate the band without driving me crazy. Basically we have 16 patchable tie lines into the cue system. I take various tracks from the tape return patch point and send them out along with some kind of L/R mix where, if I do a mute or a fader move, the band won't hear it. From the patchbay the signals go to a mult in the cable trough and then to a series of DL
continued on page 135

System 9098

Dual Mic Amplifier

by Rupert Neve the Designer

Rupert
Awarded
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Technical



'The SYSTEM 9098 Dual Microphone Amplifier follows in the footsteps of the 9098 Console, the System 9098 Equalizer and the System 9098 RCMA Remote Control Microphone Amplifier, sharing many of the same features and impeccable clarity of sound quality. New features have been incorporated which considerably extend the field of usefulness.

'Although designated as a "Microphone" amplifier, the DMA will accept a full +25 dBu balanced signal without a pad, at unity gain. So it doubles as a Line Amplifier, which, of course, retains the processing power of the Stereo Matrix.

'The flexibility of the input circuits has also enabled use of the DMA as a Direct Injection Input. Industry standard single pole jacks have been used to provide unbalanced inputs at very high input impedance, well adapted to the requirements of high quality instruments.

'Dedicated STEREO inputs are a new feature. It is, perhaps, surprising that with the increasing popularity of outboard equipment there are very few units that specialise in the handling of stereo signals and none, I believe, which combine all the features of the SYSTEM 9098 Dual Microphone Amplifier. The possibility of differential pick-ups used in one of the classic stereo modes is intriguing.

'One of the questions I am asked is: "Why use a stereo microphone? I only need a few Stereo Modules just for stereo returns, synths etc. I can do all I need to with a Pan Pot on the MONO module".

'The answer is that Panned Mono is produced using one microphone panned to Left and Right buses. If the soloist moves, both channels are affected in the same way and the image remains fixed at the panned position. A genuine stereo signal is produced with two microphones which are fed to Left and Right buses respectively. If the soloist moves the relative signals change in amplitude and

phase causing the image to move also. A Stereo signal also contains ambience information which locates the soloist relative to his surroundings. With panned Mono, the ambience is fixed by the simple ratio of direct to ambient sound produced by the microphone/soloist positions. Panning cannot change this relationship.

'The SYSTEM 9098 DMA is equipped with comprehensive AB and MS (Main and Side) circuitry, with Width control, to facilitate stereo microphone recording of all types and can be used not only with voices but also any source from a drum kit through to a full orchestra.

'I use transformers for the DMA output stage because they are a sonically superior way to couple the signal to other equipment. They provide complete freedom from ground dependence which eliminates low level noise associated with common ground paths etc. The output transformers, which are designed integrally with their driving amplifier, handle the full +25 dBu output down to 24 Hz and +20 dBu down to well below 20Hz. The high frequency bandwidth extends to 200 kHz without self resonances.

'Low level signals from microphones have traditionally presented a problem. In the SYSTEM 9098 DMA we have achieved very low noise over a substantially wider dynamic range than anyone else.

'The significance of the mid gain low output noise, which is typically 5 to 10 dB better than any other microphone amplifier, is that these middle gain ranges, which are used for close microphone work, are given greatly improved transparency.'

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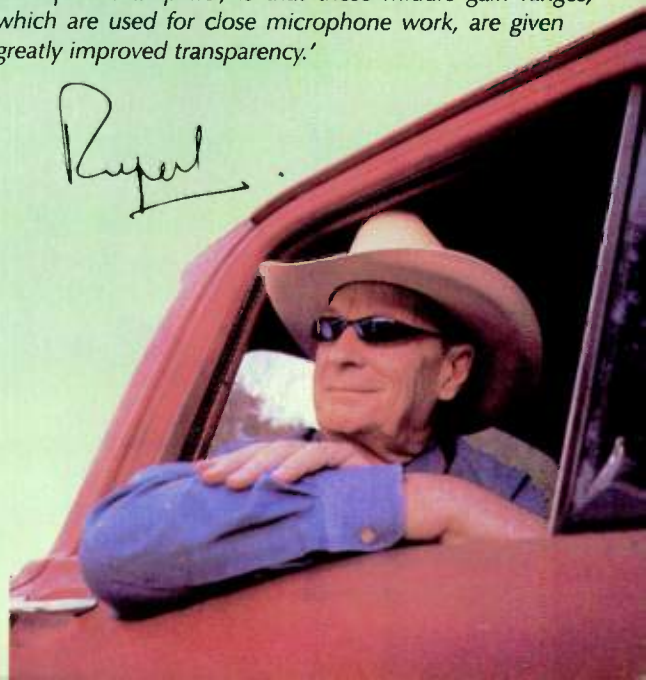
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Backstage or Bust

The Demo Queen discovers that sometimes the backstage antics are better than the show going on on-stage

BY C. REEDER

"Sorry pal, this pass is only good after the show."

The hapless owner of the backstage pass visibly slumped in his oversized leather Harley jacket at this edict issued by a security guard blocking the entrance and all available light. The guard flexed biceps the size of bowling balls and on his face sagged a road kill nose, probably not the nose his mother wiped. I backed up to give him room.

Behind the Harley jacket a young woman with a two-story hairdo stumbled in the gravel trying to maintain her balance on 3-inch spike heels. Ignoring the bad news and the messenger, she nasalized, "Jack, you promised."

Not wanting to look like a wimp in front of his date, Harley Jack faced down Rambo and yelled, "Hey, Road Kill's manager is my brother-in law and he wants us backstage. Just go back there and ask for Leo." At this the guard shot back, "I'm just doin' my job pal-o-mine and rules is rules. You got a problem with that?"

This must have been a cue of some kind because out of nowhere appeared two more Terminator types who flanked Rambo and leered down at the Harley guy. Not even the tooth fairy could have genuflected her way past this wall of human flesh. Security guards dealing with 20,000 fenced in crazy beer bloated rock fans don't like guys like Harley Jack.

Sizing up this new development and the very real danger of ruining her

heels and the whole evening, Jack's date pulled on his arm with, "Come on, baby, let's go get a beer and come back later. Pleezee..."

I watched as the disappointed duo huffed off, feeling a tinge of remorse for them. Everyone knows before and during the show is the most fun backstage. Oh the cruel, cruel fate of the owner of a restricted backstage pass.

Earlier that day I had called my old friend, Styx, who I played with in a high school band and he was happy to get me a pass. We reminisced about the time he crashed on my couch in between gigs during the not always so good ole days. Styx went on to hit the big time drumming for a band he started in his living room. With a cute lead singer like Bone and a string of hits following their first platinum single, "Maul Me," Road Kill pole vaulted from obscurity and police complaints to hero worship and millions of fans.

Before calling Styx, I tried to get a pass from the management office but didn't get past the secretary. As the Greeks used to say, "And if you are not

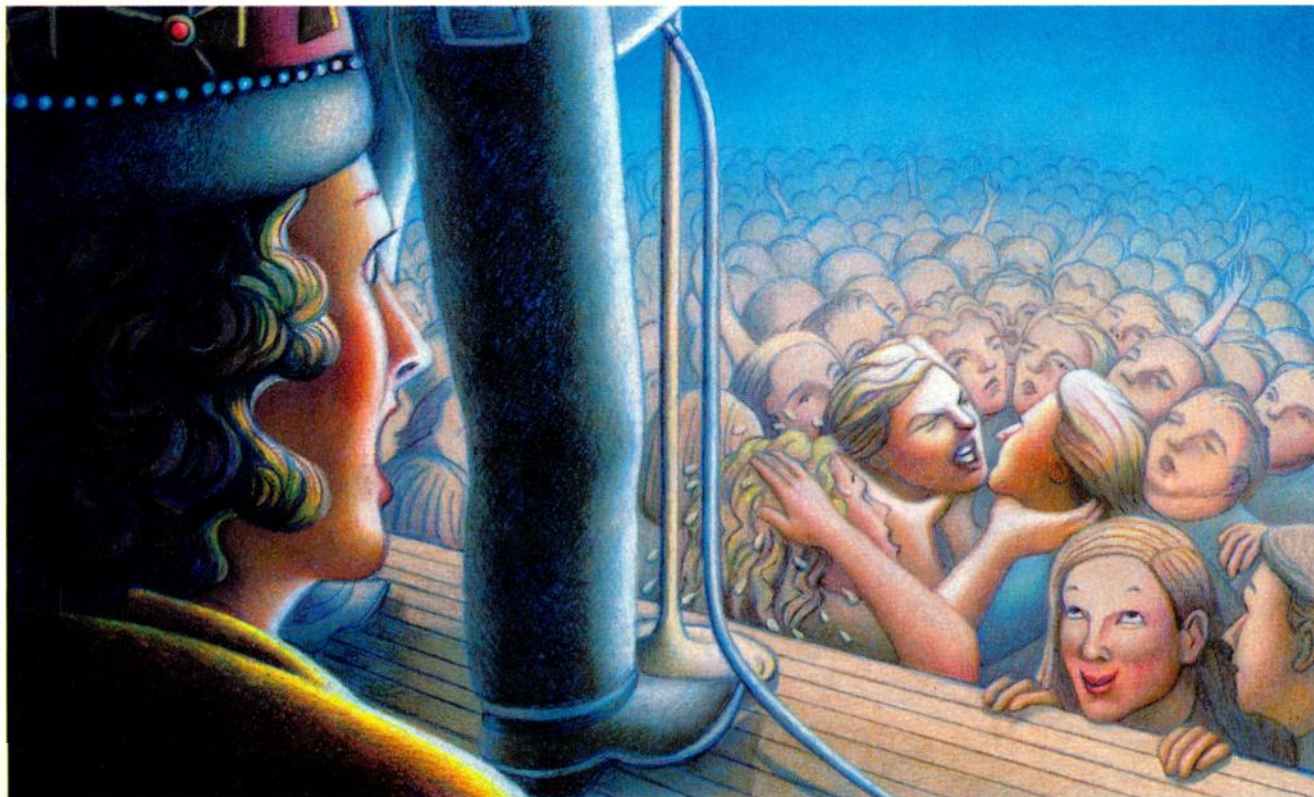


ILLUSTRATION BY AMY HILL

A M S
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render the musical image created by the top recording engineers and producers. ■ The AMS monitors are technically uncompromised designs, combining hand-selected models of Tannoy's exceptional Dual Concentric™ drivers, with the finest quality electronics design and construction.

• Beginning with the precise phase coherent drive units, the AMS series builds on Tannoy's unrivaled reputation for accurate imaging perspective. • Active monitors provide unparalleled

low frequency accuracy, due to the extremely low impedance coupling of the amplifier and drive units, and the elimination of parasitic passive crossover elements. • Precise tailoring of the active filter elements allow matching of production tolerances to within 0.25dB, guaranteeing superb stereo imaging. • The amplifiers use aero-space tolerance components and design, with the components selected for their sonic qualities as much as their reliability.

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ensure that there is no coloration of dynamics due to over-protective protection circuitry.

■ These are studio monitors designed to step aside and let you inside the musical perspective.

Joe Chiccarelli, Producer credits include:

- Tori Amos • Frank Zappa
- American Music Club
- Cracker • Dog's Eye View

"It's the first time I've used a near field monitor where I felt like there wasn't any glass between the control room and the artist. The transparency and phase coherency of the midrange allows you to move a microphone a quarter of an inch and truly hear the difference, a remarkable achievement."

photo courtesy of Royaltone studios

• All of the specifications and hype in the world cannot replace a real life encounter with the Tannoy Active Monitor Series.



• We guarantee that your smile will be bigger than the Mona Lisa's, and your art—who knows— even more famous!

Mick Guzauski, Producer - credits include:

• Mariah Carey • Eric Clapton • Barbara Streisand
• Bryan Adams • Michael Bolton • Boyz to Men
"I have relied on Tannoy point source Dual Concentric loudspeakers for several years. Their resolution of time and space put them in a league of their own. Now with the advantage of state of the art filtering and amplification, the overall precision of the image and critical damping factor makes them an unbeatable combination at any price."

Mick Guzauski

• Through the exacting application of science, the AMS monitors provide the accurate perspective to clearly



Queen, my dear, think you that you are wronged?" Well a big Hellenic...Yes!

I mustered up my best imitation of a female Moses and with one wave of a laminated "All Access" pass, Rambo & Company relaxed and parted like the waters of the Red Sea. Enter ye into the magical game of Backstagedom.

Once backstage the real show began. I headed for the nearest john to check out my ensemble and eye liner. I was looking less than polished after trudging in heels down to the stage

door. The bathroom is also a good place to look for friends and gather useful tidbits — things like the whereabouts of the party after the show, any new hair highlight tricks, possible demo pitches, or the latest on who's bopping who. Who is dumb enough to think girls really need so much more time than guys to relieve themselves? With every line and news item in place, it was time to mingle.

I headed straight to Styx standing by the stage talking to his tech guy. The

conversation didn't look serious and Styx signaled me with his eyes. Right on cue I sidled over and he gave me a big hug. He knew this would set me up as a player in the game of Backstagedom, where certain rules apply and everyone has their part to play.

The King and/or Queen is the artist or permanent band members and in this game the artist rules. Compare the official spouse of said artist or band member to the rook, with a special place in the castle, preferential treatment, and a seat in the limo. Everyone else and even sometimes the spouse is more or less replaceable, depending on how dependent the artist is on the piece, that is person, in question. Sometimes an artist can't function without a certain manager, or accountant, or even producer, so this player can rank in importance with a rook. If the artist is bankrupt or nearly so, or in some kind of legal trouble, a lawyer steps in as King, bending the rules temporarily.

The remaining players make up the knights, bishops, and pawns, otherwise known as sidemen, tour specialists, tech people, roadies, caterers, drivers, miscellaneous masseuse people, and any relatives hanging around. The good news is even the lowly pawn can persevere to the other side of the board and be crowned Queen.

Styx was in between relationships at the moment, so no one would know until after the show that our hug was platonic. For the moment, I received the royal treatment and stood in the wings to watch the show.

The audience roared as Road Kill electrified and guitar licked their way through old hits and new offerings. I was enjoying my view of the buns of Bone when the lights hit the audience and I spied Harley Jack and his date caught in the body press. Reeling with show euphoria, a besotted male fan next to the date lurched and spilled beer all over her head flattening her 'do. Mousse mixed with beer is not a pretty sight, and the date howled pitifully into the din of sound.

This last indignity ignited poor Harley Jack. He exploded with rage and pummed the stoned fan, who staggered back at him swinging. A friend of the drunk jumped into the foray and they all fell with fists flying. Security guards moved in from all directions to break up their little game of Battletchess. Checkmate. Hey ho... **EQ**

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Big Ol' Guitar



You play them. You record them. Some of you even like them. We're talking about guitars. And if you record music, then sooner or later (probably sooner) you're going to be faced with a six-string slinging performer who is looking to you to get his or her sound right. To help you

Special



out, this special section offers tips and techniques from some of the best guitar handlers in the business. Plus, just for good measure, we've thrown in a couple of guitar-related product reviews. So tune up, noodle around a little bit, *send the drummer out of the room*, and dive in...

Dave's World

Unique guitar recording techniques from Dave Jerden — the master of “rude” axe sounds

BY STEVE LA CERRA

Listen to any of the discs Dave Jerden has produced or engineered and it becomes immediately apparent that this man knows how to record guitars. With records from bands like Biohazard, Anthrax, Alice In Chains, Social Distortion, and, most recently, The Offspring, Jerden has quite the résumé of rude guitar bands under his belt. EQ caught up with Dave in-between projects to discuss some of the techniques he uses to obtain his sounds.

EQ: What are some of the techniques that you use to record guitars?

Dave Jerden: On the first Alice In Chains record, *Facelift*, Jerry Cantrell and I had several amps, and were trying to find sounds on each

one. I said, “Let’s combine them.” Usually when you combine amps you end up with nothing but mud. But I came across the idea of using different amps for different frequency ranges. That could mean, for example, using a Vox AC30 closed-back for the low end, a Marshall or a Bogner Ecstasy or a Mesa-Boogie for the midrange, and then using something like a Bogner Fish preamp or a Soldano preamp for the top end — something that I could get a real hard bite from on top. I record those each on separate tracks. They all go down at the time same, and then sometimes I double that.

So the first set of three is one performance...

One performance. My engineer Brian Carlstrom and I had been making our own active splitter boxes to help deal with hums, buzzes, and all that. The cable comes out of the guitar and the box splits the signal to the three amps. But I just did an album down in the Bahamas last year at Terry Manning’s studio (who is also great engineer) and Terry invented an active splitter box with one in and six outs. It has ground lift switches to take care of grounding problems and it works like magic.

And the whole point of having the box

is so the pickups aren’t loaded down, making the guitar sound different.

Exactly. Even the length of the guitar cable can kill the tone. When we’re doing basic tracks, the guitar and bass players are in the control room with the amp heads, and this makes the leads shorter. Keeping the guitar leads short is important because long leads can really take down the high end.

Do you have particular mics that you use for the three-amp setup?

The mainstay for me has been the Shure SM57. We always keep relatively new ones around and we front- and back-mic open-back cabinets with them. I also use AKG C12’s for pulling out the room sound a little bit, or Neumann U47’s or U49’s are great mics for the room. But I don’t take a \$10,000 mic and put it right on a Marshall cabinet. A ‘57 will get the sound for me.

How much of a mix is there between the close and distant mic?

Probably like 20 percent room as opposed to the close mic, and those mics go down to the same track.

When using the multiple-amp technique, do the amps go into separate areas or into one room?

There’s two setups that I use: one is for basic tracks and the other setup is for



THE TWEAK THAT WAS: Jerden at work.

PHOTOS BY EDWARD COLVER

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PLAY-ROOM: Jerden's studio is geared up to handle his unique guitar recording techniques.

overdubs. When I am doing the basic track, I am not sure if it is going to be a keeper, so I will isolate the bass and guitar amps from the drum room. But when I actually do guitar overdubs, we pull all of the guitar cabinets (the heads always stay in the control room) out in the main room and then I have the option of using room mics on them, too.

When you mic the front and back of an open-back amp are you generally using a '57 in front and a '57 in back?

It can be a '57 or sometimes I use '421's. Sometimes it's a '57 on the front and a '421 on the back. It varies.

Do you find that you have phasing problems?

You always have to flip the phase on the rear mic. The amps that I normally mic front and back are the Vox amps and the

Fender amps. I don't rear-mic Marshall amps that often.

There tend to be more open-back Vox and Fender amps than Marshalls.

Exactly. And when you back-mic a Vox or Fender, you definitely get a good hump at around 150 cycles. When you pull up the rear mic and flip the phase switch (which actually puts it in phase), all of a sudden there's a 150-cycle bump that comes up, which is a good frequency for guitar.

How do you handle all those tracks in the mix?

It's really not that difficult. One thing that I haven't explained is that I cut them all flat and then EQ in the mix. On SSL consoles, including the one in my studio, there are bandpass filters so I can (for instance) cut all the high end out of

the Vox amp that is being used for the low end of the guitar. Also, if you go in totally flat, they just won't have any punch.

Generally what I am doing on the low amp — let's say the Vox amp — is looking for fundamental frequencies of 100 up to, like, 300 cycles. But the Vox amp also has a great "squak" quality, as I call it. I may accentuate that "squak" quality at 600 to 1000 cycles. Then I'll low-pass from about 1000 cycles on up. From 1000 cycles on down is where all of my desirable frequencies are that I want from the Vox. On the main amp, the mid amp — which could be a Marshall or Mesa-Boogie — anything goes as far as EQ. I let that one scream. On the amp that is used just for the high end, I'll high pass and cut out all the stuff below, let's say, 1000 cycles — just use the top end stuff. But when you are



doing that you have to be careful. Usually I high-pass and low-pass filter the high one, because brightening it gives a lot of frizzle on top. Then I'll cut that frizzle off at about 12 kHz. So on the high amp you've got from 12 kHz down to about 1000 or even 3000 cycles. In the mix, the middle amp is featured and I feed the other ones into it.

By mixing the low and the high amps in, you are actually modifying the tone of what the middle amp is producing.

Yes. I pull the low and high amps completely out and start by getting a mix with the drums and bass and rhythm guitars with the middle amp. I pull up my rhythm guitars left and right and get the mix to sound OK. Then I slide in those other guitars to see how they sound. As I go through the process, I may be modifying the frequencies and the points where I am band-passing. If it is done correctly, you

can get a lot of power out of it. If it is done incorrectly, you get mud and the guitars can be too big.

Then you lose the vocal and the drums. Right, and start the cycle of trying to bring faders up to hear it.

Will you pan those three tracks to the same location?

Yes, as they were recorded. On the first pass of rhythm guitar, those three amps go down in one pass and get panned to the left. Then on the next pass I'll have the guitar player double the part and those three will be panned hard right. They are always hard left/hard right, and they stay in the position that they were recorded.

Do you find that there's a particular spot that you go for when placing the '57?

Usually it ends up about halfway between the middle of the speaker and the edge of the cone. If you go towards the outside of the cone you get a little bit more distortion; if you go to the inside it gets a little sweeter. There's not a whole lot of voodoo to it. The way we point the mic is at 45 degrees instead of going in at a 90-degree angle. The side ports on the '57 create the cardioid pattern, but when you put that mic on a loud sound source like a Marshall at 120 dB SPL, the capsule tends to collapse a little. That side-port stuff almost acts as compression, which gives it a nice, tight sound. That's the reason I go in at an angle.

Since you are not recording the microphones with any EQ, do you tend to use onboard mic pres or console mic pres? We use Summit mic pres that have been specially built. Actually, Rupert Neve himself assembled these things, and they're amazing. They belong to Brian, and he has a rack of 24, plus there's another 24 Summits in our studio. All of my recording is done with tube preamps and tube compressors, all as straight-line as possible into the tape machine, bypassing the board. I use the board just for monitoring purposes.

How much compression do you use when cutting guitar tracks?

The ratio is usually about 4:1, and I am pulling it maybe 6 dB or so. Not a whole lot, but not a little either.

What about bass?

I also record bass with multiple amps and multiple DIs. I usually start off with an SVT cabinet with a '57 on one of the cones. We go through the speakers to find the best sounding speaker in the cabinet.

Do you find it varies a lot?

Sometimes there's a big difference, but sometimes there's no difference. I always listen to every speaker to make sure we're on the right one, and at the right part of the speaker, too. I use an SVT, a Mesa Boogie, and an old Vox Westminster bass amp. It's a solid-state amp, and it has an 18-inch speaker with a separate head and a thing called "Tone X," which is supposed to be an EQ, but it's got this kind of punchy squak.

If you listen to oldies stations on AM radio, you can always hear the bass, and it sounds great. I listen to records today

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and I cannot hear what the bass player is playing. I spend great time mixing at low levels to make sure that the actual bass notes are heard. Using this Vox amp with the 18-inch speaker has really helped that. Of course, I want the lows and highs, but what I am fighting for is the mids because when you are recording aggressive stuff like The Offspring or Biohazard with that three-amp guitar setup, you have a lot of sound there. The bass has to compete with that. So I use that Vox amp, an SVT, and then I'll use a SansAmp Bass DI and an Ibanez TS-8 Tube Screamer. [*The Ibanez Tube Screamer was originally intended for guitar.* —Ed.]

Do you record these elements onto separate tracks?
It always ends up on two tracks. All amps go to one track and all of the direct

signals go onto the other. Usually they are used equally.

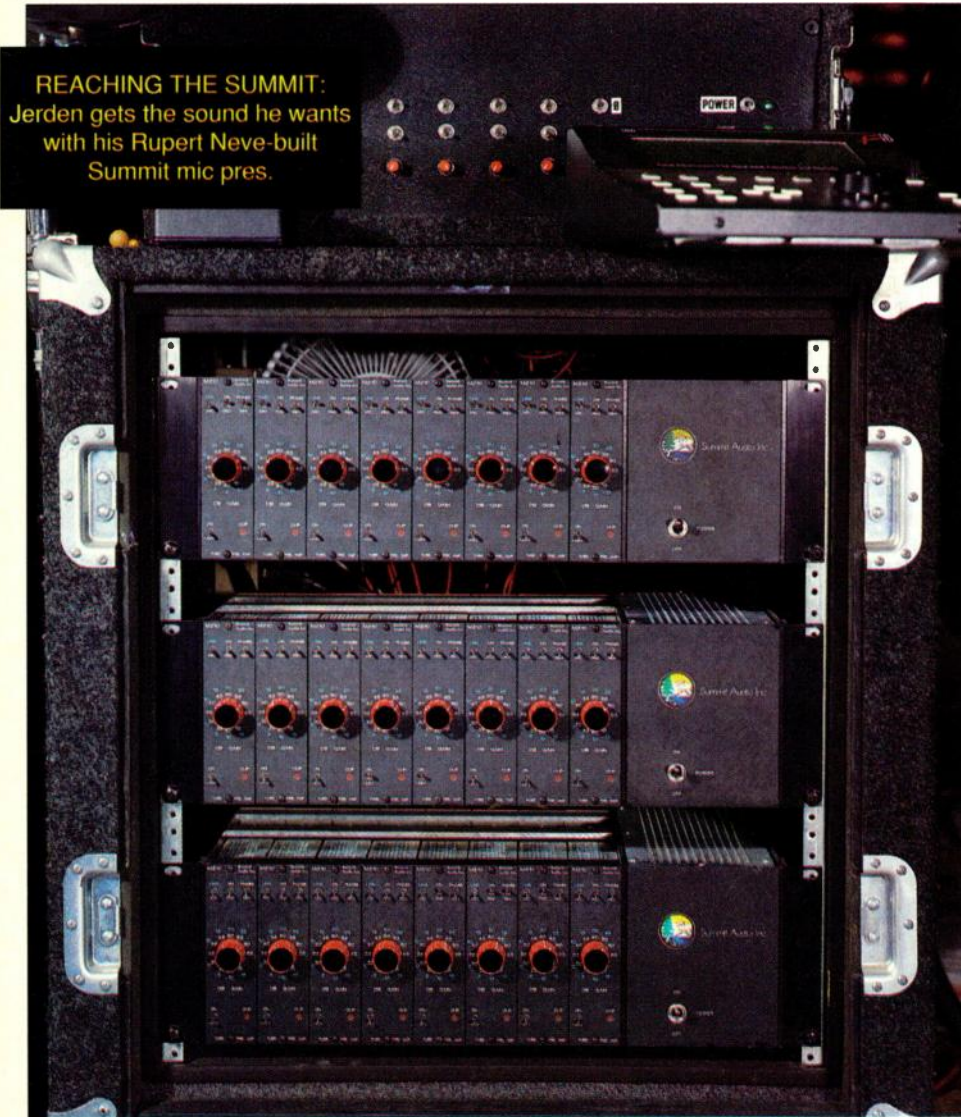
Do you tend to keep the recording path for bass similar with the Summit pres?
Yes. Everything is pretty much the same. As much tube as possible. If you are going for a Marshall sound, you are not going to get it with transistors. But, on the other hand, if you are looking for a really crazy sound...I have a Hamer 12-string bass that is really difficult to record because there's so many overtones from the different string gauges. I first ran into the Hamer 12-string bass was when I worked with Tom Peterson from Cheap Trick. He was using Marshalls and Hi-watts and said, "My hero is John Entwistle and the sound I am going for is like the sound of a piano being struck." Later on I bought a Hamer 12-string bass for myself and I always remember what

he said about a piano being struck. So what I came up with was to use two solid-state Vox Super Beatle amps that were made in the 1960s. They have four 12-inch speakers, two PA-style horns in each cabinet and are louder than hell. They are real brittle-sounding on guitar, but for the Hamer 12-string bass, it's the sound — like a piano being struck. I use two of those, so I have eight 12's and four horns. To split the signal between them I've been using an old Roland Chorus, modified by Rivera. It kind of shifts back and forth slowly between the two amps and it sounds like the end of the world. It's amazing. I used that in "Rooster" from Alice In Chains' *Dirt*. All of the choruses on "Rooster" are doubled — just the basic notes of the chord changes in the choruses. It's not that the whole bass part is doubled. If his part was playing a run in between the changes, he didn't double that — only the root notes of the chord changes. It gives a great sound.

Whereas his original bass part was played on a 4-string.
Yes, and that's still there, up front. The Hamer is mixed in with the guitars to add power. On top of that I have a Dan Electro 6-string piccolo bass. I use that through a Zoom processor set to a Marshall sound. The reason I use the Zoom as opposed to plugging the bass directly into a Marshall is that if you plug a 6-string bass into a Marshall, the sound is so huge it'll wash everything else out and kill the guitars. But the Zoom has a really limited bandwidth and it has the distortion. I use a similar technique with the 6-string, but instead of having the bass player just play the root notes like with the Hamer, he can actually double his bass part in certain sections with the Dan Electro because the sound isn't so massive that it will wash out his original bass line.

Do you compress the direct element of the bass sound as well?
Yes, always with the Summit compressors. Again with a ratio of about 4:1 and about 6 dB of compression. Sometimes we compress all the DIs together and sometimes we compress them separately. I make so many records and I try to make each sound unique for the band. It's not like I have my studio wired a certain way and they just come here and everything is epoxy'd in place to plug into the sound of my last record. It will vary.

It's not a cookie-cutter approach.
No, it's not at all. **EQ**



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—Mix Magazine, August, 1996

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CIRCLE 35 ON FREE INFO CARD

World Radio History

Strong Stuff From The Brewery

Allan Holdsworth, the guitarist's guitarist, stirs up some tasty concoctions in his project studio

BY ALAN DI PERNA

Guitar virtuoso Allan Holdsworth spends lots of quality time in his garage studio, which is adjacent to his house in San Diego, California. He calls the place The Brewery. "It's where we brew up all the music," he explains. "Plus, I like beer."

Soft-spoken, Northern-English born, and mechanically inclined, Holdsworth has even invented and patented his own beer pump. But most of his exceptional digital dexterity has been devoted to music. Holdsworth emerged as a key figure on the '70s fusion and art rock scenes, playing with Soft Machine, Tony Williams' Lifetime, Jean Luc Ponty, Gong, and with drummer Bill Bruford in the U.K.

BREWERY TOUR

By the time the '80s arrived, Holdsworth had emerged as an able composer and

band leader in his own right — his 1984 *Road Games* album was nominated for a Grammy — while continuing to record with fellow virtuosos like Stanley Clarke, Michael Brecker, and Chad Wackerman. The guitarist has long been in the habit of mixing his projects at home, but a recent move from Orange County (just outside L.A.) to the San Diego area netted him an extra bonus: a garage with enough space for a tracking room as well as a control room.

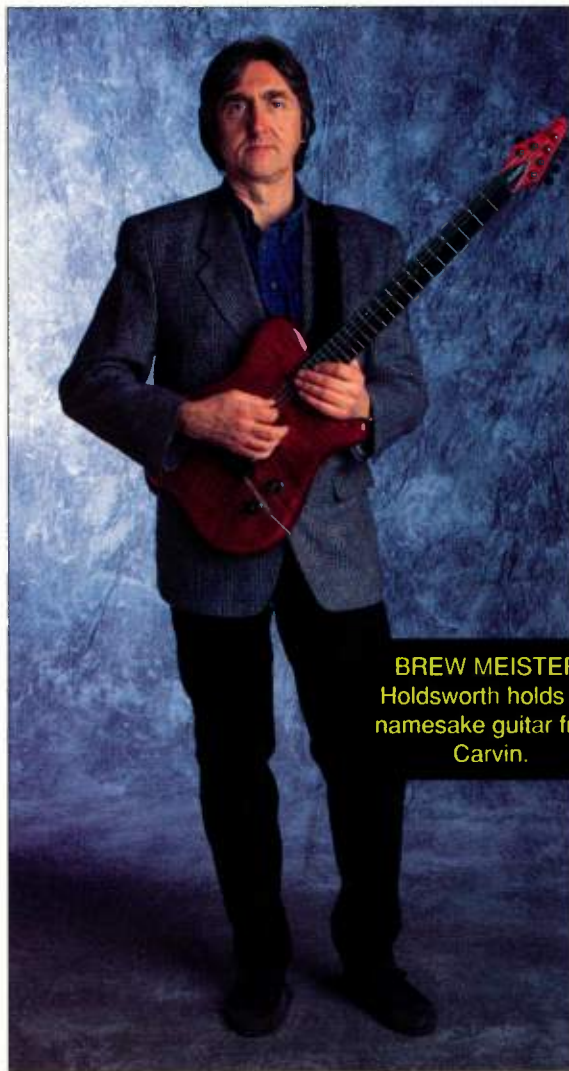
"So now I can record guitar," Allan enthuses. "A carpenter friend of mine basically divided the garage in half, making two rooms." The garage has a sloping roof, so ceiling height in the control room varies from approximately 8 to 12 feet, and from 12 feet to 17 feet in the tracking room, giving Holdsworth a fairly high-ceilinged space for cutting tracks. The tracking room measures approximately 15 feet wide and 30 feet long.

The studio is based around a 44-input Trident console and Yamaha NS40 monitors driven by a UREI power amp. The outboard gear on hand includes a Demeter mic preamp, two Neve mic and line amps, a GML 5-band stereo parametric EQ, and a pair of Trident TSM EQ modules. "In the studio, I mostly use old single-delay lines, in pairs," says Holdsworth. "I have a bunch of old Yamaha 1500's I use for that. The digital effects all date from the days before multiprocessors. The only multiprocessors I have are Rocktron Intellifexes, which I like a lot. But I use those mainly for live work. I don't actually own a really good reverb. I usually rent one when I need one. I used to have an AMS 1580S and RMX-16, but I sold those to Steve Vai a long time ago and could never afford to buy them back."

Another item not in use at the Brewery is a patchbay. "I don't believe in them," Holdsworth declares. "Every time you run a signal through a connector, you screw up the sound. All the pieces of

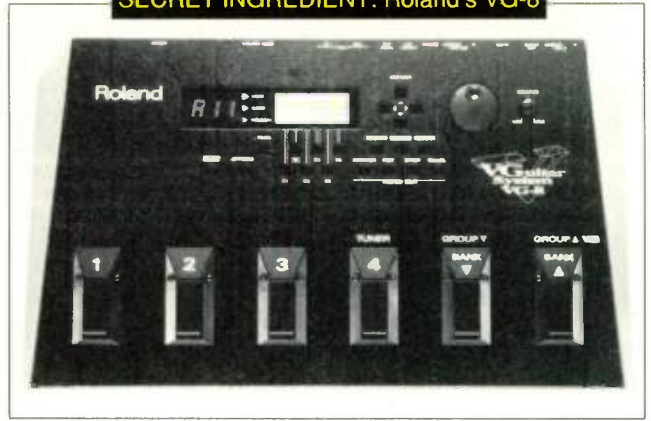
equipment in my studio are very mobile, so if I want to put an EQ or limiter on something, I can take it right to the source."

Tape machines are also rented in for recording projects. "I'm a big fan of Mitsubishi 880's," says Holdsworth, "and, of course, analog machines. I'll sometimes rent an Otari. It depends on what the budget can go for." The guitarist owns a pair of Alesis ADAT machines, which he keeps in the studio mainly for writing purposes. The same goes for his modest MIDI rig, which is driven by Cubase software running on an old Atari ST computer. Holdsworth's SynthAxe MIDI controller, which was his main axe a few years ago, is now principally used to input data to the sequencer for writing applications or to



BREW MEISTER: Holdsworth holds his namesake guitar from Carvin.

trigger the occasional synth pad on records. While Allan was once mad for MIDI, the M-word now plays a fairly minor role in his music. "I quit on the MIDI



stuff completely for a while, but I just got back into it recently. I don't do it a lot, though, and I don't want to do it a lot anymore; although it's cool for writing."

Apart from recording "basic rough ideas" when writing, Holdsworth also doesn't believe in demos: "Every time my band has done a demo, there's always something on the demo that I like better than what's on the master. But the demo's overall sound quality is never good enough to use. So now I avoid that trap. I just wait until we're ready to go in and record the thing for real."

BREWING TIPS

Holdsworth cut band tracks for his most recent album, *None Too Soon* (1996), at the Brewery. He also used the studio to record his guitar tracks for *Heavy Machinery* (1996), an album he did with former Yngwie Malmsteen sidemen Anders and Jens Johansson: "They just sent me [8-

track] ADAT tapes. I played to the tapes and sent them back. It was kind of cool. The tapes had stereo drums, stereo keyboards, and bass. That gave me two or three tracks to mess around with. It can be hard, trying to play an overdub so it sounds like it really belongs on the track. So I try to get a feel for the shape of the tune before I even begin putting anything to tape."

A good, old-fashioned "one guitar man," Holdsworth records with essentially the same equipment he uses for live gigs. The only difference is that he adds effects processing live, but prints his signals dry in the studio, preferring to add effects in the mix. The current axe in Allan's life is a custom Carvin that he designed himself: a set-neck instrument with an ebony fingerboard, 20-inch radius neck, a semi-hollow alder body, and a single custom-wound Carvin humbucker. His guitar signal is split out to two stereo amp rigs: a pair of Mesa Boogie Mark III's for clean sounds and a pair of Boogie Dual Rectifier amps with single 12-inch cabinets for distorted leads. He uses Rocktron Intellifexes and a Roland VG-8 guitar system to process his guitar signals.

Over the years, Holdsworth has evolved a very specific approach to recording his guitar: "I always mic the cabinet for lead sounds, but for clean sounds, I go DI a lot of times. I just take a [stereo] output straight off the rig and onto two channels of the tape machine. I don't run it through the board or anything."

Of those clean sounds, the guitarist estimates that he uses the Roland VG-8, "for 75 percent of the chordal things I do." Unlike the SynthAxe, the VG-8 doesn't ensnare Holdsworth in the mire of MIDI. It doesn't work by triggering external synth modules, but performs physical modeling on signals derived directly from string vibrations.

"It's just like an extension of the guitar," Holdsworth elaborates. "You're not dealing with any modules where you have to figure out how to control the envelopes and all that stuff. Instead, you can manipulate the input from a single

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pickup guitar like I use and make it sound like a three-pickup Strat or two single coils or an acoustic guitar."

Because he's highly sensitive to string drag (inhibition of string vibration caused by the magnetic pull of pickups), Holdsworth is a staunch believer in guitars with just one pickup. He finds the VG-8 allows him to achieve multiple pickup tones without compromising the responsiveness of his instrument.

"It just adds all these extra colors that are guitar-based. And there are no time-delay problems that I can perceive. It's like using an EQ or a phase shifter. If I mix the VG-8 signal with a straight signal, it'll be synchronous. And since I use two stereo amp setups, I can send the straight signal to one rig and the VG-8 patch to the other rig, which really sounds good."

On the occasions when Holdsworth uses a mic rather than a DI for clean guitar sounds, "it's because I want the coloration from the speaker box and/or the mic and the positioning," he explains. "I have two Shure SM7's that I use for clean sounds. I use Shure SM81's for overheads on drums. And I use the Shure VP88, a big stereo microphone, for a variety of things, including guitar. It's a single point source stereo mic. It sounds particularly good on solo guitar, when there's nothing else going on. It makes the guitar sound huge."

For distorted leads, Holdsworth always uses a Neumann U87 or TLM170, positioned about an inch from the speaker cone. "The variable that I experiment with is exactly where the mic is positioned on the speaker cone. Every millimeter gives you a new sound. But the distance always remains more or less the same, about an inch. And I rarely use more than one mic. With those big diaphragm mics, you'll be able to hear ambience. It's got this presence because it's sitting right in front of the speaker. And it gives you control [in the mix], because you can push the guitar forward or you can bring it back.

"That's also what I like about using stereo delays instead of reverb on lead guitar tracks. There's a lot of albums I've done where there's no reverb on the guitar solos at all. Instead, I use multiple stereo echoes, because that gives the sound a spatial quality, but it doesn't pull it back in the mix. When you use reverb, it will start to draw the guitar back into the mix. But if you use a stereo echo, you're essentially listening to the dry sound. And if it was close miked, you can put the

continued on page 135

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Chris Porter (Producer - Take That) - "I bought one of the first EQ 1s and I've enjoyed using it immensely. It gives a unique quality to the vocals in particular. Take That's 'Back For Good' is a typical example of the EQ 1 adding depth and presence to a vocal track."

Tom Lord-Alge (Dual Grammy Award Winning Engineer) - "The Indigo EQ 1 EQ has given me the ability to EQ with clarity rather than just tone. I find it to be very musical. Any problem sound I have come across I patch in the EQ 1 and it allows me to add death and clarity."

Stephen Coes (Producer, Arranger, Engineer - Fleetwood etc, Kenny Loggins, Steve Wonder) - "The Indigo 2011 EQ and 2021 Compressor are exceptional, both responsive and flexible. I can stomp or be subtle, hype a sound or just detail it. These are real tools for any level of music production."



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Making A Six String Sing

How guitarist
Neil Zaza used
his project
studio to record
his latest
release, *Sing*

BY ROBERT GRANGER

When it came time for guitarist Neil Zaza to record his latest instrumental album, *Sing* for High Chief Records, he felt that it was time for a change. For his previous two efforts, Zaza spent all of his recording budgets on actually recording the album. The only thing that he walked away with at the end of each project was a finished album, which for most is an accomplishment in itself. But for Neil, that just wasn't good enough.

"I actually changed my whole philosophy of recording for this album," states Zaza. "I don't think that my story's unique in the sense that a lot of people are doing project studios, but I had just done two albums previously to *Sing*, and I had spent all the budget on recording. At one point I said to myself, 'This is crazy.' I ended up doing some of the engineering myself and I figured that I'd rather dump money

into buying gear that I can use to do the recording. This way if I want to record in my underwear at 3 AM, I could do it. It's hard to be creative on the clock, so I think I put together my project studio because of both artistic and financial reasons. The cost in the long run pays for itself in time spent creating, perfecting, demo'ing, and the ability to record in my underwear without anyone around."

Zaza's project studio is built around several different digital-based recording mediums. He's using three Alesis ADATs along with an Alesis BRC, a Fostex D-80 multitrack recorder, and a Apple Power Macintosh 7100/80 running Digidesign's Pro Tools Project (with an 882 Studio Interface) and Digital Performer 1.71. A Mackie SR24•4 acts as the main console for Zaza's studio, and he uses a 1604-VLZ and MS1202-VLZ for "mobile" recording.

Each recording device in Zaza's studio has its own purpose in the guitarist's eye. "If I had to go do a session at a bass player's house to capture a bass track, I would bring either my Mackie 1202 or 1604, and I'd capture the performance on the D-80. After the session, I'd bring the track back to my studio and archive everything to ADAT. So, under normal circumstances, I would bounce the D-80 track on to an ADAT through an Alesis A-1. That was okay if I was satisfied with the track. If I felt that I had to do some digital editing to get it right, I'd either do it in the D-80, or, if I had some severe editing to do, I'd throw it into Pro Tools or Digital Performer, do my editing, and then bounce it down to an ADAT. So basically, I used the D-80 as a travel mod-

ule and then I'd bounce the tracks to other mediums for storage."

In a time where most guitar-related projects are still being recorded to analog tape for its warmth and depth, Zaza chose to work in the digital domain for the exact opposite reason — the medium's sonic brilliance and clarity. "Maybe my ear isn't that discerning, but digital just sounds so clean to me. It's really funny because we've gotten so deep into technology, and the sound is so clean now, that we're trying to dirty it back up. I really think that's the strangest thing. I'm a real tech-freak in terms of gear, and I chose hard-disk recording over everything else because of its clarity, as well as its random access ability. There's no rewind or fast forward time — you're instantly where you want to be when you want to be there. I think that adds so much to the overall creative process."

ON THE RECORD

Even with the impressive amount of equipment Zaza has amassed (see sidebar), there were certain elements of *Sing* that he could just not record in his project studio. So, in order to make up for his room's deficiencies, he trekked to Addison Steel Recording in Missouri to lay down the album's basic tracks. "Because I only have a few select microphones — I really don't have any proper drum mics, and I didn't have the proper selection of mics for some of the guitar stuff we wanted to tackle — and I don't have a great live room, we decided to do our basic tracks at Addison's. Addison is a country artist, and he was nice enough to let us come in to his studio/man-



ZAZA-MATAZ: Zaza and friend in his project studio.

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GOOD TO GO: Zaza and rack at a recent guitar clinic.

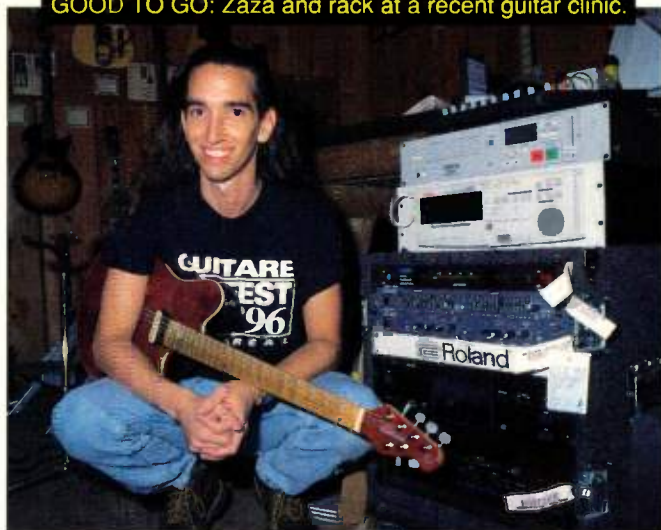


PHOTO BY ELIZABETH ANNAS

sion and record there. We did all of our basics in his kitchen, believe it or not."

After sound-proofing the kitchen, Zaza, along with producer/bassist Eric Fritsch and drummer Michael Papanonis, laid down the drum tracks, along with rough guitar and bass tracks to

Alesis ADAT XTs. With the drums set up in the kitchen and the bass and guitar rigs set aside in adjoining rooms, Zaza's main intent was to capture the vibe and intensity of "the first take." For the one of the tunes on the record, "Phunk π," that meant keeping the basic tracks in their rawest form. "We laid down the drum tracks and Eric Fritsch was playing rhythm guitar with the intentions that we would overdub it later on. After we cut the track, we felt that it had some real balls and attitude and we knew that if we overdubbed it would definitely lose all that raw energy. So that's why you can hear so much bleed in the guitars when you listen to the track. You really can't separate them because they were in one room, cranked because we thought they were going to be scratch tracks, but they ended up being keepers."

As for those tracks that didn't end up being keepers, Zaza relied once again on both his project studio and a commercial studio, John Schwab Recording in Columbus, OH, to track his guitar overdubs. "Again, because I didn't have the proper mics that I needed to capture some of the sounds that I wanted, I went outside of my studio to track some of the guitars."

AN AXE TO GRIND

"For most of the record, I used an 1972 Marshall 50-watt head with an original Marshall 4x12, purple-covered cabinet. In addition to the Marshall, I used a Matchless 1x12 combo and several different Peavey amps, including a 5150 and a Classic 30 combo," explains Zaza. "I did do some direct recording, which worked out real well. I went

NEIL ZAZA'S ROOM WITH A VU

A look into Neil Zaza's project studio

CONSOLE: Mackie VLZ 24•4, 1604, 1202, and Mixer Mixer

MONITORS: Yamaha NS10; Tannoy 6.5

COMPUTERS & SOFTWARE: Macintosh PPC 7100/80 (with 24 MB of RAM); APS 1080 Fireball Drive; SyQuest EZ135 removeable media; MOTU MIDI Timepiece II; Audio Media II; Performer 5.02; Digital Performer 1.71; Sound Designer 2.8; Deck 2.5.1; Session 8 1.1; Alchemy

RECORDERS: Fostex D-80 (850 MB drive); Alesis ADAT [3] with BRC

DAT MACHINES: Panasonic SV-3700; Fostex D-5

OUTBOARD GEAR: Fostex CX-8 and COP-1; ART MDM-81 [2], CS2, and Tube MP; dbx 166 [2]; Alesis 3630 [2]; Peavey VMP2; Rocktron Intelliflex-LTD and Intelliverb; Yamaha SPX90 [2]; Digitech Multiverb

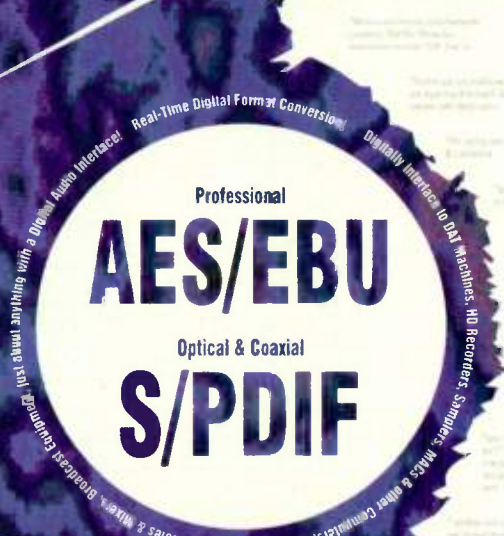
MICROPHONES: Shure SM57, Beta 57, and SM58

GUITARS: Hamer Daytona, Duetone, Artist Archtop, Jeff Watson Model, and Spider-Man; Zion Telecaster; Fender Telecaster and '57 Stratocaster; Ernie Ball "Eddie Van Halen" Model

GUITAR AMPLIFIERS: Peavey 5150 and Classic 30 Combo; 1972 Marshall 50 watt head; Matchless 1x12 combo

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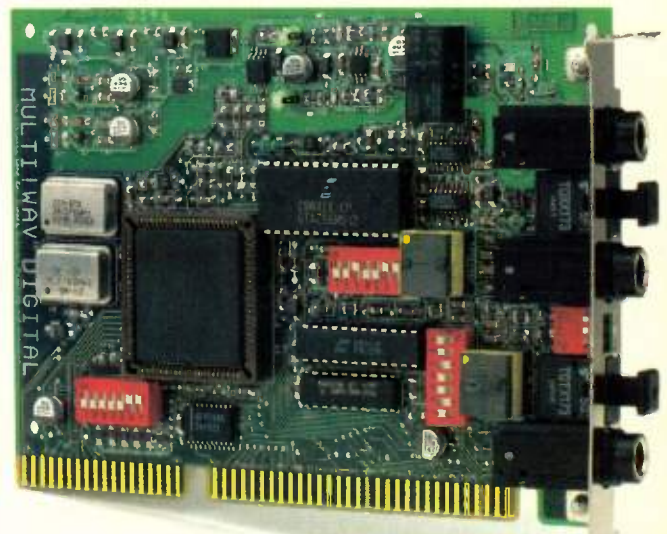
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RACK-TOP MIXER: Zaza's room may be small, but he gets good use out of it.



through either a Rocktron Voodoo Valve or a Rocktron Chamaleon, depending on the sound I was going for. When you're recording direct you have to have a good speaker emulator. If you don't, it's going to sound like a square wave — really fuzzy. The Rocktron gear has a buffer in it, and it also has a real good speaker emulator in it that allows you to choose the size of the speaker you want to emulate. So when I did go direct, I went right from the back of the Rocktron units into the D-80."

When it came to recording Zaza's live guitar sound, engineer Joe Viers captured all of the guitar tones on *Sing* without the use of any EQ. "We focused on the source," explains Viers, "the sound of the guitar and the amp. Any frequency manipulation was achieved either by physically adjusting the placement of the close mics on the speaker or by adjusting the guitar and amp tone controls."

Zaza used an arsenal of guitars to achieve the different tones found throughout *Sing*. For most of the record, the guitarist's guitar of choice was a Fender Telecaster, but the album also features some intense guitar work on a reissue '57 Fender Stratocaster, a Hamer strat-style Daytona, a Hamer Arch-Top, an Eddie Van Halen Music Man, and a Rickenbacker. Zaza comments, "I've found that lot of times you get used to a certain guitar, and then when it's time to go into the studio you think that guitar is going to sound as good on tape as it does live. For me, that wasn't really the case. For most of the record I used a old Fender Telecaster. I auditioned a lot of different guitars for this album and I found that the single-coil pickups on the Tele sounded better than humbucking pickups on tape because you can hear the voicings of the chords better and the actual notes tend to stick out better in the mix.

"I think the biggest thing that I learned on this record is that you can't judge the tone of the guitar until you actually hear it with other instruments in the mix. A lot of times you'll sit for five hours tweaking out a certain sound, and it sounds amazing. Then, when you drop it into the mix, it sounds terrible. I really took the time with this album to listen to each guitar tone to

see how it sat with the other instruments in the mix. In some instances, if you were to solo the guitar you would say, 'That just sounds terrible, horrendous.' Then you put that same track into the mix, and it sounds perfect; it just cuts right through."

To capture Zaza's rich, detailed playing, Viers relied on a combination of three different microphones placed in different locations in relation to the 4x12 cabinet. Viers placed a Shure SM57 in front of the bottom left speaker of the Marshall, an Audio-Technica ATM4031 small diaphragm condenser mic (with no roll off) on the top right speaker, and an AKG C414B-UJS TL II, with a 75 Hz roll-off set between 6-8 feet back, slightly off-axis to the center of the cabinet. The three mics were run through vintage CALREC PQ1161 discrete mic preamps and bussed to two tracks for the rhythm parts (ATM4031 left, SM57 right, AKG 414 center). For Zaza's solos, Viers summed the three mics to one track. The mix of the mics varied on a per song basis, but Viers states that "the average mix was approximately 55-percent ATM4031, 30-percent SM57, and 15-percent 414."

When it came to the final stages of actually putting the album together, Zaza once again relied on his project studio to be his main workhorse. "When we finished recording the record, we did all of our digital editing from my project studio. It was great because it only took us two days to finish. Just in digital compositing and editing, to go to CD it would have ran me a fortune. So I can safely say that all this gear literally paid for itself tenfold." **EQ**

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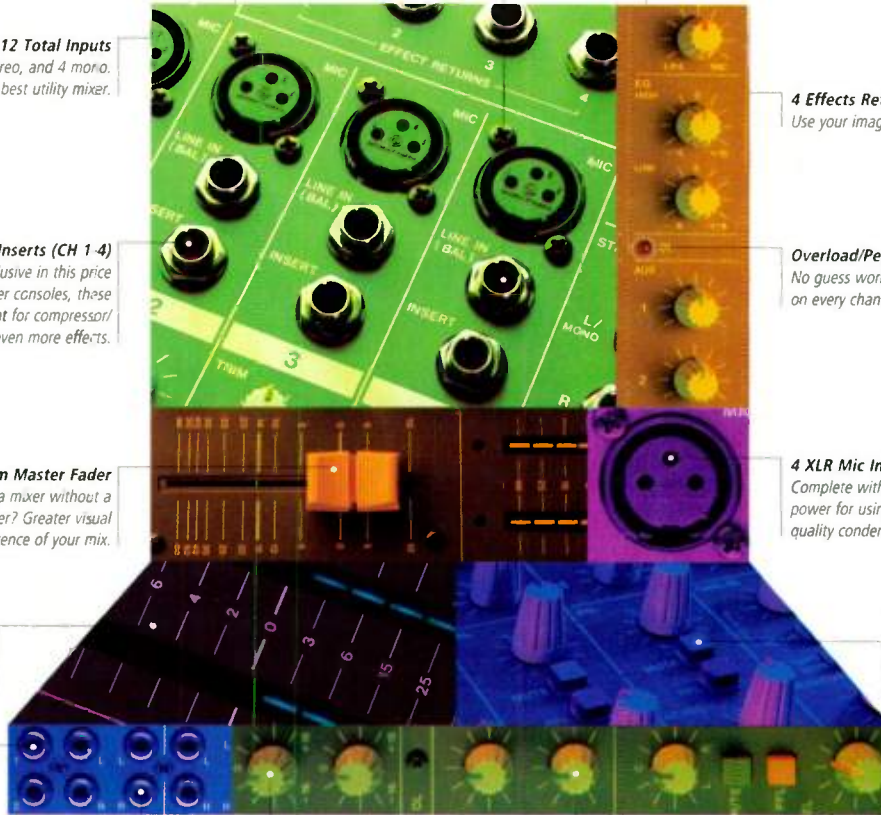
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Priming The Axe

A simple guide to guitar miking

BY DAVID MILES HUBER

There are a number of ways to capture the edge of an axe or electric bass guitar. The most common combinations are: mic, direct, cabinet, direct-mic, and direct-cabinet. See fig. 1.

MIC

Placing a mic in front of the speaker at a close working distance of nine inches or less is the easiest and often the most effective way to pick up an electric guitar or bass. All that's needed is to choose your favorite mic, make sure that the player has set all the volume, tone, and distortion settings to his/her favorite position, work out the buzzes (if that's what you want), and go. Oh yeah, there is one trick — often, a brighter sound can be achieved by placing the mic directly on-center with the speaker cone, while the overall tone can be mellowed down a bit by placing the mic off-center.

I checked around with my Seattle engineer buddies, and, as many of you

might expect, the clear winner for picking up the electric guitar was the Shure SM57. Other mics of choice included the usual complement of large-diaphragm condensers, such as the Neumann U87, AKG 414, and Sony C-37.

Sometimes an amp's overall sound can be changed by blending the sounds from a couple of mics together at the console. For example, Floyd Reitsma of Ironwood Studios mentioned that he sometimes puts an SM57 on one speaker and mixes it in with a large-diaphragm condenser that's placed directly on another speaker. One other tried 'n' true method for getting a fuller and fatter sound during an overdub is to place one mic directly onto a speaker and mix it in with another mic that's positioned further out (6-to-12 feet) into the room.

DIRECT

Taking a direct feed off the electric or bass guitar will often yield a "cleaner" sound and will give you the option of totally eliminating the amp/speaker system (should you wish to record the track in the control room or single project room).

I'm usually not a specialty cable fan; however, due to the guitar's high output impedance, a clearer and sharper sound can be achieved by placing a short, low-capacitance cable between the guitar's output jack and the DI box. In fact, the punchiest bass sound I've ever gotten was recorded using a high-quality wireless system that eliminated the traditional losses of the wiring system altogether.

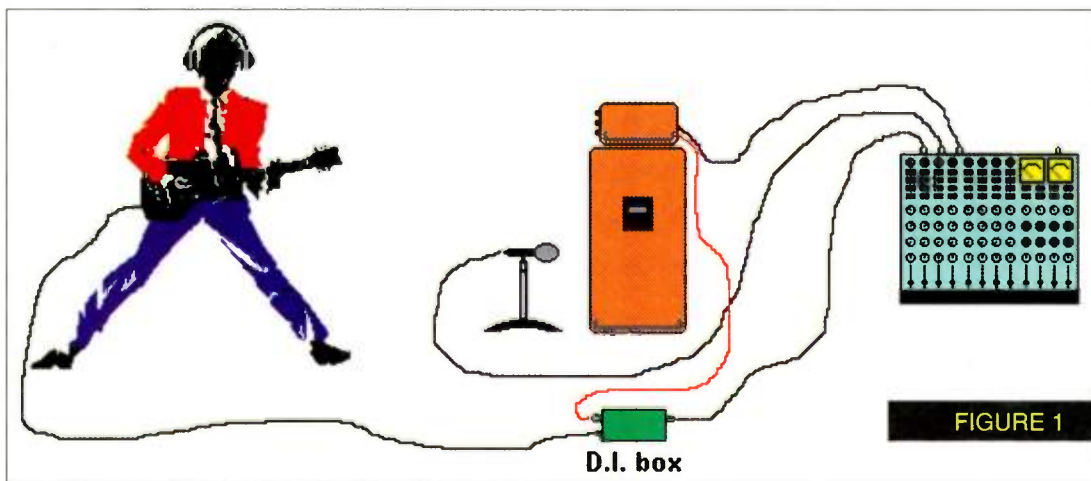


FIGURE 1

HEAD

Many of the newer amp heads have a provision for taking a line-level feed directly from their amplified output. This has the obvious advantage of adding in much of the distortion and dirt that's associated with tube amps. Often this feed will be

low-impedance, and newer amps make life a bit easier by providing a balanced, low-impedance output that can be jacked directly into the mic panel or console. Should this output be excessively noisy, you might want to insert a noise gate into its path to quiet it down a bit between riffs.

COMBO-CITY

Of course, you can feel free to mix and match any of the above combinations (such as mic-direct, direct-head, or mic-head). Each one will result in a different sound, and, as with any artistic choice, it's up to you to experiment to find the tone that best suits your or the particular musician's style.

THE BOOM ROOM

One of the oldest, cheapest and possibly best electric instrument effects box can be had by placing an amp out in the studio, cranking it up, and miking the room's natural reverberation. As I mentioned before, one simple method is to place another mic (preferably an omni) further away from the cabinet and (if you like) mix it in with another closely spaced mic. If the track has already been recorded, simply feed it out into the studio, garage, bathroom, or any room that has a "live" sound that you like, and record it to another track.

Almost all of the above techniques can be applied to the project studio. However, if you're short on space (or have complaining neighbors), you can take your trusty digital multitrack anywhere there's a couple of power plugs and cap-

ture the acoustics of a warehouse, stairwell, or music studio by playing the track back through an amp and recording it onto a free track. You might even want to try some unusual stunts, such as asking a live-sound buddy to jack the track into a stage setup and record the track during

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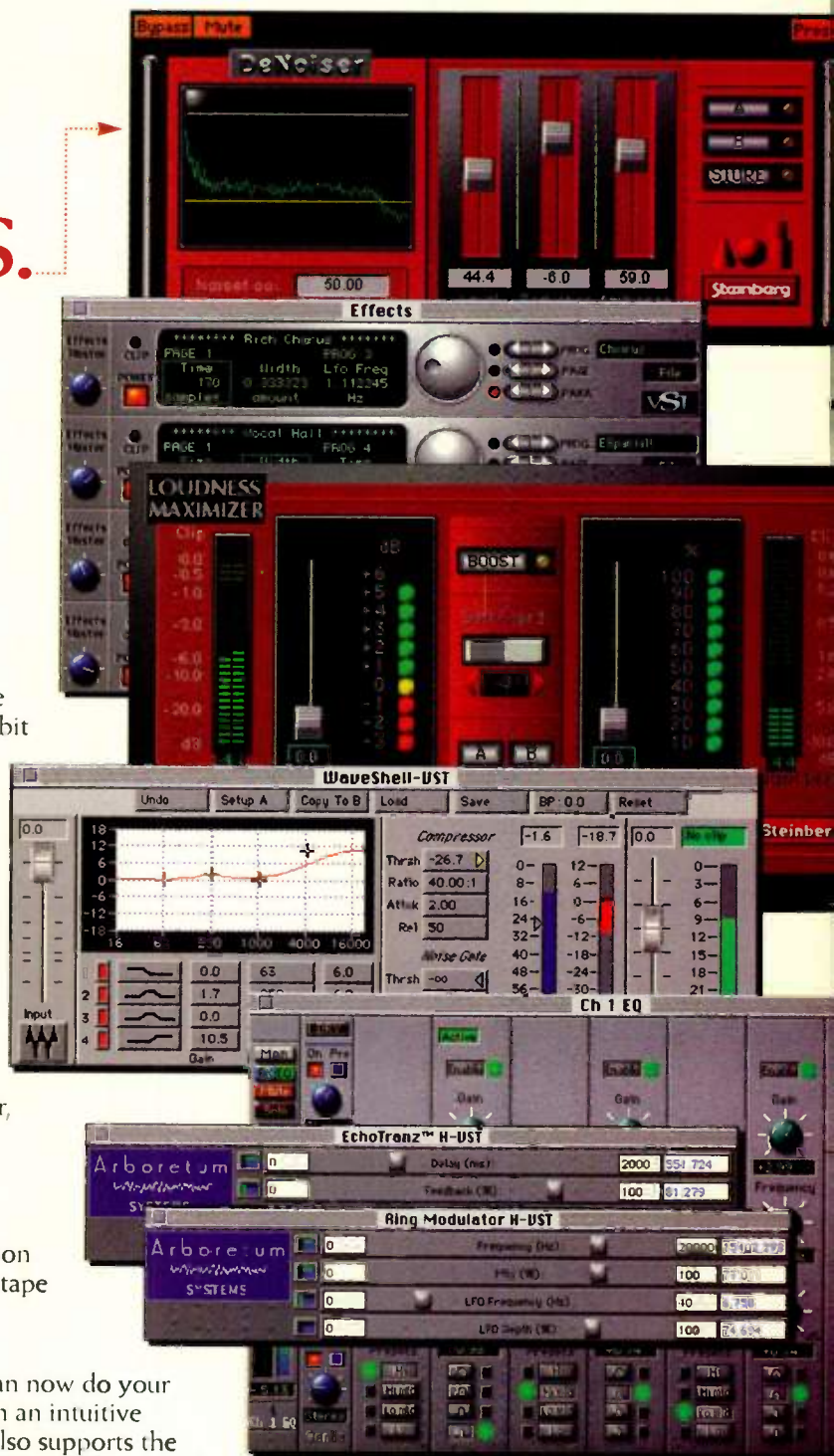
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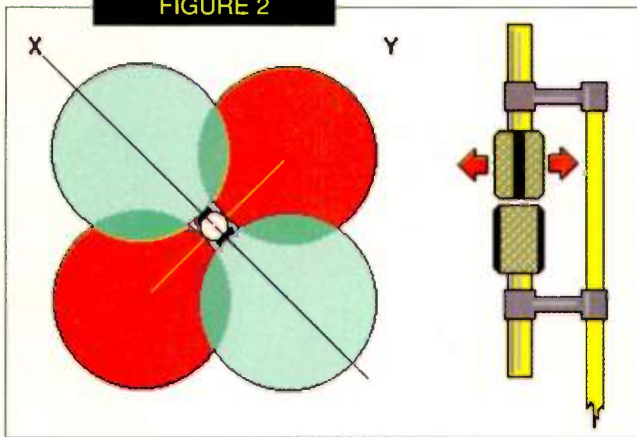
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FIGURE 2



a live audience soundcheck. Basically, the sky's the limit.

One of my favorite techniques for capturing the live ambience of a room uses the Blumlein XY stereo miking technique, which makes use of two condenser or ribbon mics set in a bidirectional pattern and placed in close proximity in a "crossed-X"

common characteristics of an electric guitar, electric bass, and upright bass instrument is the uneven volumes that can exist between one note and another. This will often contribute to notes getting lost in the mix or that will "wail" when you least expect or want it to. One of the best ways to smooth out this unevenness is to insert a

pattern (so that the elements are facing 90 degrees with respect to each other). By hard-panning the outputs of these mics left and right, you'll be guaranteed to get a killer stereo pickup that's truly hard to beat. See fig. 2.

SMOOTHIN' OUT THE BUMPS

One of the most

compressor into the signal chain.

It's important to remember that the role of a compressor is not to be heard, but to smooth out any volume differences (unless you mean to use it as an effect). When compressing an axe, a slight degree of compression at a 4:1 ratio will often suffice. However, you might want to increase this amount when recording a bass guitar or upright bass. Keep in mind that corrective signal processing (and I include EQ in this category) is used to overcome deficiencies or to change the sound to create a desired effect. If you have a great instrument, a good player and a good sound pickup, then you don't need to fiddle around with knobs and buttons to change it. Trust your own instincts to know what's right for you and your music. Experiment and have fun!

So that takes care of guitar miking tips, which was done for this special section. Next issue I'll have more non-instrument-specific miking tips designed for the project studio. **EQ**

ACOUSTIC GUITARS: MICROPHONE SELECTION

For studio recording of an acoustic guitar, start with a good medium cardioid or omni-directional microphone. Start with one mic placed in front of the strings close to where the body meets the neck about 6-to-12 inches away. A second mic positioned on the body of the instrument will allow you to add bass as desired in the mix. Alternatively, you can use a mic positioned behind the player, pointed at the back of the guitar, but be sure to invert the phase of this mic to avoid bass cancellations. Everyone has his favorite mics for studio guitar, but I like Neumann U64's, AKG 414's and Electro-Voice RE55's.

For live sound, the challenge is to get enough gain before feedback, so close miking is essential. I usually start with a Shure Beta 57 or SM81, although lately I've been using the Crown CM-700 with excellent results. Position the mike 4-to-6 inches away from the strings, and slightly in front of the sound hole.

MANDOLIN

This is similar to miking a guitar, except that there's no real bass output, so don't be tempted to add any in the mix. They have a rather "midrangey" sound to begin with by design, so be careful that microphones with a presence boost don't over do the midrange. I like to use a good condenser when possible, but have used a Sennheiser 441 on a number of live gigs and liked the results.

CHERANGO

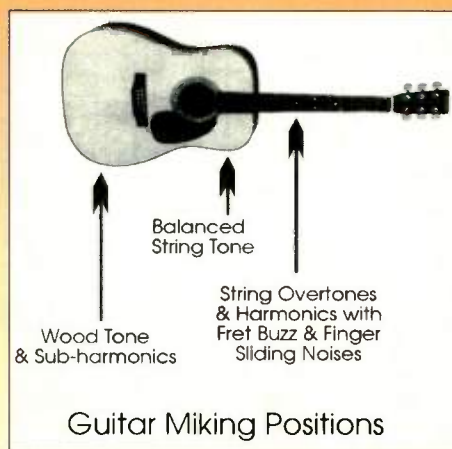
This is a South American guitar, with a body about the size of a mandolin, but with a full-size guitar neck. It's normally played with a fast strumming motion, making close microphone placement diffi-

cult, so a microphone with good "reach" is required. The Shure Beta 57 has been my first stage choice on several gigs with the midrange presence boost complementing the basic sound of the instrument.

PIANO

No, it's not a fretted acoustic instrument, but everyone needs help miking a piano, so here's some tips anyway.

There have been many books published on proper piano miking technique, so I won't try to embellish the subject here. But there is a contact pickup made by Barcus-Berry that mounts simply with contact tape and provides a great sound with excellent isolation from the room tone without microphones. Called the "Piano Pickup," it includes its own preamplifier with XLR and phono outputs. This is great for busy festival stages, where moving the piano can send expensive microphones crashing to the floor. I've even used it to record a pianist in a noisy street level office in downtown Baltimore with ambulances screaming by a mere 30 feet away, and it sounded very good — plus no siren pickup. Try *that* with a regular mic! Of course, adding a few mics over the piano in a classic X-Y stereo mode will allow you to add a little of each in a live situation. —Mike Sokol



Look for more acoustic miking tips from Mike Sokol in a future issue. Mike Sokol is a musician, audio engineer, and communications integrator. His book, *Sound Advice for the Acoustic Musician*, will be published by Prentice-Hall this fall. Contact him at jmsokol@intrepid.net or visit his Web site at www.soundav.com.

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World Radio History

10 Cool & Crazy Ideas For Recording Guitar

That are not by Don Was, but it's a really good picture, so...

BY MICHAEL ROSS

The history of pop recording is as much — or more — about the search for new sonic landscapes as it is about new music. There are only 12 notes, but the possibilities of tone are infinite. From Phil Spector's "Wall of Sound" to Garbage's "Wall of Samples," the music has changed little — catchy melodies, sung by cute girls — the textures tell the tale.

Recording standard "good" guitar tone isn't easy, but the techniques are well established. Unfortunately, after all your hard work what you end up with is a record that sounds like everybody else's. In this era of thousands of new releases every year, it tends to be the coolest, most off-the-wall sounding recordings that capture the

attention of the labels. (At least until they sign you. Then they try to make you sound like everybody else.)

I guarantee that if you suggest any of the following guitar recording procedures, someone is bound to look at you as if you are ready for the Ha Ha Hotel, but you won't care, 'cause you'll know you're cool.

1. Treat your electric like an acoustic. A technique used to great effect by guitarists from Buddy Holly, to Snakefinger, to yours truly. While laying down an electric rhythm part, mic the guitar as well as the amp. Even if you don't record it electrically, a solid body electric can provide a cool rhythm scrape that propels a track without murling it up.

2. Treat your acoustic like an electric. A favorite Daniel Lanois trick is to use a cheap magnetic sound hole pickup, play through a small tube amp, and mic it. Clean or distorted, it makes for a full, rich,

unusual sound that instantly yanks the track out of the humdrum.

3. Use oddball amps. Tiny amps, like the Marshall Mini Stacks or the old Roland 40-watt cube, can sound enormous in the studio. You can always tell everyone that you used a wall of Plexis, Boogies, Dumbles, and Showmen.

4. Use oddball guitars. In the studio, staying in tune and ease of playing over a long period of time are of less importance than when playing live. This opens up a whole new world of Kays, Teiscos, Hagstroms, etc. (a la David Lindley). John Jennings (Mary Chapin Carpenter, John Gorka) has been using the Martin Backpacker travel guitar for some interesting sounds on sessions. I started to hyperventilate when I found that

a transducer pickup on the tail piece of a Dan-electro Convertible produces a sound sort of like a resonator guitar



PHOTO BY EDWARD COLVER

GRATUITOUS DON WAS PHOTO: No, Mr. Was had nothing to do with this article, but he is cool and crazy, and is holding a guitar. Plus, Edward Colver shoots so many good shots that we never use and couldn't pass up the opportunity.

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5. Speaking of alternatives to electronic reverb, try tuning an acoustic to a chord containing the main notes of the song's key, placing it in front of an amp and miking it while you play a clean electric part through the amp. The acoustic will resonate sympathetically to the electric part for a positively unearthly effect.

6. Use the "wrong" mic. There are certain mics that conventional wisdom dictates you use to record guitars (i.e., Shure SM57 for loud electrics, sensitive condensers for acoustics). Throw that out the window. Use a Shure SM57 on your acoustic, and use a condenser on your electric (not too loud or you can damage the mic). This works especially well on overdubs to distinguish second guitar parts from the primary ones.

7. Don't be afraid of radical EQ. Record one crunch guitar with warm, fat, midrange tone, then overdub another with the low end and highs boosted, the midrange scooped out. Combined, they will reinforce one another for one huge mother of a rhythm sound. Even with one guitar, try weird EQ concepts. The sound, unpleasant by itself, might be just the thing in context with the other tracks.

8. Keyboards? You don't need no stinkin' keyboards — get loopy. If you need a pad, swell some overdriven, pitch-shifted notes into a sampler and use them as needed. You will find most tunes have one or more notes that will pedal through. And if it adds a sharp eleven or flatted ninth to some of the chords, so much the cooler!

9. Use just the effected sound, which is another Lanois/Eno trick. Eliminate the original signal and record just the delay or reverb for interesting ambient effects that sit nicely in their own sonic space.

10. Insert your ideas here. All these others are off the beaten path, but they have been done. Only you can come up with your own sounds. The only rule is: "There are no rules!" Forget about "good" sound — get weird. **EQ**

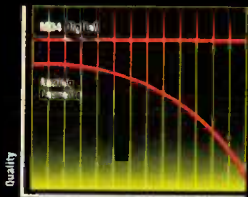
Michael Ross is a freelance writer/producer/guitarist living in San Francisco. He has written for Guitar Player, Guitar Shop, Acoustic Guitar, and Stereophile. He is the author of Getting Great Guitar Sounds (Hal Leonard Publishing). He offers just one rule, "If it sounds good — do it!"

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riety of parameters, including EQ boost/cut, tremolo speed, and depth, selected delay/chorus/reverb settings, and several others. You can't automate lots of parameters at once via MIDI continuous controller messages, although sys ex strings will do the job.

It's a little confusing to figure out which program change selects which sound of which bank, but at least there's a chart in the manual that correlates the two. Also, a program change message can select the tuner function...very handy if you have a remote footswitch and quickly need to touch up a string here and there.

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Having heard perhaps one too many guitarist jokes, Line 6 has gone out of their way to make this amp simple to use. Programming involves a matrix of 11 rows of 6 parameters; select the row with a switch, then twiddle the parameter with the corresponding knob. There are no calculator-style keypads or LCDs with hidden menus — everything is up front on the front panel.

There are several nice user interface touches. For example, the six programming knobs default to the main parameters you'd want to adjust on the fly: tone, drive, gain, and delay/reverb amount. Also, since as you change parameters the knob does not always correspond physically to the setting (for example, you may have turned a knob all the way down, but then you switch to a parameter that was programmed to be all the way up), an associated LED's brightness reflects the programmed value. Editing the parameter requires passing through the existing setting before you can change it. This ensures a smooth transition as you change parameter values, rather than having the parameter instantly "jump" to whatever the new knob setting might be. The 3-digit LED display is also handy for showing parameter settings.

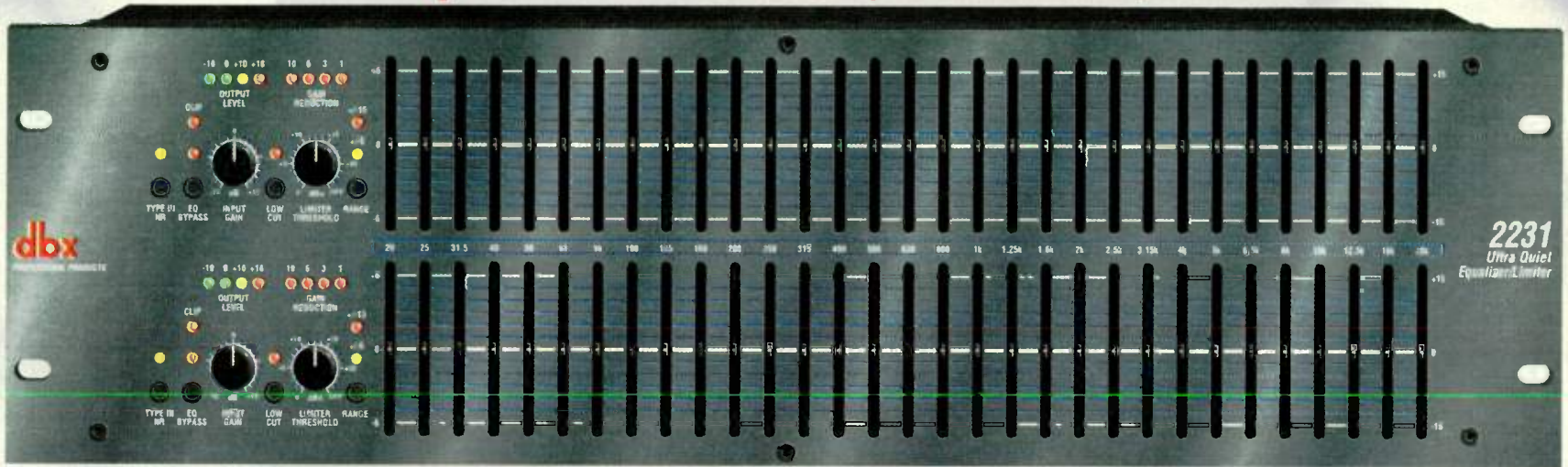
Another convenience feature is that you can set up the main programming knobs to affect all sounds globally. For example, suppose you start playing in an empty hall; you can pull back the treble a bit in *all* patches. As various carbon-based life forms file in and start to absorb high frequencies, you can goose the treble a bit to compensate. To top it all off, even the manual is good — and it's indexed.

THE BOTTOM LINE 6

Great sound, portability, direct out for recording, easy to use, really opens up if you crank it, 4x4 interface (i.e., you can still program the thing if it's 4 AM and you've had 4 beers), and MIDI. If you've never really warmed up to digital but hate replacing tubes, and are tired of hauling around a multieffects and an amp, this baby smokes. Major thumbs up. (One last tip: try putting a Minimoog through the 212. Don't say I didn't warn you.)

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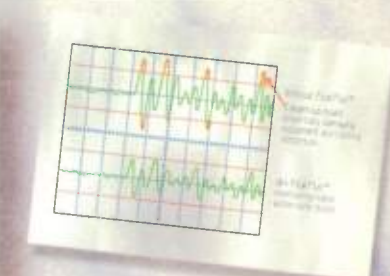
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Yamaha G50 Guitar MIDI Converter

MIDI guitar for guitarists who have given up MIDI guitar

BY CRAIG ANDERTON

Although MIDI guitar never fulfilled its hype of being "the next big thing," it has earned a cult following. Guitarists willing to endure some occasional frustration have been rewarded with a greater palette of timbres than signal processing could ever deliver. Not only that, a MIDI guitar can be a more expressive controller than a keyboard, and it's your passport to the world of sequencing.

MIDI guitar still isn't for everyone, but Yamaha's G50 has the tools — stable tracking and expressive options — that just might convince a lot more guitarists to add MIDI to their repertoire.

APPLIED RACKOLOGY

The G50 is a 1U rack box that works with a Yamaha G1D, Roland GK-2, or Axon hex pickup (extra credit to Yamaha and Axon for following the "Roland stan-

ard"). The front panel has a jack for the hex pickup's 13-pin round connector, a 3-digit LED readout, 8 programming buttons, and an on-off switch. A separate 1/4-inch mono jack accepts monophonic sound sources (voice, flute, single note guitar leads, etc.) and generates MIDI data — if you can hum, you can sequence.

The user interface is neither bogus nor fabulous, although it's not that crucial; once you tweak your setup, you're not going to program too much anyway. There's a helpful list of parameters screened on the front panel, although the buttons are black against a black background, and labeled in very small type. I'd like manufacturers in general to err on the side of legibility rather than aesthetics.

FEEDING TONE MODULES

The tone generator used with the G50 is important for both good sound and tracking; Yamaha has wisely included setups optimized for their MU50, MU80, VL70-m, and VL1-m (version 2) tone modules. I first played the G50 through these modules at a trade show, and, despite my weirdo playing style (thumb pick and fingers), it was definitely "plug and play." Using one of these boxes simplifies the setup process.

Overall, the tracking is surprisingly accurate and fast. Fig. 1 shows the guitar signal in the lower half, and the triggered MIDI sound in the upper half. The left side shows a 13.1 ms delay with low E, and the right side shows a 5.1 ms delay with an open 1st string (the tone generator's MIDI delay has been taken into account). These are very good specs — in fact, they approach the theoretical minimum required to detect one cycle of audio. Furthermore, any occasional glitches aren't the horrible squeaks and blorps usually associated with MIDI guitars; somehow, they manage to be much more polite.

The G50 also performed superbly with other synths I tried, including the Peavey Spectrum Synth, Ensoniq TS-10,

and Yamaha TX81Z. Paradoxically, though, this underlines the unit's only major gaffe: the manual fails to explain how to use the G50 with synths other than the recommended tone modules (contrary to popular opinion, tracking is just as dependent on proper synth settings as converter settings). With each of the "non-approved" synths, the tracking was terrible until I tweaked a few crucial parameters (legato mode, global pitch bend, and MIDI response), whereupon everything fell solidly into place. (For more information, read my article on tweaking tone modules for MIDI guitar in the March/April issue of *Music & Computers*.)

Moral of the story: if you're MIDI guitar newbie, use the recommended Yamaha modules. If you're a veteran, do a few basic tweaks and the G50 will likely work with any patches you've already developed for MIDI guitar.

COOL MIDI STUFF

The G50's 128 programs set up playing response, splits, string channel assign-

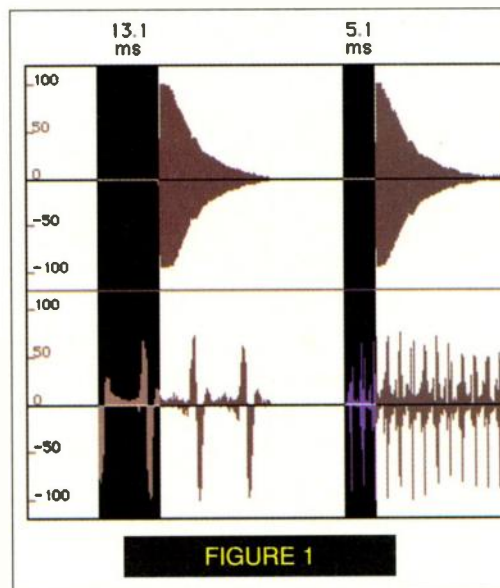


FIGURE 1

ments, and the like. (For real-time operation, the G1D hex pickup has two inc/dec buttons that can parallel the front panel inc/dec buttons, change programs, or shift octaves.)

A total of 25 parameters accommodate just about any playing style; for example, you can choose pick- or fin-



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RE: Bill R. demo

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APPLICATION: Convert electric guitar output to MIDI data.

SUMMARY: Yamaha has delivered a reasonably priced, no-excuses controller.

STRENGTHS: Setups included for various Yamaha synths help MIDIphobes; tracks very well, with minimal delay; compatible with Roland pickups and bass; cool real-time expressive control; mono mode works well with voice and other instruments.

WEAKNESSES: Superficial manual omits important interfacing info; front-panel buttons labeled with teeny-tiny type; no jack for standard expression pedal (requires MIDI pedal).

PRICE: G50, \$749.95; G1D guitar hex pickup, \$199.95 (bass pickup price TBA).

EQ FREE LIT. #: 125

ger-style playing (with bass, pick or slap), and set independent trigger levels for note on and note off. There are four options for dynamic range response (narrow, normal, wide, and a fixed value), and although you can choose a chromatic mode (quantizes pitch bend to half-steps), an "auto" option chooses chromatic mode when it senses a chord, and regular pitch bend for single notes. Very cool. Of course, there's also pitch bend range for matching your tone module's range (matching is crucial to proper operation).

Upon selecting a new program, it can send program change, program bank, volume, pan, and a fixed value for the two MIDI continuous controllers of your choice (or aftertouch) to the accompanying tone module.

The best part is the expressive control. You can specify a "string split" where different programs play on two different string groups, or a split based on picking position — that's right, pick closer to the bridge for one program, or closer to the neck for a different program. You can also assign a continuous controller to change value according to picking position and specify the high and low value limits. For example, suppose you want tremolo to increase to 75 percent of maximum as you approach the bridge, and drop back to 10 percent of maximum when you play closer to the neck: no problem. (If this feature sounds similar to the Axon guitar controllers, that's because Yamaha and Axon codeveloped the G50.)

Finally, the G50 can convert the guitar's amplitude envelope to MIDI data (auto-wah, anyone?), and there's a jack for a standard hold/sustain footswitch.

THE BOTTOM LINE

MIDI guitar has traditionally been temperamental, but the G50 gets around several limitations by providing customization options that tailor the tracking and response to your playing style. It can take a while to optimize everything, but then

you're ready to rock. The tight tracking is enough justification for this box; throw in the real-time control options, and you have a winner. It's not perfect — no MIDI guitar is — but while many guitar/synth combinations seem like a shotgun marriage, this feels a lot more like consenting adults.

If you're intrigued by MIDI guitar but haven't liked what you've played so far, give this box a serious audition (preferably with an MU80). It just might seduce you into a whole new world of guitar-controlled sound. **EQ**

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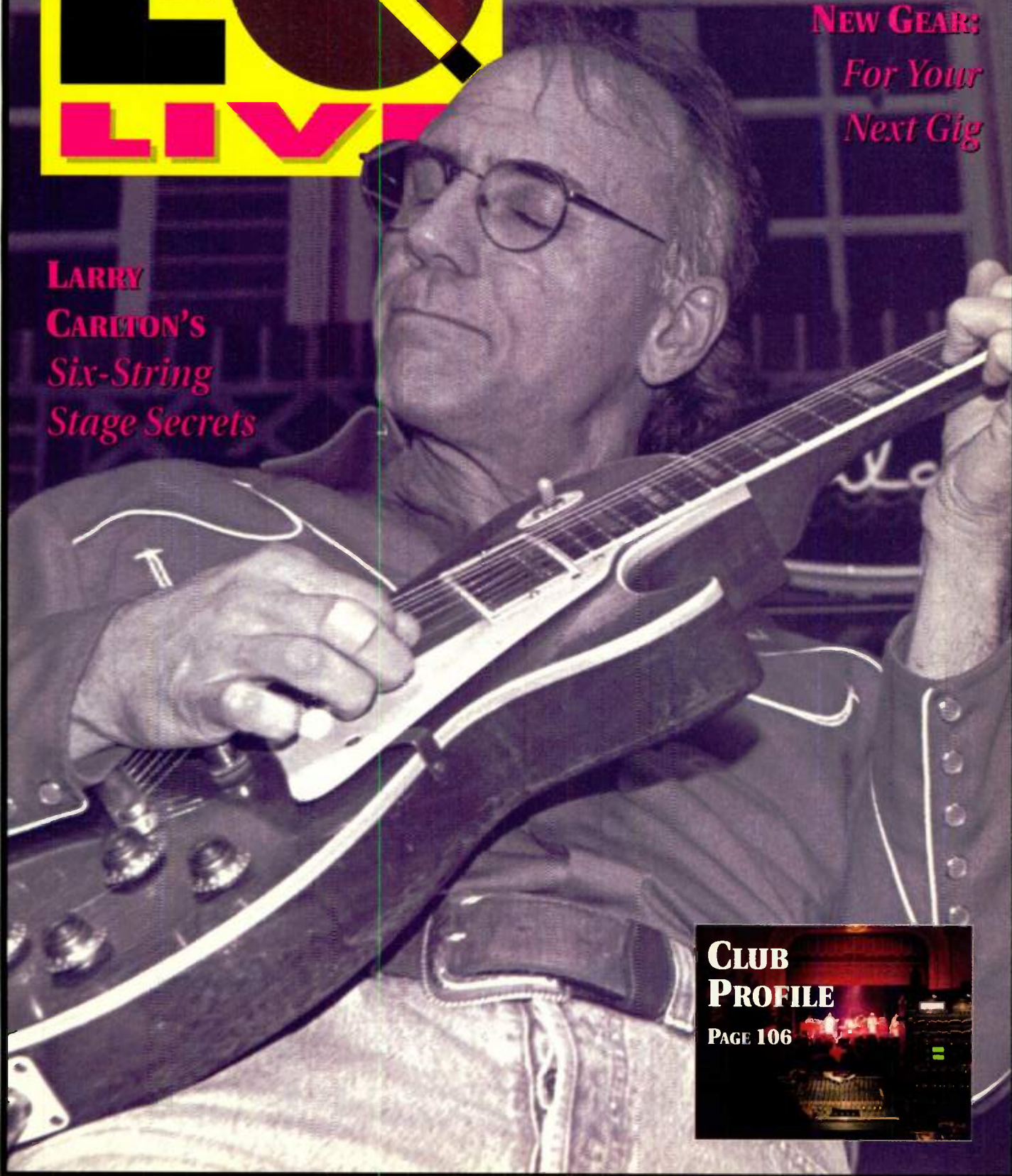
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**CLUB
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PAGE 106

THIS IS CARLTON, YOUR SHOWMAN

HOW I HELP
LARRY CARLTON
GET HIS
STAGE SOUND

By David
Rouze

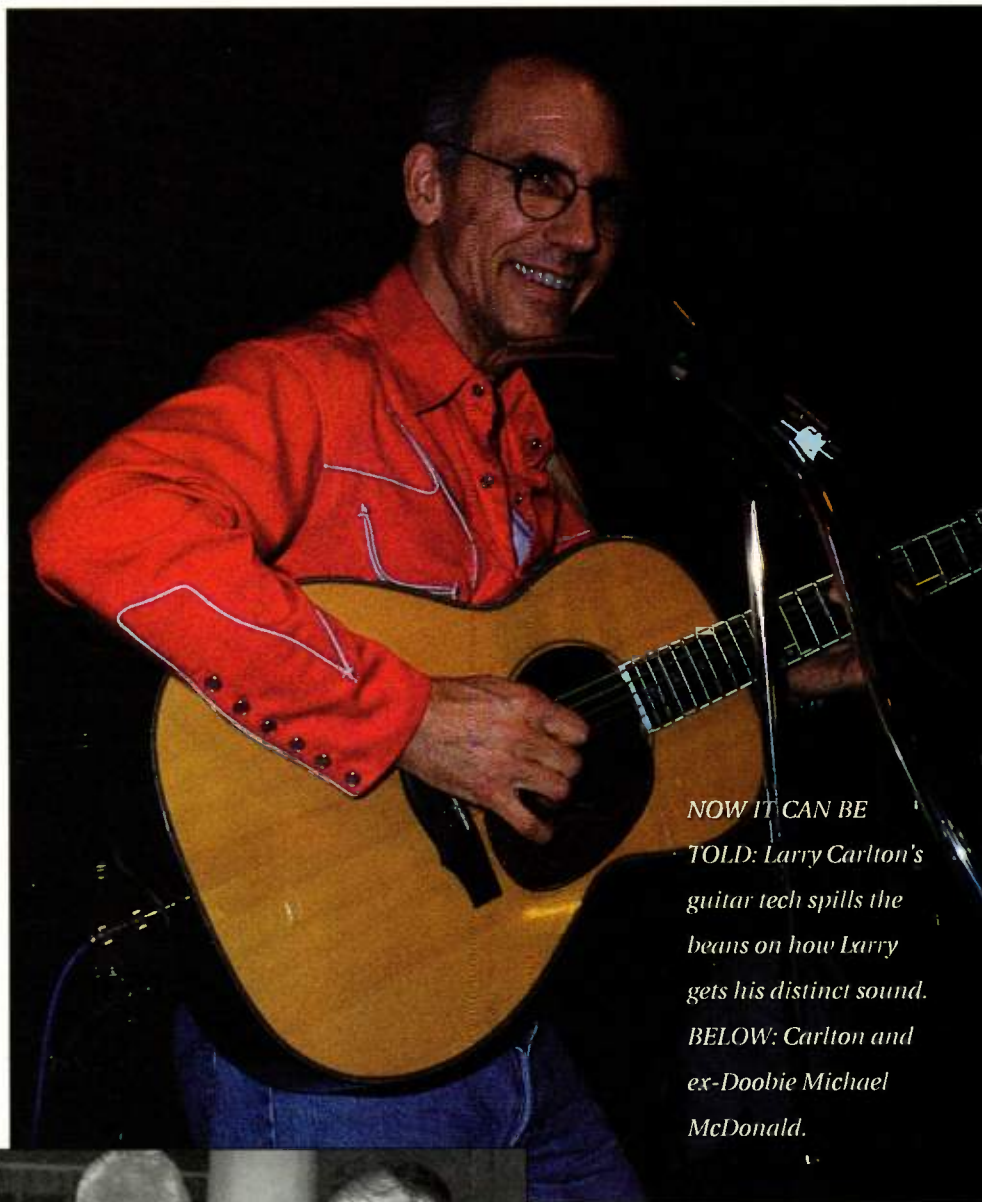
As Larry Carlton's guitar tech, people always ask me, "How can I sound like Larry?" Well, I am now going to reveal the secret: You can't. Forget it. Sell your gear and buy a motorcycle.

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NOW IT CAN BE TOLD: Larry Carlton's guitar tech spills the beans on how Larry gets his distinct sound. BELOW: Carlton and ex-Doobie Michael McDonald.



they sound amazing, but in ten years of using these amps the only breakdown I've ever experienced was when someone spilled a Coke into one of Larry's. They are also the only amps currently being made that go up in value after you purchase them.

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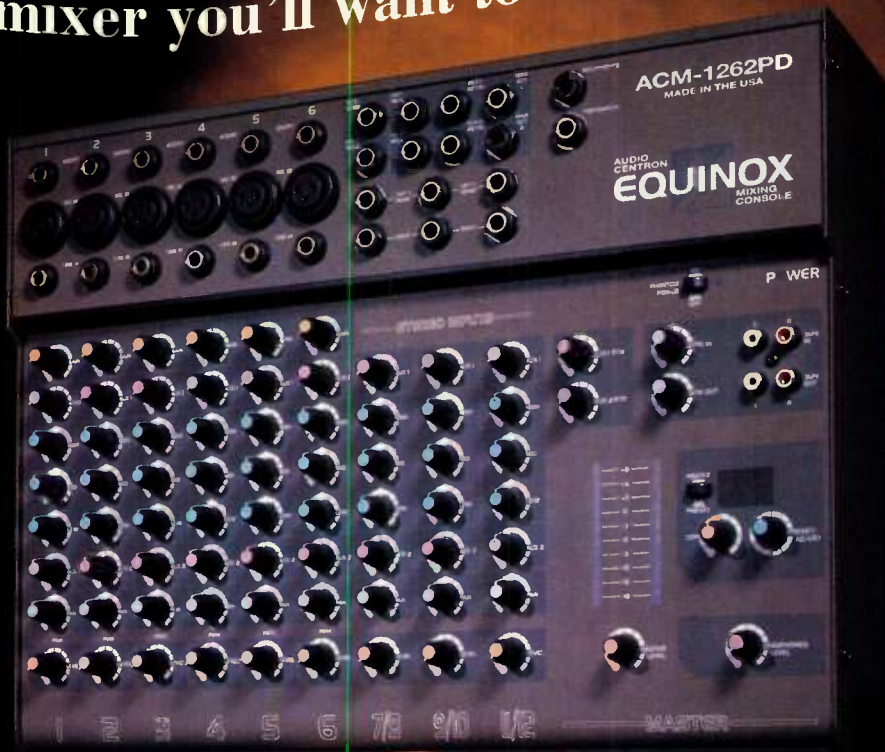
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le speaker cabinets, each containing an Electro-Voice EV-12L. This speaker cabinet is positioned in the center and produces a dry-only signal while the other two produce wet-only (effects) signals. These two are fed as follows: The external speaker out of the Dumble head goes to a load box that I built for Larry and contains a pile of used, spare pinball machine parts to cut the signal down to line level. It is then split and sent to feed four effect units. The first effects are two separate Roland SDE 3000 delays. This was a great unit when it was first made and still is today — if you can find them. Larry likes them for two reasons. The first reason is because of a function Roland calls “Playmate,” where you can tap in your delay time with a foot pedal. This is similar to the ‘Learn’ key on a TC Electronic 2290, and it is very cool. The second reason is due to a technique where you pan one delay left and the other delay right. On the right side add a bit of modulation set for slow speed and not much depth, which gives a nice stereo image. The next effect is an Alesis QuadraVerb. I try to set this up to sound like a spring reverb. It is simple to program, sounds good, and never breaks. Just set it and forget it.

Effect number four is a TC Electronic 1210 stereo chorus but the load box does not directly feed the input to the 1210. Instead, a fourth output from the load box feeds one unused channel of a Yamaha MV-802 mixer; on this channel the fader is set to Off (all the way down). Aux send one from the 802 — which is a prefader send — is connected to the input of the 1210. Now remember that the returns from both of the Roland SDE-3000’s and the Quadraverb are coming into the mixer on the other channels, so I can use aux send one on those channels to send the output from SDE-3000’s and the Quadraverb (i.e., the effected signals) into the chorus as well. The main stereo outputs of the MV-802 are patched into the left and right inputs of an Alesis R-100 power amp. This amp drives the left and right Dumble speaker cabinets while the main speaker output from the Dumble Overdrive Special

continued on page 135

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EQ CLUB PROFILE: TROCADERO CLUB

FROM OPERA TO
VAUDEVILLE TO BURLESQUE
TO ROCK 'N' ROLL,
THIS PHILLY HOT SPOT HAS
SEEN — AND HEARD
— IT ALL

By Steve La Cerra

.....
Somehow, putting a rock club into a room that used to be a burlesque theater seems like an appropriate thing to do — and so goes the heritage of the Trocadero Club. Located in Philadelphia, PA, the building that the Trocadero occupies is more than 100 years old and was originally designed as a 19th-century opera house. In addition to being a burlesque theater at one time, it was also a vaudeville theater (back in the day), as well as a movie theater in more contemporary days.

Sometime in the mid-'80s, the 1200-person capacity room became home to live music acts and has been a tour stop for club bands ever since. Seats have been removed from the floor area to allow plenty of space for slamming and moshing. On the second floor there is a balcony with seating available to patrons, and, in

a different area on this floor, there is actually another club-within-a-club up for local acts called — oddly enough — The Balcony (a second balcony on the third floor has remained closed for the past 60 years). Although the Trocadero may be an old room, it is not housing antiquated PA: the house and monitor systems were recently upgraded to include some slammin' gear, making national acts feel more at home in this excellent-sounding room.

OUT OF THE MUSEUM

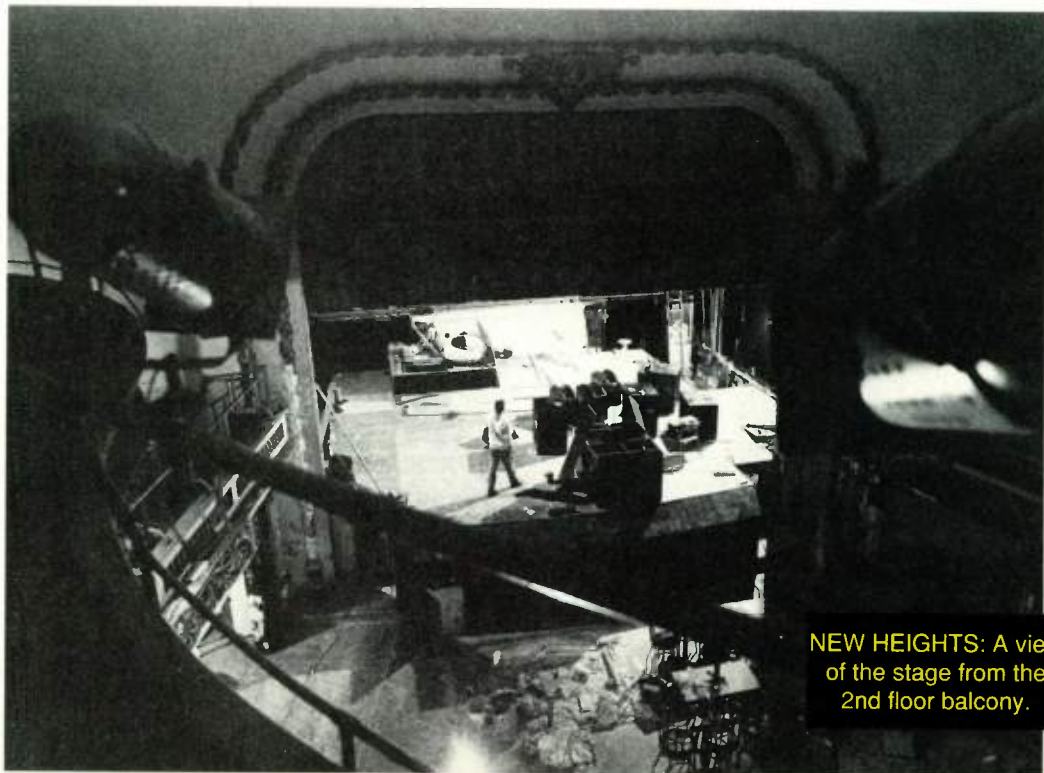
Equipment installation was supervised by Frank Silva of Music Museum (Pitman, NJ). The club formerly had a 32-channel Soundcraft Venue for the FOH console, but that's been updated to a 40-input Soundcraft K3. Silva explains that he and Trocadero house engineer Gary Ferenchak "wanted to be certain that the upgrades would be sufficient to handle any act that might come in. Gary has been here for the

past five or six years and he knows what the acts need there. We decided on the Theater version of the console, which includes fully parametric EQ — that seems to be the input of choice."

House mix position is in the center of the floor, in front of the balcony — not under the balcony. In monitorland there's a Soundcraft 400 console that had been thoroughly used and abused over its life. Rather than sending the 400 off to the silicon valley in the sky, Ferenchak and Silva decided to send it off to Bill Coe of Sluggo Audio (also in Philadelphia) for a complete refurbishment as well as some modifications. [See the sidebar for the full story on the modified 400.]

BOLTED BOTTOM

Engineers that have mixed at the Trocadero in the past will be happy to hear that the speaker complement is remaining essentially the same. Bottom end is handled by eight Electro-Voice T18's, four per side. To increase



NEW HEIGHTS: A view of the stage from the 2nd floor balcony.

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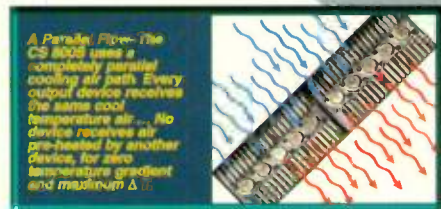
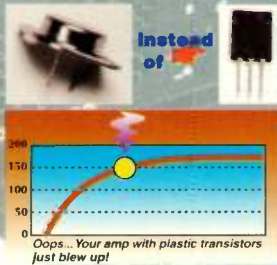
Popular wisdom says "don't change the recipe when you're making good biscuits." The reason the CS[®]800 has remained dominant for over twenty years is that we've only changed it a few times and when we did, we knew what to throw out and what to keep.

What to Keep

The new CS 800S uses metal (TO-3) power transistors, because plastic devices just don't deliver equivalent thermal performance.

While metal devices can be used right up to silicon junction failure, plastic devices degrade 50°C (90°F) sooner. This margin of "thermal headroom"

can be the difference between a really loud finale and something more final.



Books have been written about thermal management, but it all boils down to three things: air flow, heat sink area, and ΔT (the difference between the heat radiator and ambient air). The CS 800S uses a unique "parallel flow" heat sink alignment so every transistor receives the same cool temperature air for optimum ΔT .

With two variable-speed 32 CFM fans cooling hundreds of square inches of heat sink area, and metal (TO-3) power devices (in the air stream), the CS 800S will play very loud for very long (years - not minutes or seconds).

The audio amplifier section uses proven Class A/B ultra-linear complementary topology with several improvements that further reduce the distortion/noise floor even lower than the already "audiophile quality" CS[®] 800X (40 v/μsec, <0.03 % thd, etc.)

Very carefully!

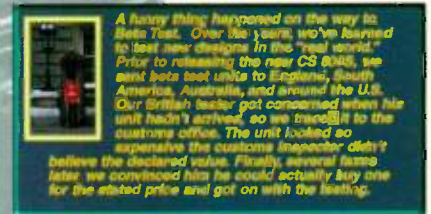
Our exclusive output circuit design (patents pending) completely compensates for amplifier output impedance. We conservatively spec damping factor at 1000 but it is only limited by component tolerance.

Modular inputs and outputs provide flexibility in configuring the CS 800S for your application. Binding post, or Speaker outputs, it's your call. A clever input circuit accepts anything from XLR balanced line level signals to single-ended speaker level signals. Caution: don't try this with a non-CS amplifier; speaker level input signals will fry most amps on the market today!

Plug-in crossover module—One of the benefits of 30+ years making sound systems is being able to look beyond last-best-line solutions for speaker crossovers. When you have intimate knowledge of how the drivers act and interact, you can correct much of their non-ideal performance. While a flat bandpass filter *looks* good on paper, flat combined responses out of the speakers *sounds* good. In this case, we chose to sound good rather than look good.

Note: we have other plug-in modules under development.

DDT™ - A fast-acting limiter, triggered by clipping or current limiting, which prevents speaker/equipment damage, is probably our most copied feature. Only Peavey Electronics offers "true" DDT. (U.S. Patent #4,318,053)



What to Change

The new CS 800S is two rack spaces high and weighs only 23.5 lbs! The CS800S wasn't lightened by using a smaller power transformer and fewer output devices on a "trick" heat sink. We used our years of digital and "switchmode" experience to develop an advanced high frequency power supply. More than just a replacement for the old heavy iron transformer, intelligent load and thermal sensing dynamically interact to provide more power, longer, and more reliably than previous approaches.

This, combined with our more than 30 years of experience building the most reliable solid-state amplifiers in the world, allowed us to redesign the whole amplifier from input to output, merging the best of the old with the best of the new to deliver 1,200 watts of superior performance without breaking your back or your pocketbook. The CS800 just keeps getting better!

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CIRCLE 41 ON FREE INFO CARD

THE STAGE IS SET:
A Soundcraft console
keeps things under
control.



power handling ability, the drivers in these cabinets will be upgraded to Electro-Voice EV-X80's.

Ferenchak has come up with a simple but clever way of coupling the PA's low-frequency output to the room. The bass cabinets on ei-

ther side of the stage are bolted together and then they are also bolted to the floor, giving the system maximum low-frequency efficiency as well as preventing the cabinets from moving around due to vibration. On top of the T18's are two custom-

made, JBL-loaded, double-12 midrange cabinets (per side), and high frequencies are handled by 2-inch Community horns on JBL drivers. Silva describes coverage in the room as, "Phenomenal. Low-end coverage in the room is killer, and high-end coverage is very good. Even large systems that people have brought in weren't as good as the house system. Gary has tweaked it over the years and really knows how to use this system."

For a room of this size, the amplification is quite healthy. All of the power amps for the triamped system are Crown Macro-Tech with two 5000's for the bottom end, two 2400's for the midrange, and two 600's for the high end. System crossover is handled through a BSS Omnidrive and the main house EQ curve is performed by that unit as well. At the FOH mix position is a BSS FCS-960 graphic equalizer for visiting engi-

A KILLER MOD

The Trocadero Club's monitor console is a Soundcraft 400B that has been modified for enhanced performance by Bill Coe of Sluggo Audio (suburban Philadelphia, PA). Here Bill describes what some of those modifications are:

This Soundcraft 400B has been doing heavy duty at the Troc for a long time, and is generally beat to hell. We estimate that it has done around 2000 shows. It's actually a 25-input console — someone stuffed an input channel into a blank space that was probably intended for an effects return. When I got the console, the noise was up around -35 dB with a swing of about 5 dB. There were noisy op amps and all sorts of little things that had to be traced down one at a time, so it sounded like the motion of the ocean!

Aside from a very thorough cleaning, I modified the ground scheme to a star ground and beefed up the power supply. The previous owner of the console had installed Jensen transformers on the outputs, so I left those in. I put in a regular screw-lug strip to make a nice 3-inch ground bus bar out of #10 solid wire. Then I used individual #20 wires to ground the input and output modules (one wire for each pair of modules), whereas the grounds from each module were originally daisy-chained together.

One of the nice things about this console is that there are individual wires (as opposed to ribbon cable), so it's easy enough to snip away the original ground wires coming out of the modules, bundle the new ones together, and run them off to the star ground. I also isolated the "virtual" ground point of the summing amps by cutting out the ground trace to those ICs and then making a separate return from the ground pin back to the star ground. This really helps to get rid of the crosstalk. Just for laughs, I doubled up on the power supply capacitance by adding a little board underneath the meter bridge with another 4000 µF per rail. Also, I added a solo LED simply because it was easy to do.

The console has a total of 10 outputs: eight auxes plus left and right mas-

ter outputs. When I got the board, the left and right outputs had actually been removed from the board by the previous owner, so I reinstated them. These were originally unbalanced outs, and (for whatever reasons) when he installed those Jensen transformers on the outputs, he neglected to do anything with the left and right outputs. These master outputs could be used for an additional two monitor mixes. When you are not in solo, the stereo mix is coming out of the cue output. So I added a switch to select either left or right output to cue, so that if the left and right outs are used for mixes 9 and 10 and you have one wedge, you can listen to one mix or the other.

Another neat thing is that, on the output panel, all the commons for the outputs are bussed together and have return back to the star ground through a switch. This allows you to lift all the output pin 1s simultaneously. Then all the shields for the inserts are bussed together and go through another switch, so rather than have zillions of ground-lift switches, you can lift ground on all the outputs at once or all the inserts at once — the concept being that if your amplifiers are in one rack and your EQs are in another, a grounding problem will probably be common to all devices in that rack. If anything bizarre is happening and you want to isolate it, you can flip all the grounds for the amp rack or the EQ rack with a single switch.

One other nifty modification for Soundcraft boards of the 200 or 400 vintage is at the mic preamp. There's an SIP resistor network with 4.7 kohms resistors in a little black or red, inline eight-pin resistor package. Those trash up the mic preamps horribly, so if you replace them with 1 percent metal film, 4.7 kohms resistors, you can drop the self-noise of the mic preamp by 2 dB. That's a very simple mod. You don't have to cut any traces or commit suicide with your soldering iron. If you can do it without creating any solder bridges, it's a quick way to quiet the board down. Now with everything on at nominal, the noise level is around -70 dB, which is a big improvement.

Bill Coe can be reached at Sluggo Audio at 609-359-5424.



neers to tweak to taste. A dbx 1060 limits overall system output to prevent any "accidents," while Behringer Multicomms and Autoquads and a PreSonus ACP-8 (which has eight channels of compression and gating) are available for channel insert patching as needed. Other toys at FOH include two TC Electronic M2000's and a Korg SDD2000 sam-

pling delay; eventually Frank and Gary plan to add another digital delay, possibly a Lexicon PCM42.

MONITORLAND

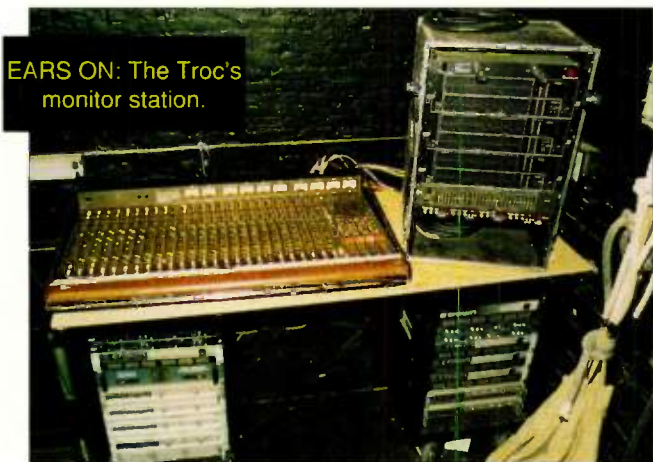
Tracy Stanton handles monitors and explains the stage mix situation: "The Soundcraft 400 that Bill Coe is modifying will allow us to have up to ten mixes. We're starting off with six

and we'll build up to eight later on. Wedges are JBL SR4706A's with one 15-inch and a 2-inch horn — we have three pairs of those. They only come in one design with the horns on the right of the cabinet, so we are changing three of them so that the horn is on the left side of the cabinet."

They plan to do this by removing the drivers and baffle board, turning the baffle over, and re-mounting the drivers. Then they'll move the cradle for the rear of the horn to the other side of the cabinet. This will give them mirror-image pairs for each wedge mix.

For the drum fill, Stanton uses two JBL SR4733's (each with two 15's and a 2-inch horn), "Texas headphone-style — one on either side of the drummer. It's a nice sounding, trapezoidal cabinet, and makes for a pretty slammin' drum fill." Mixes four and five are side fills with one JBL SR4726 (one 15 and a horn) and one JBL MR818 (single 18) per side. Both of these cabinets are trapezoidal so the 4726 sits firmly atop the MR818. Interestingly, every monitor on the stage has the same speaker and horn, which Tracy and Gary feel helps reduce the feedback situation.

Amplification to the monitors comes from Crown Micro-Tech



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1200's and 600's. Wedges are bi-amped using BSS crossovers, while the side fills are triamped using Rane AC22 crossovers. Tracy uses Rane GE60's for graphic EQ and has a total of eight EQs racked up. When they need the extra two mixes, they just rent a few wedges.

Tracy says that "about 1/4 to 1/3 of the bands come in with monitor engineers, but they'd rather bring a drum tech or guitar tech than a monitor engineer. Depending on the musicians, it can be really hard to deal with. Lots of people wear ear plugs and want to be able to hear normally with the plugs in, which really isn't going to happen." In addition to the monitor split, there is also a third, transformer-isolated split for recording, making it easy to just pull up a recording console and connect into the system.

Microphone selection at the Trocadero is meat-and-potatoes — Shure SM57's, 58's, and Beta 58's, Electro-Voice RE20 for kick, E-V308's, Shure Beta Green 4.0's for the hats and overheads, and Countryman DIs. Tracy says, "It's a real basic rig. If someone *has* to have a certain mic for guitars, they'll usually bring them along and a lot of engineers bring the ones that they really rely upon."

MIXING TIPS

Gary comments on mixing in the Trocadero: "It was designed for no PA, and you really can hear a pin drop from 100 feet — it is one of the most beautiful-sounding buildings I have ever been in. The room is almost shaped like a speaker horn with the stage at the throat and it gets wider and wider as you get further from the stage. When you touch a knob, you hear exactly what happens. It is super-clean and reacts at show time pretty much the way it did at soundcheck. You perceive a bit more low end when the room is full, but basically the sound is a little cleaner and tighter during the show. Listen to the PA first before you come in and flatten out the EQ. Oh, and don't park in front of the Troc after 4 PM or you'll get towed!"

EQ

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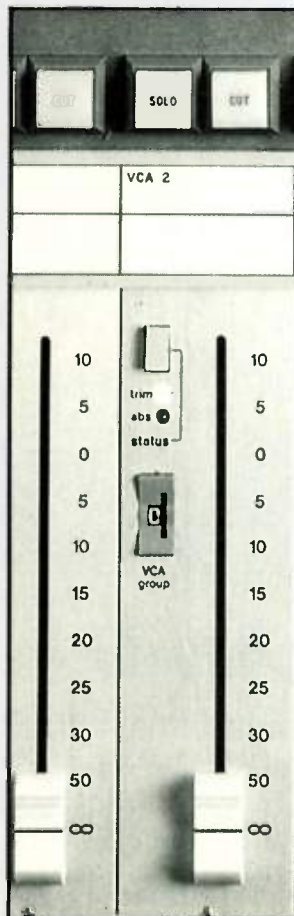
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Telex ProStar Series



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of the unit without compromising its thermal capability. The enclosure comes with three instrument inputs with individual level plus controls that eliminate the need for an additional mixer. The system features an XLR microphone input, a 4-band EQ, an effects loop, headphone jack, and

AHEAD OF THE PAK

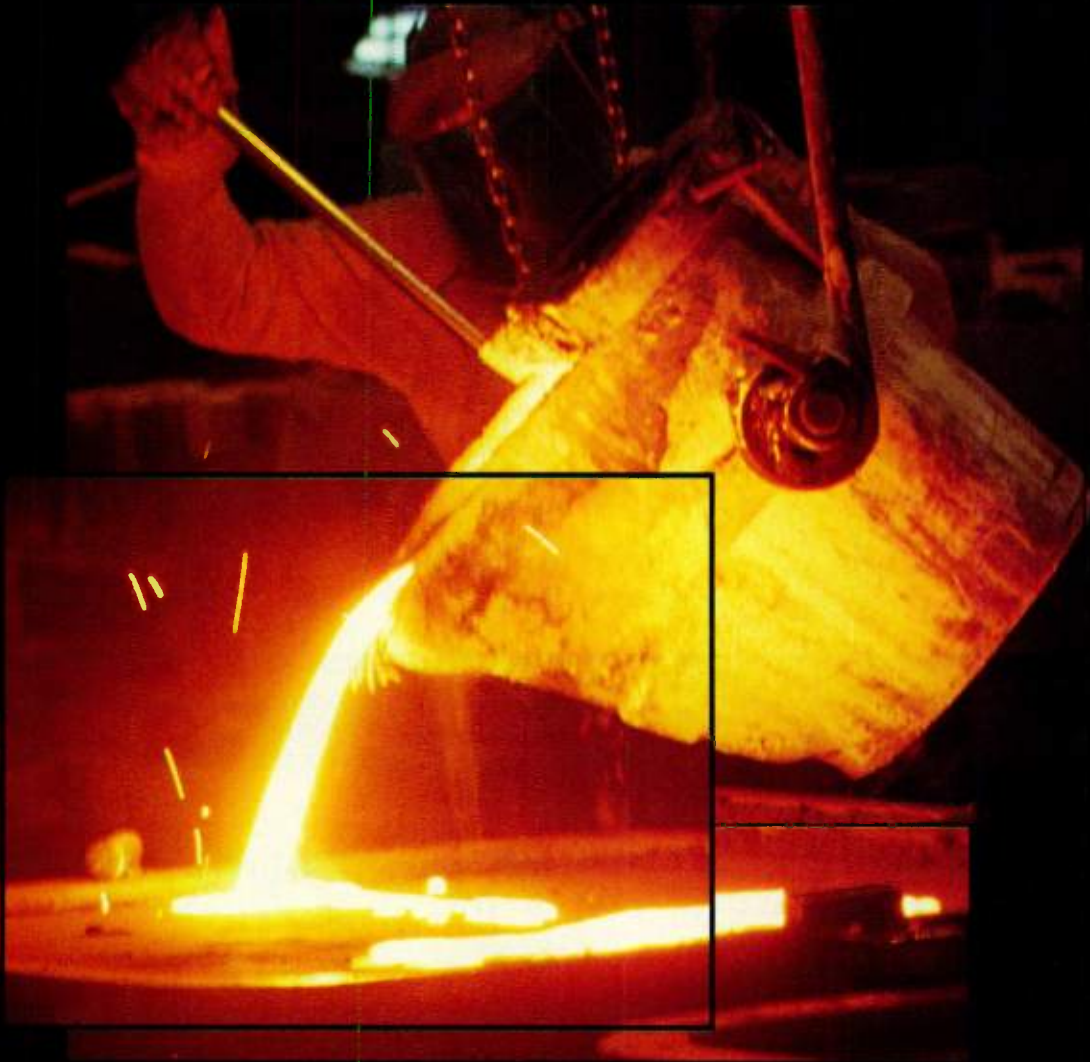
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JBL EON 15PAK

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Sound Forge Heats Up With ActiveMovie



Sound Forge 4.0, the award-winning digital sound editor for Windows, now supports ActiveMovie audio plug-ins. Sonic Foundry has selected ActiveMovie (a component of Microsoft's Interactive Media technology) as the foundation for the Sound Forge plug-in architecture. ActiveMovie plug-ins will be supported by a variety of audio software companies including Sonic Foundry and Waves.

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The new Servo 4120 4-channel power amplifier from Samson produces 120 watts per channel @ 4 ohms. The 4120 is a highly stable DC

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CIRCLE 72 ON FREE INFO CARD

TC Electronic Finalizer

Mastering in the project studio just got a little bit easier

What comes after project recording? Project mastering, of course — which is now economically feasible thanks to a new class of products. Although most are computer-based (e.g., software plug-ins for products like Sound Tools, Peak, and

+4 operating levels. A/D and D/A converters are both 20-bit.

PRESETS & MODULES

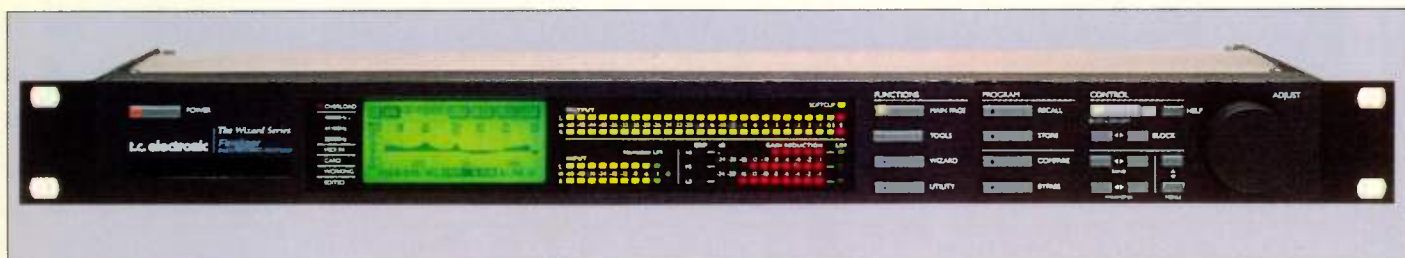
There are 25 ROM presets and 128 RAM presets, but the Finalizer accepts PCM-CIA memory cards (minimum 64K SRAM) for swapping presets with other users or expanding internal memory.

The EQ module offers a low shelf (20 Hz–5 kHz; 3, 6, 9, or 12 dB/octave slope), three parametric stages (20 Hz–20 kHz with variable bandwidth from 0.1–4 oc-

router or artificially wider), or de-esser with multiple parameters.

Normalization requires manual gain-setting, then checking to make sure there's no clipping (although the "Wizard" function, described later, helps automate the normalization process). There's built-in soft or hard limiting, and an indication of how many samples were clipped in the last second.

Multiband compression and expansion, while separate functions, are related. For example, the two variable



Sound Forge), TC Electronic has packed a bunch of mastering functions — 5-band EQ, lo-cut filter (2–200 Hz), 3-band limiting, normalization, de-essing, "tube emulation," stereo width expansion, 3-band compression, and 3-band expansion — into a compact, 1U box. Can it really make your 2-track file sound wonderful? If you know how to master, the answer is yes. Here's why.

UP FRONT (PANEL) AND PERSONAL

The front panel's most striking features are the LCD and various meters (10-step input meter, 26-step output meter, and 3 bands of 10-step gain reduction meters, all with some associated overload and limit indicator LEDs). Programming is the usual batch o' buttons for selecting functions, preset options (recall, store, compare, bypass), and edit parameters, along with a data wheel for parameter adjustment.

The rear panel has balanced XLR I/O (analog and AES/EBU), phono S/PDIF digital I/O, MIDI In/Out/Thru, footswitch/fader input, and IEC-compatible AC cord receptacle. AES/EBU, S/PDIF, and analog outs are available simultaneously, but the input can only be one of the three. The Finalizer supports sample rates of 32, 44.1, and 48 kHz; for analog, a switch selects between –10 and

taves), and high shelf (500 Hz–20 kHz, same slopes as low pass), all with ± 12 dB of gain. The eminently helpful display shows the approximate frequency response curve, and you can zero all settings by pushing two buttons.

The next processing block plugs in any of three options: a "digital radiance generator" that adds second harmonic distortion, stereo width adjuster (nar-

crossover frequencies that create the three bands are common to both functions, as is a defeatable "look-ahead" option that can analyze the signal either 1 or 10 ms before processing to allow for more accurate operation. There are the usual threshold, ratio, attack, and release controls; the compressor adds a level control for each band to adjust the spectral balance, and a "crest" function



LAB REPORT

MANUFACTURER: TC Electronic, 705-A Lakefield Rd., Westlake Village, CA 91361. Tel. 805-373-1828.

APPLICATION: Provides comprehensive, mastering-oriented signal processing for stereo analog or digital signals.

SUMMARY: If you need to prepare your 2-track recordings for entry into the real world, you'd be hard-pressed to do better than this.

STRENGTHS: Excellent sound quality; useful metering; processing functions handle all basic (and some not-so-basic) needs; good MIDI implementation; moron-proof display and user interface.

WEAKNESSES: No external word clock input; no mono switch to check how stereo mixes sound in mono; programmed fade curve can't be customized.

PRICE: \$2495

EQ FREE LIT. #: 134

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CIRCLE 100 ON FREE INFO CARD

that sets response to peak, RMS, or any degree in between the two.

The limiter restricts maximum levels while ignoring low-level signals. Parameters include threshold, attack, and release, but there's also a crossover option similar to the compressor, and soft/hard clip parameter that disposes of overshoot transients. If needed, a "digital ceiling" control can decrease the output by up to 0.01 dB (in 0.01 dB increments) to prevent overloading subsequent devices.

Lastly, the output section provides dithering to 8, 16 (S/PDIF default), 18, 20 (analog default), 22, or 24 bits (AES/EBU default; dithering is off). Analog output is variable from -16 dB to +6 dB. A fade in/out function provides a linear or convex log curve up to 60 seconds — initiate this manually, from MIDI, or with a footswitch or footpedal. You can also use an external fader or footpedal for level control.

In addition to the various processes, a "Tools" section comprises a meter that checks the phase relationship between two channels, a 1 kHz tone, "flow" meters that monitor levels at various points within the algorithm (helps isolate where any dis-

tortion might be occurring), a peak-hold meter, digital input signal display (shows whether pre-emphasis is on or off, number of bits received, copyright info, etc.), and a similar function for displaying the output signal characteristics, including copy flag enable/disable.

MIDI AND MR. WIZARD

Regarding MIDI functions (the only sketchy part of an otherwise excellent manual), program change commands can call up various presets, and virtually all of the processing-related parameters can transmit MIDI controller messages, or respond to them. (Note that MIDI controller numbers are not assignable.) This allows automated changes, and, with a few exceptions, the changes are smooth and clickless.

Finally, it's worth mentioning the "Wizard" function, which lets you set up basic criteria for EQ, compression, and

About the
only
competition
for this box
is a comput-
er-based
system

normalization; the Finalizer adjusts its parameters for the incoming source material. Also, some of the screens are set up with an additional "expert" screen for adjusting less commonly used parameters, and a front-panel "help" button round out the transparent user interface.

About the only competition for this box is a computer-based system running some pretty sophisticated software. The computer has the advantage of expandability, but it would be difficult to put together the same complement of features as the Finalizer; besides, the real-time control aspects — and overall convenience of a dedicated hardware box — are significant advantages.

For many mastering applications, a quality stereo parametric and stereo compressor is all you really need. But for truly sophisticated project mastering, the Finalizer is the right tool for the job. **EQ**

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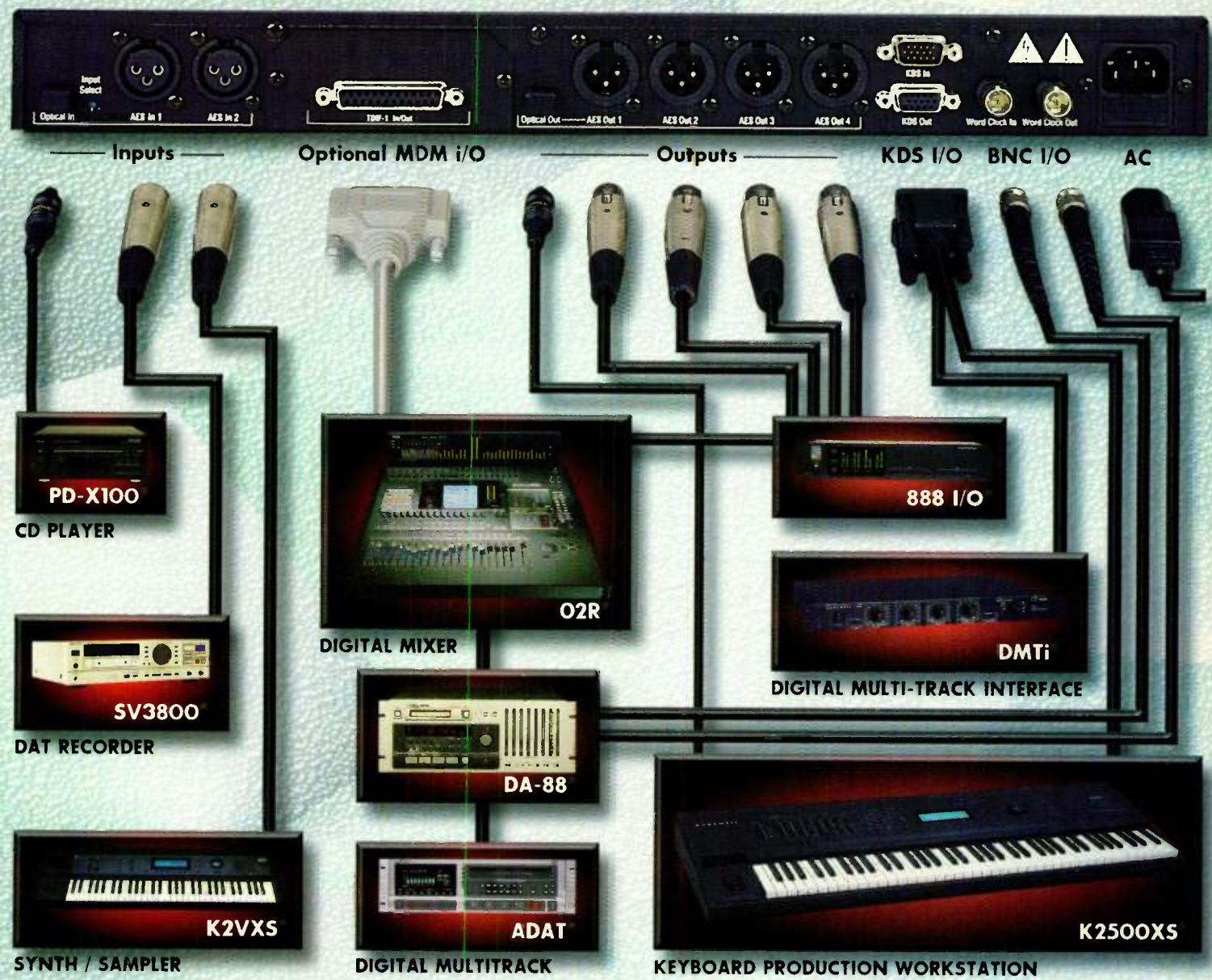
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The DMTi is a 1U rack module designed to be used as a stand alone digital signal format converter, digital patchbay, as well as for use interfacing Kurzweil's K2500 series production stations to popular MDM formats such as TDM, and ADAT formats found on MDMs produced by Sony, Tascam, Alesis, Fostex and others. The DMTi allows communication between Alesis Adat or Tascam DA-88 with their respective proprietary 8 channel digital formats and AES-EBU or SPDIF digital formats.

The DMTi was also designed to interface with Kurzweil's proprietary 8 channel digital protocol KDS-Kurzweil Digital Stream (offered as an upgradeable option for the K2500 series). The DMTi can perform sample rate conversion (in real time) on up to 4 stereo pairs of incoming digital data while acting as the master or slave clock; the DMTi can transmit 44.1K or 48K clock and can transmit or receive BNC word clock.

This device is well suited for use with popular digital mixers such as Yamaha's O2R, or Korg's Soundlink, or as a translation device from MDM to Digidesign's ProTools systems. The DMTi allows many different digital input formats to be user routed to a variety of digital output formats and sample rate converted. The Alesis and Tascam option cards are needed for conversion to and from these popular MDM formats. The DMTi can be seen and demonstrated at your local Kurzweil dealer.

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MTA Signature Series *Mic Preamp/EQ*

Malcom Toft takes his "Trident-true" EQ to a new level

Malcolm Toft, as the original founder of the console manufacturer Trident, has an impressive track record in desk design that he has continued with his company MTA (Malcolm Toft Associates).

Central to many of his creations have been highly regarded EQ sections, and this is something that has been built on with consoles like the MTA 980 Series.

The Signature Series 1U rackmount dual-channel mic preamp EQ is based on exactly the same circuitry as the 980 Series and aims to offer a couple of decent channels of processing for less than you might think. Each channel has a high-quality mic preamp with switchable phantom power and 4-band fully sweepable peaking EQ. Each channel also has inputs for mic and line provided

on Neutrik connectors that can handle balanced XLR or jack connectors in one socket; outputs are on XLRs. Construction is solid.

Gain is adjusted on a stepped pot for 60 dB on the switch-selectable mic and ± 20 dB on line inputs. The EQ has a bypass, runs with a Q of around 1.5, and offers ± 15 dB with reciprocal curves over the ranges of 1–15 kHz,

700 Hz–10 kHz, 150 Hz–2 kHz, and 40–650 Hz.

The preamp is very high quality, provides lots of headroom, and is fast. MTA, though, should consider including a peak LED, phase reverse, and the 980 console's 12 dB/octave 50 Hz high-pass filter in future models. The four bands of EQ are strong, dependable stuff and, like all decent equalizers, are able to add subtle lift and cut as well as the more extreme stuff. Classy and sweet are the words that spring to mind.

As on the 980 desk, the EQ impresses with a dependable and predictable response to the pots and an overall reluctance to want to turn harsh or nasty. The band ranges and overlaps are perhaps greater than some will be used to, but this becomes almost academic in practice as it all proves to be well balanced. There's a natural logic to it.

This is a very easy and satisfying EQ to operate with the exemplary LF (soggy-free bottom-end lift) and exciting HMF band worthy of special

mention. It's a sweetener's dream.

While the mic preamp performance and input versatility of the Signature Series cannot be challenged, the appeal of this box will be dictated by the sophistication of the console you're using already. If, when looking for an outboard EQ, you're expecting some tunable filters, maybe switchable or variable Q, and bell/shelf switching in the perimeter bands, then you won't find it here. However, what you will find is four really good basic bands that sound great and are pretty powerful all the same. Don't forget the mic preamps either.

Indeed, it's the price of the Signature that weighs strongly in its favor because there's not much to touch it for value versus performance.

It won't challenge SuperEQs for controllability, but it certainly puts a couple of channels of quality equalization and superb mic preamps within reach of those who, until now, have had to live without it. **EQ**

EQ LAB REPORT

MANUFACTURER: MTA (Malcolm Toft Associates), UK. Distributed in North America by David Michaels & Associates, 5060 Don Pio Dr., Woodland Hills, CA 91364. Tel: 818-888-2440.

APPLICATION: Project and commercial studios, post, live sound.

SUMMARY: Dual-channel mic preamp and 4-band EQ.

STRENGTHS: Good mic preamps; fine-sounding and deceptively versatile EQ section.

WEAKNESSES: No phase reverse, overload indicator, or high-pass filter; not crammed with EQ features.

PRICE: \$1176.38 (includes duty, shipping)

EQ FREE LIT. #: 135

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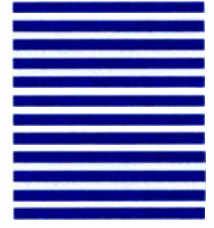
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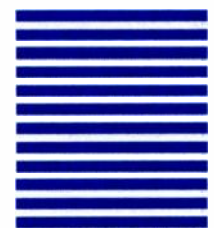
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73	Digital Audio Labs	90	612-772-5173	69	Rich Music	50	800-795-8493
98	DigiTech	91	801-566-8800	89	Rockford/Hafner	65	800-366-1619
80	Discount Distributors	97	516-563-8326	18-19	Roland	51	213-685-5141
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				110	West L.A. Music	59	310-477-1945
				14	Whirlwind	60	716-663-8820
				5, 41, 91, 127	Yamaha Pro Audio	61, 63, 94, 64	714-522-9011

Aphex 109 Parametric Equalizer



Aphex makes a new addition to its popular Tubessence line of signal processors

Aphex continues to expand its "Tubessence" signal processing line with a 2-channel, two-stages-per-channel, single-rack space parametric EQ (also configurable as mono 4-stage). The two channels are identical: each of their two stages has controls for boost/cut (± 15 dB), frequency, and bandwidth (0.2 to 2 octaves), as well as a useful "shape" button for peak or shelf response. However, one stage's frequency control goes from 20 Hz to 2 kHz, and the other from 200 Hz to 20 kHz. Each channel also has an input level control with associated clip LED and, on the rear panel, 1/4-inch phone balanced/unbalanced analog I/O, along with a $+4/-10$ switch.

There are also two "master" front-panel switches: mono 4-stage/dual 2-stage mode, and hardwired bypass that completely removes the EQ from the circuit. A wall wart supplies power, but extra credit to Aphex for including a rear-panel cutout for strain relief.

The complement of controls is

what you'd expect; the main attraction here is the Tubessence circuitry. The sound quality is great — clear, detailed, transparent, and sparkly without being strident. In fact, the 109 makes a great "signal warmer" if you zero all the boost/cut controls (which are detented) to effectively remove the EQ, and process your signal flat with a little bit of gain.

Also, the manual is excellent and includes useful background information on equalization, as well as loads of hookup diagrams and even suggested control settings for various types of program material.

GO CONFIGURE

Aphex was kind enough to lend me a schematic for analysis. The sound relies on a blend of solid-state op amp

stages and a very cleverly configured tube output stage, driving a standard transistor-based push-pull output. The approach is different from any

other hybrid design I've seen. You won't get that mondo-distorto tube sound — this is not a distortion box — but you will get a sound quality that joins the clarity of solid-state with the smoothness of tubes.

If you're in the market for a tube parametric, I'd recommend the 109 for general tone-shaping, as well as project mastering, in a heartbeat. **EQ**

Craig Anderton thinks that his daughter's laugh is one of the very few sounds that's better than a 1966 Telecaster.



You will get a sound that joins the clarity of solid-state with the smoothness of tubes.

EQ LAB REPORT

MANUFACTURER: Aphex, 11068 Randall St., Sun Valley, CA 91352. Tel: 818-767-2929.

APPLICATION: Precision tone control for stereo and mono signals, as well as for mastering stereo program material.

SUMMARY: Great sound at a reasonable price distinguishes an otherwise standard-issue signal processor.

STRENGTHS: Wonderful tonal quality; cost-effective; useable as 4-stage mono or 2-stage stereo unit; hardwired bypass; filter shelf/peak response option.

WEAKNESSES: Wall wart supply; no XLRs; no power switch.

PRICE: \$495

EQ FREE LIT. #: 136

BY CRAIG ANDERTON

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CIRCLE 18 ON FREE INFO CARD

World Radio History

Alea Systems CD-Blaster



Stock up on blank CDs — Alea makes CD duplicating easy

Alea Systems of Italy has produced an inexpensive stand-alone CD duplicator. [This product is distributed in North America by Microboards Technology, Inc.—Ed.] The basic model tested contained one Plextor 4X CD-ROM drive for reading the source disc and one Yamaha CDR-100 4X CD recorder for producing the destination disc. A built-in keyboard and a two-line LCD display are provided for entering commands and displaying results. SCSI connectors on the rear panel allow for direct connection of the internal CD-ROM and CD-R recorder to external computers. A 3 1/2-inch floppy drive is also provided for internal software updates.

BACKGROUND

There seems to be a quest to fill up every blank CD-R that is manufactured. Multimedia companies use them for testing CD-ROM titles and shipping demo copies of their latest creation. Mastering facilities use them as reference discs for producers and artists to listen at home before sending CD-R masters to the CD plant. Companies with a lot of data to archive use CD-R for backup. Photo labs use CD-R to store images for photographers.

When the first CD-ROMs became available in the mid '80s, it seemed that you could never produce enough data to fill up one CD-ROM. You could purchase an entire encyclopedia on a single CD-ROM.

CD recorders became available about 1988. The first widespread system was made by Yamaha and cost about \$50,000 with software. In order to write data to the CD, you needed to have a Sony PCM-1630 with 3/4-inch U-Matic (another \$50,000) that played back the CD master tape for transfer to CD. Blank discs cost \$85 each, and the record company was charged about \$300 for one CD copy of his master. We've come a long way, baby.

Now, with blank CD prices hovering around \$6 and three new CD-R production plants coming on line in the U.S. near the beginning of 1997, we should be in much better shape for obtaining blank media.

CD-BLASTER

With the CD-Blaster, you can place virtually any format of audio CD or CD-ROM in the source drive, place a blank CD-R in the record drive, press GO, and in a few minutes get an exact duplicate of your original. If you don't have a separate CD-R recorder, the CD-Blaster can be connected to your host computer via SCSI, and the Yamaha 4X recorder built into the CD Blaster can be used to create the master.

If you already own a CD-R recorder, then you have probably had the same problem that I do. You are probably using the same computer for editing your project and cutting your CDs. This means that when you need multiple copies of one project, you can't go on and prepare the next project until all of the CDs are cut.

If you buy a second CD-R recorder, then you have to buy another computer, another monitor, and software to cut the CDs. You then have to decide how you are going to transfer the data over to the other computer



LAB REPORT

MANUFACTURER: Alea Systems, Italy. Distributed by Microboards Technology, Inc., 1480 Park Road, Suite B, Chanhassen, MN 55317. Tel: 800-646-8881. Web site: www.Microboards.com.

PRICE: \$3795

EQ FREE LIT. #: 137

BY ROGER NICHOLS

How to buy your next reverb without listening to it.

The first criteria in choosing a reverb is always sound quality. Everyone claims they sound the best but **ONLY** the Yamaha REV500 has 32-bit internal processing and 20 bit A/D and D/A conversion. Everyone else has 24-bit or less processing and 16 or 18-bit conversion.

The difference between 32-bit and 24-bit is audible: 32-bit processing gives you significantly smoother decay so your reverb fades imperceptibly into "silence." The difference between 20-bit and 16/18-bit conversion is also dramatic; 20-bit A/D D/A means the REV500 is exceptionally quiet, eliminating noise in recordings and adding headroom in live applications.



Stereo professional +4dB/-10dB balanced inputs and outputs.

The second criteria is the actual effects—what are they and how do they sound? The REV500 includes 100 top quality halls, rooms, plates and special reverbs. These simulations of actual environments place your signal in "real" locations for unparalleled realism. And the REV500 also gives you 100 spaces to store your own settings.

The third criteria is the ease of accessing the effects. REV500 true stereo halls, rooms, plates and special reverbs are instantly recalled from the front panel. The REV500 has front panel controls for reverb time, pre-delay, high-frequency decay and early reflection level. If you want to change these settings, just turn that control and the LCD instantly shows a picture of what's happening. You can **see** what you're hearing.



If you want to hear it, too, only Yamaha has built-in drum samples so you can hear the effects without an external sound source. Just hit the "audition" button as you select and customize your effect.

The fourth criteria is price. Once again, the REV500 delivers like no one else: \$499 for a professional reverb. But if you'd rather pay more, you can buy the \$1299 Yamaha **ProR3** which has the same 32-bit engine and 20-bit A/D D/A with a keypad for calling up effects, two types of EQ and a gate which can be placed around any reverb.

Now that you know enough to buy the REV500 sight unseen, we recommend you go listen to it. The sound quality will



Large LCD display shows effect type, name and current settings.



Turn the reverb time control, see the reverb time displayed graphically.



Turn the HI-RATIO control, the REV500 instantly shows high frequency decay.

blow you away. Call (800) 937-7171 ext. 680 to find the Yamaha REV500 dealer nearest you.



YAMAHA
REV500
32-BIT DIGITAL REVERB

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CIRCLE 46 ON FREE INFO CARD

EQ IN REVIEW

to cut the CDs. The most efficient way would be to buy two Jaz drives and a bunch of blank media at \$100 each.

With the CD-Blaster, you cut the master CD, place it in the CD-ROM drive, tell the CD-Blaster how many copies you want, and then go back to editing the next project. Each time the CD-Blaster beeps, you insert another CD-R blank and it makes another copy.

FORMATS

The CD-Blaster [which fully supports Red Book] can duplicate just about anything you can throw at it, including:

- Mode 1: Single, Hybrid, Multisession, and Mixed Mode.
- CD-XA: Form 1 and Form 2, Single, Multisession, Mixed Mode, and Photo CD
- Philips, Goldstar, and Video-CD.
- CD-DA: Up to 99 track IDs, Emphasis and copy bits, ISRC, Catalog, Index 0, and Count Down.
- CD-Plus: Mode 1 and XA Mixed Modes.

Because of the internal SCSI pipeline architecture, it is possible for the CD-Blaster to make a direct copy from the source CD to the blank CD-R. The intelligent controller can determine if it is necessary to cache the source data to the internal hard disk before recording the new CD-R.

One scenario might be if the original disc contains scratches. In this case, the data may not be readable at 4X, so the source drive will slow down to 2X or 1X to make sure that the data is recovered accurately before the destination CD-R is burned. This data is spooled off to the hard disk and then transferred from there during the record cycle.

ADDITIONAL FEATURES

The CD-Blaster includes some utilities that add exponentially to its overall value. One such utility is the Track Validator. Data that has been written onto a CD-R is compared bit for bit with the data on the source CD-ROM. If you need to make multiple copies of CD-ROM data for distribution, validation of the copies is a must.

CD-DA discs cannot be validated because of the track configuration of audio CDs. This is a fault of the format, not of the CD-Blaster. Blocks that are set aside for error correction and block addressing in CD-ROMs are used for additional audio data on CD-DA discs, so audio data cannot be addressed as accurately.

Scan CD is another brilliant utility. The source CD TOC (Table Of Contents) is read, then all CD tracks are scanned to determine their real length, format, and block size. Any discrepancies are shown on the display. It is nice to be able to see what you are dealing with when faced with unknown formats.

COMMANDS

A quick overview of the available commands should round out our description of the CD-Blaster. All commands are entered by one or two keystrokes on the front-panel keyboard.

Blast CD creates a track-by-track copy of any multiformat CD, including audio tracks. This command takes advantage of the SCSI pipeline feature, making it the fastest way to copy Audio CDs or Mixed Mode CDs. The track-at-once process used adds two seconds between cuts. The TOC of the copy is not the same as the original CD. This method works well if you are copying a few tracks from each of many CDs. You can mark which tracks from the original to copy.

CD to CD Copy is a Disk-at-Once copy of the original CD. The time map of the original is guaranteed. Data tracks are duplicated on the fly or, if the source is marginal, the copy is made from the cache file.

View CD Track Descriptor allows the user to see all tracks on the source CD together with their format and length. The built-in TOC editor lets the user tag only the tracks to be copied and edit their format and their length.

ESC+D displays all Orange Book parameters present in the information area of the CD-R. This command is used to determine if there is any more room on the CD-R for another session.

INCLUDED SOFTWARE

The CD-Blaster comes with Red Roaster CD creation software. This is an excellent package for PC-based CD cutting. I was able to use Toast CD-DA and Toast CD-ROM Pro on a Mac to cut CDs with excellent results.

CONCLUSION

The CD-Blaster is an excellent machine and can save you a lot of time and hassle when you need to make multiple CDs of a project. The entire CD-Blaster costs less than what I paid for my Yamaha CDR-100 by itself one year ago.

Also available for more demanding applications is a CD-Blaster Plus that contains three CD-R recorders. [Note: The CD-Blaster II, which does not offer a standard internal drive, will be available by the time of this printing. This device can simultaneously drive up to four CD recorders and will, by this Summer, support Red Book standards. It will be priced, with SCSI MUX, at about \$7995. Microboards Technology will continue to offer full support of the CD-Blaster I.]

The CD-Blaster I had for review worked like a charm for three months without so much as a hiccup. Good work, Alea.

EQ

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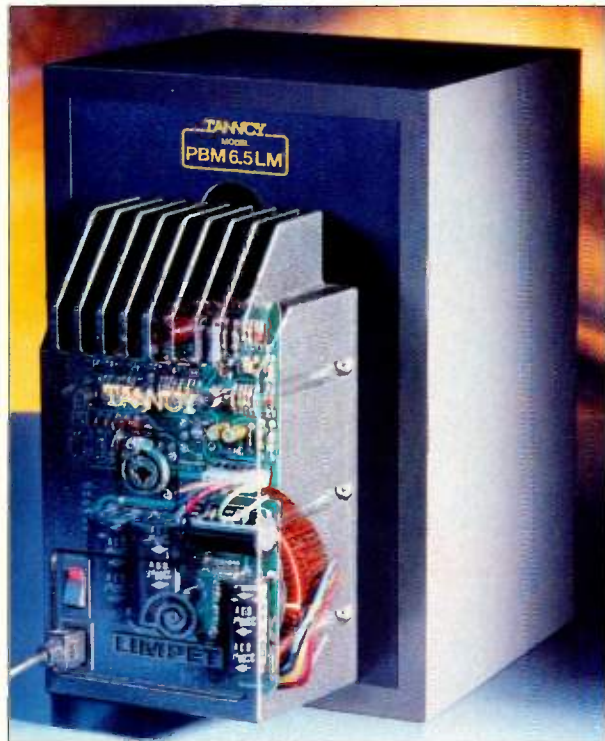


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World Radio History
CIRCLE 22 ON FREE INFO CARD

Tannoy Limpet Amplifier



Make your speakers powered ones with this add-on amp

The Limpet, named after the mollusk that clings to the rocks at the seaside, is specifically designed to cling to the back of a loudspeaker. Using screws instead of suction, the Limpet ensures the cable between the amp and speaker is as short as possible to realize the maximum potential damping factor. The cable running to the loudspeakers is a simple low-cost shielded pair of wires carrying a line level signal. No more need for using automotive jumper cables, welding cable or that hard to find 10-gauge, oxygen-free, low stress, highly-stranded, inverse-braided, low-capacitance, bi-directional, karma-aligned, low-inductance, mono-metal, bi-wire, laboratory-grade, copper loudspeaker cable. The cost savings alone could pay for the Limpet!

The unit is a nondescript, black high-pressure die-cast alloy box with heat-sink fins at the top. An internal toroidal power

transformer minimizes mechanical hum and the magnetic field around the unit. However, the unit is more susceptible to noise on the AC power line caused by nearby (SCR-type) lighting dimmers than many other amplifiers I have tested.

The single-channel Limpet has only two controls: power On/Off (beside the IEC power connector); and input sensitivity (0.5 V, 1.0 V, or 1.5 V) on the loudspeaker side of the unit near the output wiring. The input connection is a Neutrik Combo connector that combines an XLR and 1/4-inch phone jack into a single unit. The electronically balanced

input can be directly connected to the output of the mixer and allows your nearfields to become very portable. A nominal line input level between -10 dBV and +4 dBm is plenty to drive the amplifier to full power. Tannoy expects the user to be careful and therefore does not include any forms of limiting or protection within the amplifier design. (An amplifier mounted directly to the loudspeaker is less likely to experience a shorted output than one mounted in a rack some distance from the drivers.)

Installation is a simple matter of connecting the captive output wires to the loudspeaker and then bolting or screwing the Limpet to the back of the loudspeaker cabinet. Tannoy System 800 and 600 loudspeakers include pre-drilled holes to accommodate the Limpet, while the PBM series can include an installed Limpet as an option. Other loudspeakers should be examined to ensure that the mounting screws will not interfere with internal wiring, crossovers or driver. The unit can power loudspeakers of medium efficiency (90 to 95 dB 1W/1m) with very good results.

The Limpet will compete with the sound quality of all but extreme high-end studio amplifiers, so it will easily substitute for lesser units and provide audible improvements in quality and the ultimate in

MANUFACTURERS SPECIFICATIONS

Frequency Response:	20 Hz to 20 kHz
Output Power:	100 watts continuous (into a 4 ohm load) 150 watts peak
TMD + Noise:	0.05%
Signal-To-Noise Ratio:	100 dB
Input:	XLR and 1/4 inch phone jack combo
Weight:	12 lb. (5 kg)
Dimensions:	24 cm (H) X 14 cm (W) X 9 cm (D) [9.5" (H) X 5.5" (W) X 3.5" (D)]

stereo separation. Simplicity has its charms, and the Limpet is simple, practical, and sounds good. There is also the added bonus of freeing up some rack space and returning those jumper cables to the trunk of your car. **EQ**



LAB REPORT

MANUFACTURER: Tannoy/TGI North America, 300 Gage Avenue, Kitchener, ON, Canada N2M 2C4. Tel: 519-745-1158.

APPLICATIONS: Add-on amplifier for nearfield monitors.

SUMMARY: A good amp that ought to lighten your rack somewhat.

STRENGTHS: Easy to use and install; good quality.

WEAKNESSES: Susceptible to lighting dimmer noise; no limiting or protection circuitry.

LIST PRICE: \$349

EQ FREE LIT. #: 138

BY WADE MCGREGOR

Sample CD *Reviews*

More sample CDs
to add to your growing
arsenal of sounds

BY TONA OHAMA

L.A. RIOT VOL. 1

Musical Style: Hip hop, rap. **Format:** A library of 1000 samples, mostly setups of drum loops plus scratches, organized by DJ and BPM. **Best Feature:** Six different DJs give you their beats. **Limitations:** Not a lot of programming, but this disc was meant to be customized. **Bottom Line:** A great drum loop resource. Hollywood Edge/Ensoniq. 244.6 MB. \$199.95.

L.A. RIOT VOL. 2

Musical Style: Hip hop, rap. **Format:** About 100 music construction setups 75-93 BPM, each with drum loops, bass and lead samples, and voices. **Best Feature:** Lots of funky guitar samples, plus drum machine samples of LINN 9000, Roland TR-909, TR-808, E-mu SP-1200, and others. **Limitations:** No key velocity or layering in presets (not even in the drum machines). **Bottom Line:** Really great grooves with lots of character (variable recording quality) all set up ready to build song foundations. Hollywood Edge/Ensoniq. 398.5 MB. \$199.95.

ANALOG DIGITAL SYNTH RESOURCE

Musical Style: General purpose. **Format:** Multisample synthesizer setups, plus some drum kits. **Best Feature:** Sourced from a wide variety of synths: ARP Avatar™, Oberheim Xpander, Korg Wavestation™, MiniMoog, Prophet, DX, CZ, and many

more. Lots of classic sounds plus some very nice layers and blends. All sounds are Direct Macro accessible and fully programmed (many with pressure). **Bottom Line:** A well-rounded collection of synthesizer samples. Ensoniq. 240.9 MB. \$199.95.

DJ JAZZY JEFF/A TOUCH OF JAZZ

Musical Style: Hip hop, rap. **Format:** Song construction setups mostly comprising of drums or loops, bass/keys instrument, and scratches, with the focus on scratches. **Best Feature:** The large collection drum "slices" (individual drum samples snipped from the loops) that contain lots of "surrounding" audio, making each drum sample very unique. **Bottom Line:** A great foundation for rap/hip hop. Ensoniq Signature Series. \$249.95.

CHICAGO

Musical Style: Pop rock. **Format:** Loops and individual samples of vocals, brass, guitars, bass, percussion, and organ. **Best Feature:** Samples are supplied as "instruments" (single notes mapped to a keyboard) and "performances" (longer samples of loops and licks). Most of the samples are quite long. **Bottom Line:** It's as close to Chicago as a single sample CD is gonna be. Ensoniq Signature Series. 610 MB. \$249.95.

Contacts: Ensoniq Corp.; Tel: 610-647-3930. Hollywood Edge; Tel: 800-292-3755/213-466-6723. Note: Sample CDs are sometimes available only through the distributor, rather than the manufacturer, of the product



Studer MicValve *Mic Preamp*

A tube processor with digital outputs — the best of both worlds

Representing something of a departure for the Studer clan, its range of outboard mic processors is capped by the gloriously esoteric MicValve. Here is a box that takes established ideas about tubes in outboard and shakes them out. It's a dual-channel mic preamp



with line capability that can address balanced analog or digital outputs, and, in the case of the latter, it's neat by offering ADAT or TDIF (ADAT or DA-88) interface options for routing inputs to any of these eight channels. It's a cosmetic delight finished in the now-traditional combo of silver and burgundy with the tubes glowing behind a front panel window supported by superb feel pots and switches.

Each channel's controls are identical in coarse and fine gain controls for the mic and line inputs, the Valve Dignifier stage of Bass Warmth, "Angel Zoom" (you read it right), and Valve Drive sections plus line output control and bargraph peak hold metering. Each channel also has six buttons for switching in the valve stage, phantom power, 75 Hz-12 dB/octave high-pass filter, routing, phase reverse, and insert. Inserts have XLRs for the send and return legs and can be sourced pre or post the tube stage. The output section selects the word length on the digital output for 20-bit, 16-bit with dithering, and 16-bit with noise shaping, while a Sync button selects a variety of digital synchronization possibilities. The converter stage can be protected by a Soft Clip switch. Back panel connectors are completed by word clock In and Out,

AES/EBU IO, and the optional sockets for ADAT optical or TDIF.

The front end of the MicValve is solid state with the tubes effectively spread across the signal as a means of enhancing it, although they can be bypassed. What a job it does. The Bass Warmth section solids up the low end and is quite subtle. Leave it in to get used to it, then take it away and a whole chunk drops off. Nice. However, you want to keep both sections set identically on stereo program, as it can

want to get dirty, but I hasten to add we're talking added richness, not filth.

What's interesting is how you can balance the pots against each other and against the input level; it's infinitely variable. There's a very high level of "band" interaction, and it's surprising how subtle and strident you can get. It's superbly quiet.

This is a good box on line signals, but it is stupendous on mic signals. I'll go so far as to say it's the best tube-style preamp I've heard. It's the closest I've heard any box get to replicating tube mic character because of the amount of tube parameter control. Single gain pot to output tube preamps sound a little undignified by comparison.

Now the MicValve isn't cheap, but it's a damn good signal path for line signals and mics that would be particularly invaluable if you work with digital 8-tracks. Unless you're intending to track more than two tracks simultaneously, you can pass everything through it, insert quality outboard EQ and processing, and then route directly to any of the tracks digitally via the interface. You'll then be able to process your final mix through it and go out to 16-bit or better digitally.

If you can discipline yourself enough to scrape together the cash to buy only this one box with tubes in it, then you'd be guaranteed an extremely high level of usage from your investment. Use it on absolutely everything and place it in the most prominent place in your system. **EQ**

interfere with imaging.

The funkily entitled Angel Zoom section acts as a type of presence mid lift that works in conjunction with a slight associated roll off at the top end. You won't hear this on everything, but the wider the bandwidth of the source the more apparent the effect — but it's still subtle even so.

Finally we hit the Valve Drive section with pots for the gain — what you would expect, but still no Marshall head — and Clip, which sweeps the harmonic content. This is the section to concentrate on if you

EQ LAB REPORT

MANUFACTURER: Studer Professional Audio, 1449 Donelson Pike, Nashville, TN 37210. Tel: 615-399-2199.

APPLICATION: Project and commercial studios, postproduction.

SUMMARY: High-quality, dual-mic preamp with tubes offering extensive control over tube sound shaping, plus digital outputs.

STRENGTHS: Wonderful sound; great variability of tube character; remarkably flexible by virtue of processing mic and line inputs to digital outputs.

WEAKNESSES: Expensive — but you could still do with one.

PRICE: \$4950

EQ FREE LIT. #: 139

BY ZENON SCHOEPE

SNAKE SABO'S ROOM

continued from page 58

connectors in the studio. We have five Mackie 1202's and a 1604 (for the drummer), all with DL-to-1/4-inch harnesses, so it's one connection. Each band member gets his own Mackie and he can decide what he wants and how he wants to mix it."

Snake actually got the idea from Nikki Sixx's studio: "You have complete control over the levels in your own headphone mix, so you are not sitting there going, 'Mike, I need this, Mike I need that.' Plus, Mike doesn't ask for a gun. On every record that we've done it's taken hours to get the right vibe in the headphones. It's an essential part of playing live — you have to be comfortable before you can play your best."

YIN VS. YANG

In addition to the technical concerns handed over to Mike and the crew, there was also the issue of vibe. Snake wanted the studio "to be a place that I could hang out in. In the past we have worked in studios that are beautiful, but if you're not in either the control room or the live room there is nothing going on. I knew that would be solved by the lounge and by the fact that I live here, so I can go anywhere! Also it had to be comfortable as far as the tones of the wood and the aesthetics. To me, the cosmetics were as important as anything in creating the vibe. I want to be able to sit down and crank out the heaviest riffs, but then be able to turn the lights down, play my acoustic, and still feel as comfortable. I wanted the room to feel cool and so far that has been the case."

Mike notes, "We did have a challenge in reconciling that with the technical part. Acoustically you want it to be the best and aesthetically you want it to be the best. So we had the two little cartoon guys over each shoulder — one going 'gotta make it sound right' and the other going 'gotta make the vibe right!' We had to split the difference, and Joey helped with a killer job. I'm happy with the way it turned out." Snake says that the studio is continually evolving — they plan to convert an outdoor deck into an iso booth, giving them another acoustic space to utilize. "We'll just keep adding on and we'll never stop until we get evicted!"

Mike Thompson can be reached at Mona Lisa's Pizza Palace at 908-332-0556 or e-mailed at Skulvalous@aol.com.

ALLAN HOLDSWORTH

continued from page 76

guitar right up in the listener's face if you want. Or you can draw it back. But you have the choice, rather than being stuck with a sound that's too ambient and can't be brought forward. And by using multiple stereo echoes, you can hear each repeat, which gives the guitar an imaging thing that I like. More so than a reverb. Most of the time, reverb on a mono signal still sounds mono. Whereas multiple stereo echoes will put some perceived stereo onto a mono signal."

One last thing: some of the most roaring tones Holdsworth achieves on record and onstage these days are actually generated at very low volumes, thanks to a reactive load device he's invented called The Harness:

"Even with the amp's master volume pretty low, it will still sound cranked. You can usually talk over the volume that I record guitar at. That's something I've been working on for a while now. I just got fed up playing loud. I feel like the volume pushes you into playing things that you don't necessarily want to. It's taken me a long time to realize that music can be really fiery, but not loud. You don't need volume to make it intense." **EQ**

LARRY CARLTON

continued from page 104

remains directly patched to the (dry-only) center speaker.

For acoustic performances, Larry plays a Valley Arts Acoustic guitar built by Mike McGuire, who now runs Gibson's Custom Shop in Nashville. This guitar plugs into a volume pedal, then to a Lexicon Alex, then into a DI. The whole rig is split into two six-space racks, and is small enough to make it onto an airplane as excess baggage. Larry has recently been hosting a blues night at Cafe Milano in Nashville, where stage space is limited — so size really does matter.

So there you have it. Larry's rig is simple and easy to maintain — two qualities that go a long way toward reliability for live gigs. And, as most of you know, when everything works, everyone is happy.

In addition to being Larry Carlton's guitar tech, David Rouze was also the guitar tech for Darryl Jones and Mick Jagger during the Rolling Stones' VooDoo Lounge Tour (1994-95).

PRESONUS REVIEW

continued from page 117

inputs, such as the mic channels of an entire horn section. The Link feature ensures the horn section's will remain balanced while you adjust the compression (on the master ACP-8 channel) to, for instance, create solid and consistent horn stabs in an R&B act. The gates would also be useful in reducing monitor leakage between the horn riffs, but be alert because the fast fixed-attack of the gates may cause audible clicking.

With so many channels of gates, you may be tempted to experiment with the processor. However, do not attempt to reduce feedback by gating microphones. Although the gates will automatically close mics that are not in use and improve the system's gain-before-feedback, if any circumstance should open enough mics at one time, then feedback will occur and, typically, all the gates will open — flooding the system with feedback. This is a classic error with potentially catastrophic consequences.

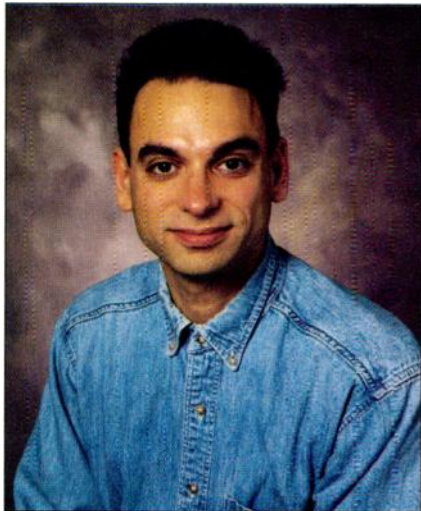
The manual [which appears to be a preliminary edition] for the unit offers some good graphical information on connection of the unit. The text, however, has some confusing wording, and also suggests some misleading applications. Most notable is the suggestion that the unit be used as a limiter for a digital multitrack recorder with the Link button engaged on all channels. True, this will allow a single control to calibrate the limiter threshold for all channels, but it will also cause all channels to be ducked in level should any one channel exceed the threshold. This form of dynamic crosstalk would be very destructive when recording multiple tracks.

The PreSonus ACP-8 is ideally suited to dynamic control of drum kits, percussion, compressing vocals, or limiting the send to multitrack recorders in both studio and live sound applications. The low cost-per-channel of this compact processor can bring a flexible system of dynamic processing into even the most claustrophobic mixing locations. **EQ**

Wade McGregor is a senior consultant for Barron Kennedy Lyzun & Associates, an acoustical consulting firm based in Vancouver, BC. For more info, visit their home page at www.bkla.com.

Guitar Tips

Some tips and suggestions on getting the most out of six strings



BY EDDIE CILETTI

Engineers and guitarists have been known to disagree on the subject of mic technique. Collected here are a handful of tips, graduated in order of user-friendliness, starting with cabinet placement techniques and ending with electronic modifications.

TIP 1: MORE OR LESS BASS

The sidebar to Wade McGregor's Tannoy PS115 powered subwoofer review (January '97 EQ) included valuable tips (by Huart Collier) on how boundaries (walls, floors, and ceilings) affect bass response. For example, a speaker cabinet placed against a wall and on the floor (two boundaries) will have 3 dB more bottom than when located in the middle of a room and/or elevated on an equipment case. An additional 3 dB is gained when the cabinet is placed on a floor and in a corner (three boundaries). This effect will not be captured by a single close mic.

Tip 1A: More or Less Treble. The improved low-end response that occurs

naturally when a cabinet is on the floor can — in a live performance — also send tortuous high frequencies directly into the audience's ears, completely bypassing the guitarist's ears. (There are guitar speaker cabinets that include support struts for tilting purposes. Why is it that these are so rarely used?)

The potential benefit of positioning a cabinet directly towards the performer's head would be that excess level or brightness can be intercepted by the perpetrator. If human servo systems are correctly operating, the fingers will grab the appropriate knob (labeled "Treble" or "Presence") and turn it counter-clockwise. Don't laugh! For every dissatisfied guitarist, there is an engineer just waiting to say, "That's what's coming out of the amp!"

Tip 1B: More or Less Trouble. Engineers can emulate guitarists by putting control room monitors on the floor and/or disconnecting the tweeters...OK, so maybe that's not funny, but recording electric guitar should be as easy as placing a microphone in front of a speaker.

From an engineer's perspective, it is extremely important that performers be intimately familiar with their sound. In the case of guitarists, know your "direct" sound — at the speaker — either by angling or placing the cabinet at ear level. Then, if it's too loud or too bright, *turn it down!* Everyone will love you for

it and it may even change the weather pattern. (Yeah, OK, perhaps I do have your axe to grind.)

TIP 2: SUICIDE: THE SPORT OF CHUMPS

There are some artisans who insist on tweed-era axes and amplifiers, while there are others who skip the minimalist approach and go for active electronics and racks of effects. In between are those who haven't quite locked-in the ultimate rig for financial or other reasons.

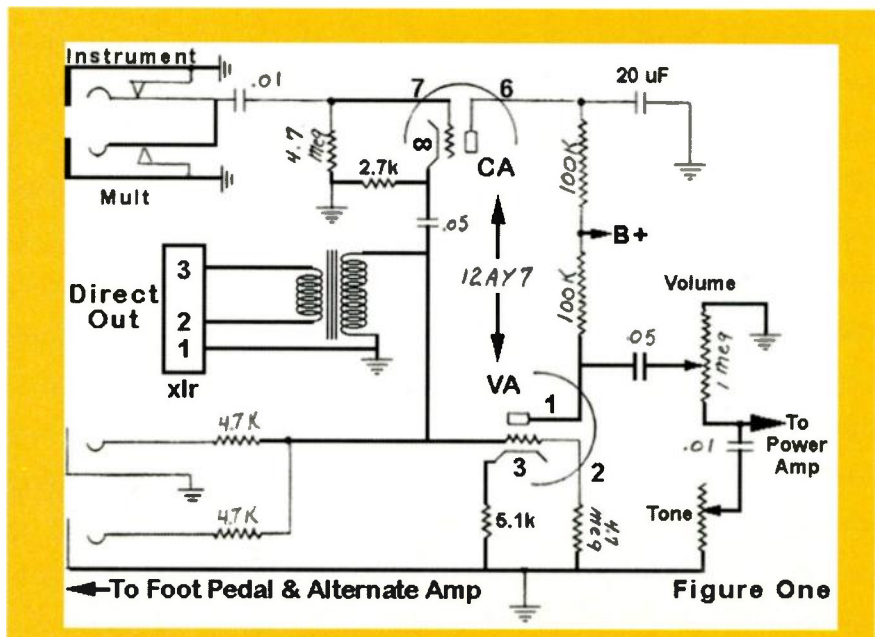
No matter what, sonic experiments are best attempted independent of recording sessions. Too many musicians have "upgraded" their gear (borrowing or otherwise) just in time for "the big session."

TIP 3: SONIC SAMPLES

Assuming that you own or have access to a DAT machine, record your axe with the following:

- A single microphone placed directly in front of the cabinet.
- An optional mic at ear level to capture the "space" that your ears are hearing.
- An optional direct signal to hear what is being played preprocessing.
- A optional stereo pair of mics (of the same model) placed in X-Y configuration (a right angle) about a foot in front of the cabinet. This will simulate the way your ears hear.
- Drummers and bassists are also encouraged to experiment.

Connect the mic(s) and optional di-



rect box to a dedicated preamp or mixer and record flat (no EQ or compression). Recording can take place during a full band rehearsal. The point is to take the tape home and listen to your performance. Are you as gifted after-the-fact as during? Does the sound have the same impact on your stereo as it did live? While the direct recording is not your "sound," is the performance as precise as it could be?

TIP 4: FENDER AMP INPUTS

Most Fender amps have two channels — Normal and Vibrato, for example — each with two inputs labeled 1 and 2. I will speculate for a moment that the original purpose was that two or more users might share the same amp. When was the last time this happened?

Under the hood, I've always noticed that the input impedance of each jack is slightly different. Regardless of which channel you choose, connect to input jack 1 and try inserting a "dummy plug" (one that is an open circuit) into jack 2 (of the same channel). Also, try swapping jacks — plug the guitar cable into jack 2 and the dummy plug into jack 1. I'd be curious to know whether anyone finds the difference useable.

TIPS 5A, 5B, & 5C

A few years ago a local band approached me about helping them out in the studio. I agreed to attend rehearsals, make suggestions, and engage in the ancient craft of preproduction! As a three-piece band with guitar, bass/vocals, and drums, they weren't loud so much as dense. Rather than overdriving the amp, the guitarist used a multieffects pedal-fest.

5a: When in Doubt, Lay Out! While appropriate in a live performance, the psychedelic swirl of guitar and effects filled every sonic hole. I had trouble hearing the vocalist and her performance seemed timid. It was a challenge to convince the guitarist to play less, but when he didn't play at all (through a verse), the lead vocalist's performance became confident and inspired.

5b: Create Sonic Real Estate. When writing a song, it is easy to fall into the habit of playing every conceivable part to determine what works. Inspiration, improvisation, and spontaneity are key elements of the creative process. Leaving "holes" can seem anticlimactic, but it is important to differentiate between essential and secondary parts. Support parts should be

just that, parts that help vocalists find their notes.

5c: The Rhythm Track. Strummed chords processed with a chorus effect should be allowed to ring into the next musical section even if that section immediately calls for a "picked" part. Play only essential parts when laying down the rhythm track. If, from section to section, a different pickup setting or effect is required, play it as an overdub for purposes of precision.

"Y" CHORDS

After encountering some resistance from the six-stringed member, I was inspired to come up with a solution that wouldn't ruffle his feathers while simultaneously providing more sonic options. It can be implemented with existing gear or as a modification.

The guitar plugs into a direct box whose "loop-thru" goes to a "Y" cable feeding both the guitarist's foot-pedal/amp combination as well as an alternate amp. The downside of this approach is that the combined impedances of each destination may "load" the guitar and negatively alter its sound. Keep the cables short.

THE MODIFICATION

To avoid this, fig. 1 shows how a cathode-follower vacuum tube circuit converts the guitar's high impedance down to a medium impedance. (Fig. 1 can also be viewed on my web site: <http://www.users.interport.net/~edaudio>). The medium "Z" output is split via resistors to feed the pedal board and the alternate amplifier. Just before the split is a matching transformer that creates a balanced mic-level signal. Please note that I modified the alternate guitar amp to do this (hence the Volume and Tone controls), but that the circuitry could also be built as a special-purpose "direct" box.

IN SESSION

During recording, the alternate amp was adjusted to crunch when the guitar was thrashed. The guitarist played as usual (even "forgetting" to lay out in the verses) with a new amp (another no-no). Three signals were brought up to the board — direct, main, and alternate — and recorded individually as well as mixed on-the-fly. By doing this, I was able to extract textures that were more distinct for each section of the song. **EQ**



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Sure, you've heard the buzz about the new Digital Video (Versatile?) Disc — DVD — being generated throughout the industry, but no one has yet been able to answer the all-important question: "But what does it mean for me and my project studio?" In the April issue the legendary George Massenburg will tell you his thoughts on the subject and what he feels the future of DVD holds for the audio industry.

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How did James Brown churn out those funk-tastic hits of the '70s? Find out as producer/engineer Bob Both takes us back in time with the hardest working man in show business.

To be a part of this jam-packed issue, contact: Kathleen A. Mackay; Associate Publisher (ext. 460) Matt Charles (ext. 458), Andrea Berrie (ext. 471), Christine Cali (ext. 454), Pete Seidel (ext. 457); Advertising Sales

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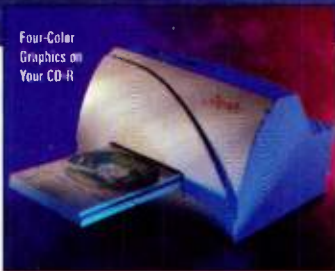
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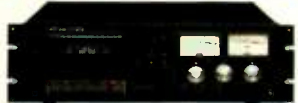
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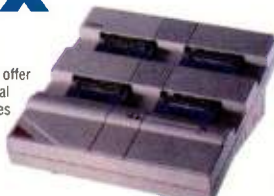
General	PMD-101	PMD-201	PMD-221	PMD-222	PMD-430
Stereo/Mono	Mono	Mono	Mono	Mono	Stereo
Heads	2	2	3	3	3
Inputs/Outputs					
Mic Input	1/4-inch	Miniplug	Miniplug	Mini/XLR	1/4-inch
Condenser Mic	Built-In	Built-In	Built-In	Built-In	Built-In
Remote Jack	—	Yes	Yes	Yes	—
Modular Tel Jack	—	Yes	Yes	Yes	—
External Speaker Jack	—	Yes	Yes	Yes	—
Record Controls					
VU Meters	—	1	1	1	2 (Illuminated)
2-Speed Recording	Yes	Yes	Yes	Yes	—
Dolby B NR/Adapt NR	—	—	—	—	Yes
Mic Attenuation	—	0,-10dB,-20dB	0,-10dB,-20dB	0,-10dB,-20dB	0,-15dB,-30dB
Ambient Noise Cont.	—	Yes	Yes	Yes	—
MPX Filter	—	—	—	—	Yes
Manual Level Control	—	Yes	Yes	Yes	—
Limiter	—	Yes	Yes	Yes	Yes
ALC	Yes	Yes	Yes	Yes	—
Peak Indicator	—	—	Yes	Yes	—
Playback Controls					
Pitch Control*	±20%	±20%	±20%	±20%	±6%
Bias Fine Adj.	—	—	—	—	Yes
Tone Control	Yes	Yes	Yes	Yes	—
Memory Rewind	—	—	Yes	Yes	Yes



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The "bench mark" for cost and performance, the Equirek series of microphones incorporate a unique servo design and exceptional flexibility to provide extraordinary ballistic capability and exceptional transient response.

E-300

A multi-patterned side address mic that combines vintage capsule design with advanced head-amp electronics, the E-300 has an unusually wide frequency response of 10 Hz to 20 kHz and an exceptional dynamic range of 137 dB. Also extremely low self noise of 11dB. Ideal for the most critical applications.



Shown with optional ZM-1 Shockmount

Unique powering of all mics is accomplished with a pair of rechargeable nicad 9-volt batteries in combination with 48-volt phantom power. This overcomes inherent current limiting associated with most phantom power supplies and can supply 10X the current.

E-200/E-100

The first member of the Equirek family, the E-200 is also a dual capsule side address multi-pattern condenser mic but with lower specifications than the E-300. The E-100 uses the same electronics as the E-300, but with only one of the same capsules in a supercardioid pattern.

- Frequency response of 10 Hz to 18 kHz.
- Dynamic range of 137 dB • Low self noise of 16 dB.



audio-technica.

AT4033

Cardioid Capacitor Microphone

The AT4033 is a transformerless, studio microphone designed for use in the most demanding applications.

- Gold-plated, "aged-diaphragm" condenser element with internal baffle plate to increase S/N ratio which, coupled with low-noise transformerless electronics, makes the AT4033 ideal for critical digital recordings.
- Dynamic range is 123 dB without built-in attenuator.
- Accepts up to 140 dB SPL without distortion above 1% T.H.D. A built-in switchable 10 dB (nominal) pad increases it to 150 dB.
- Internal open-cell foam windscreen.
- Integral 80 Hz hi-pass filter for easy switching from a flat frequency response to a low-end roll-off.

AT4050/CM5

The AT4050 multi-pattern condenser expands upon the AT4033 to set the standard for studio performance mics.

- 2 capacitor elements.
- Cardioid, Omnidirectional, and Figure 8 polar pattern settings.
- Vapor-deposits of pure gold on specially-contoured large diaphragms are aged through 5 steps to ensure optimum characteristics over years of use. Transformerless circuitry results in exceptional transient response and clean output even under extremely high SPL conditions.



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BUSINESS LEASING AVAILABLE



PROCESSING

BEHRINGER

MDX 1200 Autocom

- Attack/Release times, with Intelligent Program Detection.
- Noise gate, switchable Soft Knee/Hard Knee characteristics for varied sound pressure levels.
- Bright, illuminated LEDs show gain reduction.

MDX 2100 Composer

- Integrated auto/manual compressor, expander & peak limiter.
- Compresses "musically" in dynamic range without any audible "pumping" or "breathing".
- Attack & release times are controlled automatically or manually.
- Interactive Gain Control (IGC) combines a clipper and peak limiter for distortion-free limitation on signal peaks.
- Servo-balanced inputs and outputs are switchable between +4dB and -10dB.

APHEX

107 Tubessence

2 Channel Mic Preamp

The 107 delivers outstanding sonic performance, as well as a great degree of presence, detail, openness and image.

- 2 independent channels with front panel XLR inputs
- Up to 64dB of gain available
- 20dB pad with red LED indicator, 2 LED input meter
- Full 48V phantom power with red LED indicator
- Low cut filter with red LED indicator: 80Hz, 12dB/octave
- Polarity inversion switch with LED indicator
- Individual channel remote mute capability
- Switchable +4dB/-10dB output with 1/4" TRS phone jacks

TUBESSENCE combines the best attributes of both tube and solid state circuitry to provide performance unmatched by conventional designs. The solid state front end is transformerless and only high end capacitors are used in the signal path. The tube circuit imparts the sonic characteristics of tubes without the extremely high voltages, heat, fragility, and short life span of conventional tube circuitry.

109 Tubessence

Parametric EQ

The Apex 109 is an extremely versatile and high performance parametric vacuum tube EQ with unique features, flexibility and sound.

- Great for "warming up" digital signals.
- True tube circuitry in the output stage.
- Dual (stereo) 2 band or mono 4 band EQ configuration offers flexibility from general sweetening to critical problem solving.
- Operates in the EQ flat mode yet still passes signal through the Tubessence vacuum tube stage.
- 1/5 octave to 2 octave bandwidth adjustment.
- Switchable -10dB/+4dBu operating level.

t.c.electronics

Wizard M2000

Studio Effects Processor

The M2000 features a "Dual Engine" architecture that permits multiple effects and 6 different routing modes. There are 250 factory programs including reverb, pitch delay, chorus, flange, phase, EQ, de-essing, compression, limiting, expansion, gating and stereo enhancement. The M2000 also features 20-bit A/D conversion, AES/EBU and S/PDIF digital inputs/outputs, "Wizard" help menus, 16-bit dithering tools, Tap and MIDI tempo modes and single page parameter editing.

HIGH-END MIC PRE-AMPS

Focusrite

Red 1 / Red 8 Mic Pre-amps



The Focusrite Red Series is instantly recognized by leading engineers worldwide for its fidelity, musicality, precision and control. The Red1 is a 4 channel mic pre while the Red 8 has 2 channels. Both are ultra-high quality for use in digital recordings, and with high-quality ribbon, vaive, and condenser microphones.

Each channel offers—

- Phantom power & Phase reverse.
- Warm, and crystal-clear.
- Easy-to-read, accurate illuminated VU meters.
- Low noise floor with high gain bandwidth.
- Mic gain has 66dB range

ISA 215 Dual Mono Mic-Pre & EQ



Engineers, producers, and musicians worldwide are familiar with the legendary ISA 110 mic pre/EQ that forms the heart of the Focusrite Studio Console. Frequent requests for a 19" rack unit with the same circuitry have led to the development of this high-quality studio device.

- 2-independent mic pre-amp & EQ.
- Microphone inputs feature variable gain and switchable phantom power.
- Independent HF and LF shelving sections.
- Overlapping Upper and Lower Mid EQ w/variable bandwidth.
- Independent High and Low pass filters.
- Integrated PSU
- Large, easy to use control knobs and switches.

Focusrite Green Range
NOW AVAILABLE!

ALESIS

3630 Compressor RMS/Peak 2Ch.Comp/Limiter/Gate



The 3630 is a dual-channel compressor that offers Ratio, Threshold, Attack and Decay controls to handle the toughest signals. It also offers a choice between RMS and Peak compression styles, plus Hard and Soft Knee dynamic curves for every application from subtle gain control to in-your-face punch. Ideal for use in applications from studio recording and mixing to live sound reinforcement and broadcast.

M-EQ 230 Dual 1/3 Octave/Precision Equalizer



Used extensively in recording studios since 1989, the M-EQ 230 provides 2 independent 30-band 1/3 octave graphic EQ's in a single rack space. Covering every band from 25 Hz to 20 kHz in 1/3 octave increments the M-EQ 230 is ideal for tuning the monitors in your project studio or even getting the most out of a home stereo setup.

MidiVerb 4 2 Ch. Parallel Processor w/Auto Level Sensing



The MidiVerb 4 extends Alesis' line of affordable professional multi-effects processing. It provides the sonic quality and programming power required for studio recording and live sound reinforcement at an affordable price.

- Wide variety of dense, natural-sounding reverbs, rich chorus and flange, versatile delay, rotating speaker simulation, pitch shift, panning and more.
- Auto Level Sensing feature automatically sets your input signal to the optimum level to take advantage of the MidiVerb 4's wide dynamic range.
- 18-bit oversampling digital converters add to the excellent audio fidelity, with a resulting 20 kHz frequency response and a dynamic range over 90dB.
- 128 preset and 128 user-editable programs.
- Mono or Stereo single effects, dual-mono effects, and multi-chain configurations for 2 or 3 effects at once.

QuadraVerb 2 2 Ch. Master Effects w/Digital I/O



Alesis' most powerful signal processor, the QuadraVerb 2 offers the amazing audio fidelity of a high-end dedicated vocal reverb while providing powerful multi-effects capabilities.

- 300 programs (100 preset and 200 user-editable).
- Octal Processing allows use of up to 8 effects simultaneously in any order. Choose between over 50 different effects types for each block including reverb, delay, chorus, flange, rotary speaker, pitch shift, graphic and parametric EQ, overdrive and more.
- 5 seconds sampling, triggered pan, and surround sound encoding are also built in.
- Selectable -10 dB and +4dB levels, servo-balanced TRS inputs and outputs.
- ADAT Digital Interface allows you to work entirely in the digital between the Q2 and an ADAT XT.

MIDI

OPCODE



Studio 5 LX

Macintosh MIDI Interface

- The Studio 5 LX is arguably the most advanced MIDI interface on the market today. It incorporates a MIDI patchbay, MIDI processor, and SMPTE synchronizer with it's interface functions, all in a 2 rack space unit.
- 15 Independent MIDI ins and outs.
 - SMPTE reads and writes all formats—24, 25/29.97/29.97DF and 30.
 - Network multiple units, 240 MIDI channels each.
 - 128 patches, unlimited virtual instrument controls.
 - 2 assignable footswitch inputs, 1 controller input.
 - 8X speed when used with OMS.
 - Internal power supply.

Studio 3 & 4 MIDI interfaces, and Vision sequencing software also available.



Mark of the Unicorn products now available.

PROCESSING



White Instruments

4200A, 4400 & 4700

L-C Series 1/3 Octave Active Equalizers



- The 4200A (active, cut only graphic EQ) and 4400 (active graphic EQ) provide 28 1/3-octave filters on 1 S.O. centers from 31.5 Hz to 16kHz. Hand-tuned inductor/capacitor (L-C) resonant circuits provide the ultimate in performance and reliability.
- Better than 108 dB signal-to-noise ratio with no degradation even when filters are used.
- Continuously adjustable high and low-pass filters band-limit unwanted subsonic and ultrasonic noise.
- 3 outputs and powered accessory crossover socket facilitate distribution and level control to three subsystems. (Bi-amp or tri-amp operation with optional 2-way and 3-way plug-in crossover networks).
- The 4200A has a -15 dB control range, the 4400 has a ±10 control range.
- The 4700 is similar in specifications to the 4200A/4400 EQs, the difference is that all functions of the 4700 are digitally controlled.

DSP 5024

Digital Signal Processor

- 2 input, 4 output signal processor with 107 dB of dynamic range.
- Crossover can be configured as 2-way, 3-way, 4-way or dual 2-way.
- Adjustments can be performed in frequency 1 Hz steps, slope (6, 12, 18, 24 dB/oct.), shape (Butterworth, Bessel, Linkwitz-Riley).
- Parametric filters include boost, cut, high pass, low pass, rising shelf and falling shelf, adjustable in 1 Hz steps, 1/10 dB steps and bandwidth from 1/70th octave to 4.8 octaves.
- Delay up to 680 ms on each output.
- Ten non-volatile memories and presets with password security.
- Remote preset select interface includes PA422.

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STUDIO MONITORS

JBL

Control 5 Compact Control Monitor Loudspeaker



The Control 5 is a high performance, wide range control monitor for use as the primary sound source in a variety of applications. It's smooth, extended frequency response combines with wide dynamic capability to provide acoustic performance that's ideal for recording studios, A/V control rooms & remote trucks.

- 6-1/2" low frequency driver provides solid, powerful bass response to 50 Hz and a pure titanium 1" dome handles high frequency response to 20 kHz.
- Magnetically shielded for use near video monitors.
- Choice of black, gray or white finish.
- A host of mounting systems including ceiling, rack and tripod allow positioning in exactly the right spot.

4200 Series Near-Field Monitors



The 4200 Series near field monitors come in 6.5" (4206) and the 8" (4208). Both offer exceptional sonic performance, setting the standard for today's multi-purpose studio environment.

- Multi-Radial baffle directs the axial output for optimum summing at approximately 3 to 5 ft.
- Curved surface of the ABS baffle virtually eliminates baffle diffraction distortion.

- Superb imaging and greatly reduced phase distortion.
- Vertical alignment of the transducers across the baffle center produces natural mirror-imaging.
- Pure titanium diaphragm high frequency transducer provides smooth, extended response.
- Magnetically shielded for use near video monitors.

6208 Near-Field Monitors



An internally bi-amplified near field studio monitor, the 6208 provides excellent reference in a small, portable package. It combines optimized electronics with an 8", two-way speaker system on a Multi-Radial baffle that aligns acoustic centers of high and low frequency transducers. The transducers are magnetically shielded to allow safe placement near sensitive equipment such as tape recorders and video monitors.

- XLR or 1/4" inputs are compatible with both -10 dBV and +4 dBu nominal operating levels.
- 2.6 kHz electronic crossover with discrete circuitry.
- Low feedback design, with no slew rate limiting and extremely low distortion.
- 8", low frequency transducer delivers a long, linear excursion resulting in a smooth extended bass output with low power compression. It is coupled to a one inch titanium diaphragm, high frequency transducer with patented "diamond pattern surround" exhibiting flat response, +/- 2 db from crossover point to 20 kHz.

MIXING BOARDS

BEHRINGER



EURODESK MX 8000

24 Channel 8-bus Console

- 48 input channels with dedicated EQ, Mute, Pan & Level.
- Channel, Subgroup, and Mix insert points.
- Direct Outputs, 24 balanced tape ins/outs.
- 4 band EQ with sweeps.
- 6 Aux sends, 6 stereo Aux returns w/extensive routing.
- Optional MB-8000 Meter-bridge.
- Optional Cybermix automation software for Windows.

MACKIE

CR-1604 VLZ 16-Channel Mic/Line Mixer

A hands-down choice for many major touring groups and studio session players as well as broadcast and sound contracting. The CR-1604 VLZ features everything you would expect from a larger console, and then some!

- 24 line, 7 AUX, 3-band EQ w/ mid sweep, 10-segment LED output meter.
- 90 dB S/N and 108 dB dynamic range.
- 16 studio-grade, phantom powered mic preamps.
- AFL/PFL solo & mute w/ overload and signal indicators.



- Rear panel features 1/4-inch/ XLR connectors, inserts on every channel, and RCA tape inputs/outputs.
- Rotary I/O "pod" allows 3 different positions for set-up.

MS1202VLZ and MS1402VLZ IN STOCK!

The new MS-1202, 1402 and 1604 all include VLZ (Very Low Impedance) circuitry at critical signal path points. Developed for Mackie's acclaimed 8-Bus console series, VLZ effectively reduces thermal noise and minimizes crosstalk by raising current and decreasing resistance.

TASCAM

M-1600 16/24 Channel 8-bus Console

Great for modular Digital Multitrack setups and hard disk recording, the M-1600 is part of Tascam's next generation series of recording consoles. It features multiple option for inputs and outputs and uses the same, easy to install D-sub connectors as Tascam's more expensive console, all in a compact design.



- XLR Mic inputs w/phantom power on 8 channels.
- Signal present/overload indicators on each channel.
- Balanced/Unbalanced tape returns and Balanced Group/Direct outputs using D-sub connectors.
- TRS Balanced Line Inputs on all channels.

- 3-band EQ with sweepable mids.
- 5 Aux sends (1 stereo)
- 4 assignable aux returns.
- Perfect for use with DA-88 and ADAT setups

Digital Multi-Track Recorders

TASCAM DA-88

- Hi-8mm tape format.
- ATF system ensures no tracking errors or synchronization loss on up to 16 cascaded decks.
- 16-bit D/A, selectable 44.1 or 48KHz.
- Flat 20Hz to 20KHz, 92dB dynamic range
- Seamless Punch-in and out, for programmable digital crossfade and insert.
- Individual track delay for special effects and timing correction.



SONY

PCM-800 Digital 8-Track In Stock!

ALESIS adat xt

S-VHS DIGITAL

The ADAT-XT sets the standard in modular digital multitrack recording. The ADAT-XT operates up to four times faster than the original ADAT and offers an intelligent software-controlled tape transport as well as provides onboard digital editing and flexible autolocation.

- Includes LRC remote control with transport and locate functions
- Advanced transport software continuously monitors autolocation performance.



- 56-pin ELCO connector operates at +4dB and -10dB
- Built-in electronic patchbay
- Flawless copy/paste digital edits between machines or within a single unit.

STUDIO MONITORS

ALESIS

Monitor 1

Near Field Reference Monitors

- 6.5" low frequency driver provides excellent image and transient reproduction. powerful bass, and smooth, extended high frequency detail.
- Exclusive SuperPort speaker venting technology eliminates the "choking" effect of port turbulence for solid high-power bass transients and extended low frequency response.

Monitor Two

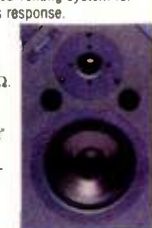
Mid Field Studio Reference Monitors

- Today's popular music demands more bass at louder volumes than a small near field monitor can possibly produce, the Monitor 2 delivers.
- 10" three way speaker design with a unique asymmetrical crossover to maintain the same accurate tonal balance and imaging of the Monitor One—but with a much larger sound field.
 - 5" mid frequency driver offers exceptional mid frequency detail
 - 1" silk dome high frequency driver delivers a broad but natural frequency response from 40Hz to 18kHz.
 - Covered in a non-slip rubber finish, the Monitor Two comes in a mirror imaged pair for mixing accuracy.



Point Seven

- Shielded reference monitor.
- Front ported venting system for great bass response.
- 60 watts RMS—100 watts peak @ 4Ω.
- 85Hz-27kHz, ±3dB.
- 2kHz crossover for accurate phase and a wide "sweet spot" for mixing.
- Accurate flat sound reproduction.
- Great for studio and multi-media applications.



TANNOY

PBM Series II

Near-field Reference Monitors

The PBM II Series is the industry standard for reference monitors providing true dynamic capability and real world accuracy.



PBM 5 II

- Custom 5" injection-molded bass driver
- Woofer blends seamlessly with the 3/4" polyimide soft dome ferro-fluid cooled tweeter providing extended bandwidth

PBM 6.5 II

- 6.5" lowfrequency driver and 3/4" tweeter
- Fully radiused and ported cabinet design reduces resonance and diffraction while providing deep linear extended bass.

PBM 8 II

- High tech 1" soft dome tweeter and 8" driver capable of powerful bass extension under high SPL demands.
- Hard wired crossover features true bi-wire capability.
- Full cross-braced matrix medite structure virtually eliminates cabinet resonance as a factor.
- Ensures precise low frequency tuning by incorporating a large diameter port featuring laminar air flow at higher port velocities.

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TASCAM DA-P1

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- 32/44.1/48kHz sample rates & SCMS-free recording.
- Built in MIC limiter and 20dB pad
- TRS jack w/level control for monitoring
- Includes shoulder belt, AC adapter, & battery.



PDR1000/PDR1000TC



- 4 head Direct Drive transport
- Balanced XLR mic and line analog inputs and two RCA analog line outputs. Digital inputs and outputs include S/PDIF consumer (RCA) and AES/EBU XLR
- Left/Right channel mic input attenuation selector (0dB/-30dB)
- 48v phantom power, limiter & internal speaker.
- Illuminated LCD display shows clock and counter, peak level metering, margin display, battery status, ID number, tape source status and machine status.
- Nickel Metal Hydride battery powers the PDR1000 for two hours, AC Adapter/charger included.

PDR1000TC Additional Features:

- All standard SMPTE/EBU time codes are supported, including 24, 25, 29.97 (drop frame and non-drop frame) and 30 fps.
- External sync to video, field sync and word sync.

STUDIO DAT RECORDERS

Fostex D-25/D-30



- Pro DAT master recorder featuring confidence monitoring and insert editing with a 4-head transport.
- Sync functions include the ability to chase sync to a master timecode. Resolves to WORD/VIDEO/DAT frame signal + WORD.
- Independent left/right recording.
- Scrub from tape or buffer, Jog/ Shuttle 1/2X to 16X.
- SMPTE/EBU TC generator/reader
- On board chase/lock sync, RS-422 slot.
- 4-head 4-motor transport.
- 16 MBit RAM buffer/instant Start & Edits.

D-30 Additional Features:

- Large, high resolution backlit LCD display which shows all parameters at a glance
- Intuitive menus: from 10 dedicated soft keys
- 2 RS-422 ports for added flexibility.

FOSTEX D-15 TimeCode DAT NOW AVAILABLE!

Panasonic SV-3800/SV-4100



The SV-3800/SV-4100 feature highly accurate and reliable transport mechanisms with search speeds up to 400X normal. Both use 20-bit @/A converters to satisfy the highest professional expectations. The SV-4100 features instant start, program and cue alignment, enhanced system diagnostics, multi-media digital interfaces and more.



A-90EX Master Controller for the Next Century



The A-90EX is an 88-note, weighted master controller with the best keyboard action currently on the market—bar none. It offers incredibly realistic piano sounds, powerful controller capabilities and "virtual" programmable buttons which can be configured to operate your software and other devices. The A-90EX combines the majestic sound of a concert grand, the expressive action of a fine acoustic keyboard and the comprehensive MIDI functions of a master controller—all in a portable stage unit.

Keyboard Controls

- Master Volume Slider and Global Transpose features allow you to send control commands to your entire MIDI setup without changing the balance between connected units.
- Sequencer Control Section lets you control song selection, tempo and other parameters quickly.
- The keyboard can be split into eight zones and features 20 different controls and connectors.

Superb Sound

- 2 types of stereo-sampled grand pianos, various acoustic and electric pianos (including a great classic Rhodes).

- 128 patches selected from Rolands extensive "JV" and "JD" series library.
- 64-voice polyphony, Built in effects

Extensive Performance Configurations

- Stores up to 64 Performances (128 w/optional M-512E card) which may consist of up to 4 preset Patches along with various user-configurable parameters such as zone, effects, and MIDI channel.

88 Key Keyboard

- Proprietary 88-note hammer-action, velocity sensitive keyboard w/aftertouch offers the natural resistance and rebound of an acoustic piano and control of a synth.

JV-2080 64-Voice Synthesizer Module

Roland resets the standard with the incredibly expandable JV-2080 64-Voice Synthesizer Module. This amazingly powerful package offers unprecedented expandability, digital signal processing, and remarkable operational ease, all housed in a 2-unit rack-mount design

- 64-Voice polyphony / 16-part multitimbral capability.
- 8 slots for SR-JV80 series expansion boards.
- 3 independent effects sets plus independent reverb/delay and chorus.

- 64-Voice polyphony/16-part multitimbral capability.
- NEW patch finder and Phrase Preview functions for easy access to the huge selection of patches.
- Large backlit graphic display
- Compatible with the JV-1080, XP-50, and XP-80.

NEW SR-JV80-10 "BASS & DRUMS" EXPANSION BOARD NOW AVAILABLE!



DM-800 Digital Audio Workstation

A compact, stand-alone multi-track hard-disk recorder that provides an amazing array of features at an unbelievably low price. Used music production, post-production and broadcast, it performs all digital mixing operations from audio recording and editing to rotation tracking-bouncing and final mixdown. It supports SMPTE and MTC and features a built-in Sample Rate Resolver for sync with any time code.

VS-880 V-Xpanded Digital Studio Workstation

The VS-880 V-Studio Digital Workstation, is now even more versatile with the release of the VS-880 V-Xpanded. This new version incorporates powerful additional functions that allow you to get the most out of the VS-880's incredible creative potential.

NEW FEATURES

- Mixer Section**
 - Auto Mixing Function records and plays back song data in "realtime" including fader movements and panning positions. No external sequencer is required.
 - Easy recording with an inserted effect in "INPUT-TRACK" mode.
 - Process the master output with a specific inserted effect such as total compression.
 - Scene change by MIDI program change message.
- Recorder Section**
 - Simultaneous playback of 6 tracks in MASTER MODE recording.
 - Digital output with copy protection.
- Effects Section***
 - 10 additional effect algorithms (30 total) including Voice Transformer, Mic Simulator, 19-band Vocoder, Hum Cancelor, Lo-Fi Sound Processor, Space Chorus, Reverb 2, 4-band Parametric EQ, 10-band Graphic EQ, and Vocal Cancelor
 - 100 additional preset effects patches.
 - Effect change by MIDI program change message.
 - Effect edit by MIDI control change message.



And More...

- Additionally, over 20 powerful and convenient features in editing/sync sections have been added. The functions marked * require the optional VS6F-1 Effect Expansion Board

VS-880-S1 SYSTEM EXPANSION KIT

Current owners of the VS 880 now enjoy unprecedented support from Roland with the release of this System Expansion Kit. Supplied on a ZIP disk and including a new owner's manual, the VS-880-S1 will provide current version users with all of the benefits of the VS-880 V-Xpanded at a fraction of the cost.

HARD DISK RECORDING

ATTENTION MAC USERS- digidesign

PROTOOLS PROJECT, AUDIOMEDIA III, MASTERLIST CD, & POWERMIX DAE NOW AVAILABLE!



SOUNDSCAPE DIGITAL TECHNOLOGY LTD.

SSHRD-1 Hard Disk Recorder/Editor



A professional Multitrack Digital Audio Workstation for the PC, the SSHRD1 combines the highest quality processing hardware with easy-to-use Windows-based software for the most complete and affordable solution for high quality digital audio recording and editing on the PC. The SSHRD1 has over 50 powerful editing tools and is expandable from 8 to 128 tracks, with up to 32 inputs and 64 outputs. Ideal for a wide range of applications ranging from, recording music in project studios with an 8 track system, to multiple unit 32, 48 and 64 track systems used by major TV and film studios for audio post production linked to video.

- All audio processing, disk handling and sync. Is carried out by the powerful DSP in the hardware, so any PC can be used. Even a 386!!!
- Up to 64 virtual tracks all with Move, Copy, Trim, Slip, Solo, Repeat, Delete, Cut, Glue edit functions.
- Solo/Multi-track audio scrubbing, 999 named markers
- Realtime face In/Out (8 selectable curves).
- Automated Punch In/Out, Volume contouring.
- All SMPTE formats, including 29.97 and 29.97 DF.
- AV file support w/full sync. (Req. Video for Win.V1.1).
- Optional ED. File support w/full auto conform via RS422.
- Volume and Pan controls, assignable fader grouping.
- Reverse/Phase Invert/Compute tempo.
- Optional Time Module features Time stretch/Time compression Pitch shift and Sample rate conversion.
- 8 physical output channels, selectable for each PART
- Non-destructive sample-resolution editing.
- Cycle record mode with stacked TAKES and pre-roll (like analog multi-track tape recorders)
- AND MUCH MORE...

Fostex DMT-8 VL



The latest in the Fostex HD recording family, the DMT-8 VL truly brings the familiarity of the personal multi-track to the digital domain.

- 18 bit A/D, 20 bit D/A conversion.
- 8 channel mixer, CH. 1&2 feature both mic & line level
- 2 band EQ and 2 AUX sends per channel
- Cut/Copy/Move/Paste within single or multiple tracks.
- Scrub from tape or buffer, Jog/ Shuttle 1/2X to 16X.
- Built-in MIDI Sync, 6 memory locations.
- Dual function Jog/Shuttle wheel provides digital "scrub" without pitch change.
- Divide the drive into 5 separate "virtual reels" each with it's own tuning information.
- NO COMPRESSION!

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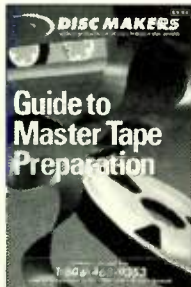
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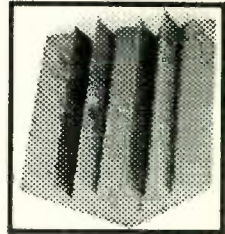
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Tax Time Again

Last time we talked about freelance tax tips — here's some for you studio owners

BY MARTIN POLON



About this time each year, we look at the dynamic of the project studio operator and the issues raised by Federal, State, and the occasional local income taxes. We have always discussed the ability of project studio owners to write off as much as 100 percent of their audio and computer equipment purchases to a level approaching \$25,000 each year! We have also discussed the risks of filing business income tax returns open to public scrutiny. We felt that revealing commercial operation by project studio operators in a neighborhood not zoned for commercial activity may not be wise and could entail local zoning jeopardy. We suggested strongly that while filing at least an accurate personal income tax statement is not optional, running a commercial studio illegally certainly is!

This year, however, we probably should deal with the basic issue of record keeping for tax and other purposes, since what we hear from the street is that record keeping is costing many project studio operators their deductions, as well as hobbling insurance settlements from various kinds of calamities.

The problem with accurate record keeping for taxes and insurance purposes is that it requires a system and strict adherence to that system. This

runs contrary to many "fly by the seat of their pants" studio operators, whose annual trip to their tax providers (assuming that they even have tax providers) is marked by their arrival clutching a shoe box or other similar vessel filled with a multitude of receipts and other small scraps of paper. There are several things wrong with this process. First, nothing irritates an IRS (Internal Revenue Service) examiner more than the sight of unorganized records. Second, you pay for your tax provider's time for your lack of organization, and it can be very costly to set your records in order. Third, the receipt for the Super Whizbang Digital Whoopee Cushion 45B that cost \$20,000 will be the one receipt that you cannot find in the shoe box, the dealer you bought it from has gone out of business, and cannot confirm your purchase. On top of that, you were paid cash from your last session with a band that was probably a front for Nigerian scam artists. Such improbable connection of events do happen and should enhance your faith in both Murphy's Laws of Probability and the process of regularizing your record keeping.

One question that is frequently raised is, "If a studio is using a computer to keep track of income and cash flow, why can't a program such as Quicken or other accounting software be used to record equipment purchases?" The answer is that it can be used and perhaps *should* be used for internal accounting, but serves only to augment a written log and receipt storage system. What both the IRS and the insurance companies want is a detailed log and the written receipt provided by the vendor of what you purchased. There is virtually no acceptable replacement for that, and the steps outlined below will help you to keep your records in acceptable order.

1. Keep a journal. It does not have to be anything fancy, but the IRS likes this kind of record in an audit situation, and if a computer should crash, this record is still around. You can buy acceptable journals at any good office supply store. Depending on your purchasing pattern, you can use a journal broken down to each day of the year or by week or by month. Each page allows

you to log individual purchases by date of purchase, product name, product identification number, the vendor, how payment was made, and any transaction numbers on the invoice, the check or credit card slip, etc.

The trick to this is to use it for every purchase made — no matter how large or small. When keyed in to a system of dedicated file folders holding the actual receipts, invoices, shipping slips, bills of lading, etc., a complete record is created that will withstand the scrutiny of the IRS or an insurance company.

2. Use ordinary manila file folders separated by vendor, or by vendor by month depending upon the volume of receipts, to store your receipts. At the end of the appropriate fiscal period, one can then staple the receipts into the folders and together with the journal possess an inexpensive yet thorough system of accumulating purchasing records.

3. Save everything! It is amazing how many small and even large studio operators actually throw records away while pursuing cleanliness. If you start using this or any other system, you will need to keep all your records to make the system work.

4. Paperless transactions need to be legitimized as much as any other transaction. Generally, these occur when someone at a flea market or other impromptu retail event sells something for cash and does not accept credit cards or checks. One should always try and have the vendor write out a receipt, ending with the words "paid cash" and a signature or initial. If this does not work, then create your own receipt indicating the date, time, what you bought, how much you paid, how you paid, and ending with your signature and the words "paid cash."

Now, what is most interesting about the whole phenomenon of record keeping is that many taxation experts estimate (via newspaper and magazine articles) that far more tax payers lose their legally entitled deductions, or, if you prefer, "cheat themselves," rather than as many suppose "cheat the system." The bottom line for fiscal happiness is to use a professional tax provider and to keep accurate records.



THE FEZGUYS

continued from page 132

Experiment. After mixing in headphones, listen at varying volumes with real speakers just to make sure that your file is still sonically legible in a room.

The technology exists to do a lot of "after-the-fact" turd polishing on a piece of source audio that doesn't sound good. There is, however, no substitute for doing it right the first time. If it's an option, see to it that everything sounds good from the very first note.

You might want to try using a noise gate. They're supposed to cancel background noise that jumps out when the primary signal stops for a second. This explains that strange "pumping" sound when the source material has gaps in the audio. It feels as if a door is opening and closing really fast. It's disconcerting. You can hear it a lot on TV and radio broadcasts. Anyway, it saves space because it suppresses any signal below a certain level that you can set, and when you encode your gated material as a file, the soundcard will not hear the gated sounds and that means less information and a smaller, more manageable file.

A compressor is also very useful here. Remember audio and file compression/decompression (or "codecs") are two discrete methodologies. Audio compression is used to balance out the overall dynamic range of your soundfile. Naturally, this makes it sound like crap. That is to be expected. We are attempting to improve the audibility of your file, not its sound quality. We're suggesting that you eliminate as much dynamic range as you can stomach. Remember, we are dealing with the World Wide Web here. Today it is still a rudimentary delivery system, regardless of where the wild-eyed visionaries say it's going.

Equalization is another sharp implement in your toolbox. Try dumping some highs and some lows. Are they really necessary when most playback systems are a single speaker an inch-and-a-half wide? More specifically, all of the streaming audio codecs (remember that from above?) don't make much use of those dynamic ranges when compressing your song, and you can help it out by removing them first. When recording spoken word, tweak your audio so that the only frequencies being heard are the frequencies that contain the most sound. That's going to be in the

middle ranges. Some pieces sound distorted after encoding because of too much unintelligible bass information. Dump it. You don't need it where you're going.

The last modification to be affected should be (if you are going to use it at all) the Normalization filter. Please refer to last month's FezGuys column for a brief description.

May the Fez be with you! Please check out the FezGuys Web site: <http://www.fezguys.com/>.

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What?! EQ Magazine brought right to your door every month? You kids got it way too easy. In my day, if we wanted the best in project studio recording gear and techniques plus information for the gigging musician, we had to walk 10 miles in our bare feet. And do you know what the roads were paved with then? **BROKEN GLASS!** And the sidewalks were covered in salt. Yeah, and it was freezing cold — even in the summer!

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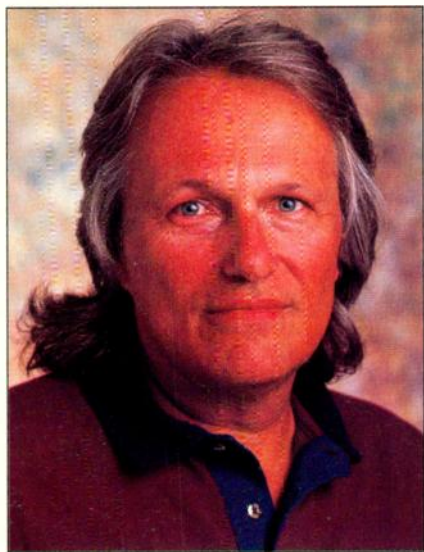
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Amp On Two My Feet



Never trip on
a guitar...and other
six-string tips

BY ROGER NICHOLS

This title is not to be confused with the early morning TV religious program that carries nearly the same name. We do, however, need some higher power to guide us in the recording of guitars. I sometimes wonder, though, if God had wanted us to retain our hearing, he wouldn't have allowed the invention of Marshall stacks.

Guitars are a factor in most forms of music recorded today and, in fact, affect our everyday lives. One of my daughters is taking guitar lessons at school as well as private lessons at home. The one lesson she missed, however, was the one that teaches you not to leave your guitar lying around where other people can trip over it. At this very moment I am on crutches from tripping over her guitar when I walked into her darkened room.

As the Earth's gravity was accelerating me toward the floor and sur-

rounding sharp objects, I realized that I was going to crush the guitar in the process. To me and my family, musical instruments and books are held in high esteem. (You can run over a banjo player, but try to swerve so you don't hit his banjo.) At precisely the last instant I lifted my feet off of the floor so that I would not hurt the guitar. My right knee absorbed the entire impact of the fall, dislocating it with a loud snap. So this must be how it feels to have your cleats dug into the turf as the 700-pound lineman hits you just below the knees. *Ouchie!*

Recording guitars has a special set of problems. The sound of an acoustic guitar comes from many sources. You can use multiple microphones, but then you run into phasing problems from these multiple sources. Most of the time I prefer a single microphone about six to ten inches away from the guitar just above the highest fret, but aiming toward the sound hole. Sometimes I will add some of the direct feed (if the guitar is so equipped) with the possibility of later time-aligning the signals to circumvent phasing. I personally like the direct-only sound of acoustic guitars for solos, but I hate it for rhythm parts. I much prefer more of an acoustic ambiance for strumming guitars.

When it comes to electric guitars, I find that it takes a long time to get the exact perfect sound for guitar solos. During the time it takes to get the ultimate guitar sound, the guitar player has become worn out, or the amp has blown up, or some other catastrophe has occurred to thwart the attempt of the solo in question.

The remedy here was to record a placebo amp sound for feel, and also to record the direct feed from the guitar so that it could be fed back into a guitar amp at a later time and re-recorded onto the tape. This method caused the least amount of brain damage and allowed the most efficient use of the guitar player's time.

There have been many attempts,

with various outcomes, to devise an electronic box to emulate the sound of a guitar amp and speaker combination. But so far nothing sounds as good as an amp in a room, or a garage, or an alley. Dean Parks came up with a novel approach. He had a giant road case about the size of a bachelor apartment. Inside he placed a speaker enclosure and a microphone that he liked. The case was sealed up tight with connectors on the outside to access the speaker and the microphone. Now he had perfect isolation and a guitar sound that beat the pants off those electronic boxes. And if the session ran late, he could spend the night in the case and invite some friends over.

Guitar sounds can be very elusive. When you are out in the studio listening to the amps in the room, everything sounds great. When you get back into the

control room the guitar sounds puny at best. This is usually because of phase cancellation at the microphone capsule. I know I have said this before, but it works. When you go out into the studio, stick a finger in one ear. Now you are listening in mono, just like the microphone. Walk around while you are listening. You will hear the sound change drastically. Find a spot where you like the way it sounds, and that is where you put the microphone. For health reasons, wash your hands before you try this, you can't always be sure where that finger has been.

The finger-in-the-ear technique works well for other instruments as well. Drum sounds, especially

the snare, will benefit quite a bit. I have used it when recording orchestras for placement of French horn mics. It also came in handy once while trying to find the best place to put the wireless microphone bug in a lawyer's office. While carrying on a conversation, I walked around the office with a finger in one ear. Later, when I got the bill, there was a discount on his fee. When I called his office, the secretary said that he always offers discounts to the handicapped. **EQ**

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