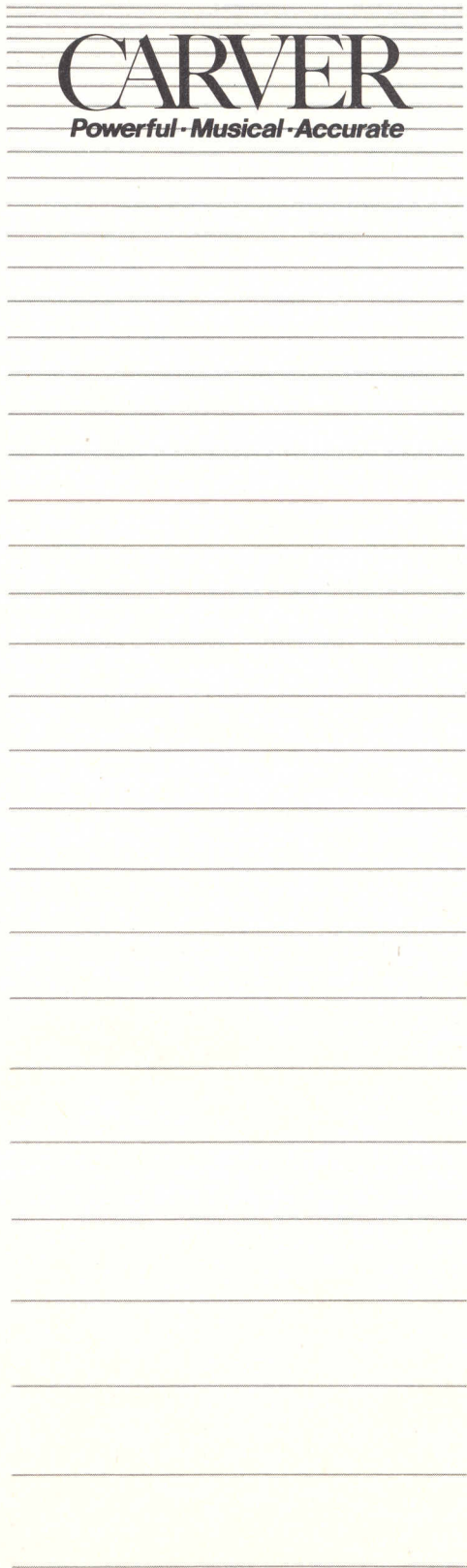


CARVER

Powerful - Musical - Accurate



THE CARVER CORPORATION

Throughout the world, CARVER high fidelity audio components are acclaimed for technology, respected for execution of design, and depended upon for reliability. They are also, and perhaps this is most important of all, appreciated for musicality.

"State-of-the-Art" is merely a point of departure for Carver Corporation. Indeed, since it introduced its first products, the M-400 Magnetic Field Amplifier and the C-4000 Sonic Holography-Autocorrelation Preamplifier at the Winter Consumer Electronics Show in January of 1979, Carver Corporation, under the direction of its founder, Bob Carver, has been said to have "redefined the state-of-the-audio art."

Located near Seattle, Washington, Carver Corporation is the second company founded by inventor-entrepreneur, Bob Carver. His first company, Phase Linear, was a leader in amplifier technology through the seventies.

Committed to the design and manufacture of audio electronics which bring the listener as close as possible to the sound of the original musical performance, Carver has pushed the audio art to unprecedented heights and price/performance standards.

THE MAGNETIC FIELD POWER AMPLIFIER

All CARVER Power Amplifiers utilize Bob Carver's proprietary technology: The CARVER Magnetic Field Power Amplifier.

The technology of the CARVER Magnetic Field Power Amplifier solves some of the most basic problems of conventional power amplifiers: high cost, great weight, and excessive heat generation.

The power supplies of conventional high-power audio amplifiers are very costly and inefficient because they produce a constant high-voltage level at all times—irrespective of the demands of the ever-changing audio signal—even when there is no audio in the circuit at all.

The power supply of a Magnetic Field Power Amplifier is signal responsive and highly efficient, producing *exactly and only* the power the amplifier section needs from moment to moment to carry the signal with complete accuracy and fidelity.

Another way to understand the principal of the Magnetic Field Power Amplifier is to imagine an enormous cast iron tub containing several hundred gallons of water. That's a good analogy for a conventional amplifier's power supply. Huge capacitors and a gigantic power transformer soak up a load of electrical power and store it in a heavy, unwieldy storage tank.

When power is needed, it is squirted into a bucket and the circuitry "refills" the sink during a lull.

This leads to **LESS POWER** during peak demands... and **MORE** wasted power during lulls.

Note that it takes an enormous "sink" to store a lot of water (amp power) against sudden demand. The more rated power an amp has, the grosser the power supply. Also note the amount of power which is "evaporated" into heat when the amplifier is at rest.

Now imagine, instead, a little valve on the water main line. When water is needed, the valve senses the demand and opens, using the water line pressure to quickly shoot out a large quantity of water.

Note that this leads to **ALL THE POWER YOU WANT** during peak demands... and no need for any excess during lulls.

Also note that the **WATER MAIN** is doing the work of storing the excess, not a huge reservoir.

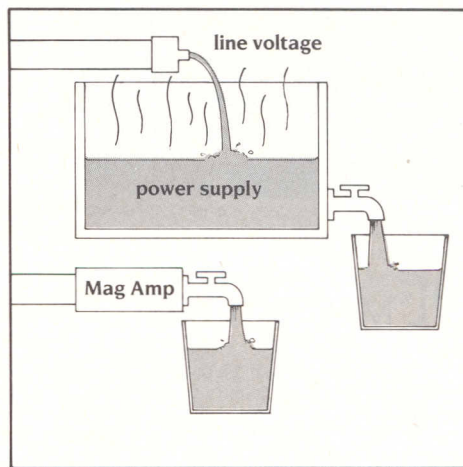
Enough said about water buckets. The "valve" we've described is our analogy for the Magnetic Field Coil inside each Carver amplifier.

Instead of converting a lot of power to heat during lulls, the Carver Magnetic Field Amplifier delivers power **ONLY WHEN NEEDED**.

What's more, it uses line power and hence, the **ACTUAL POWER GENERATOR** to provide muscle.

This results in less heat, smaller components, lower cost **AND** less **DISTORTION**.

The Carver M-400t is the first amplifier to utilize this technological breakthrough. A 200 watt per



channel amplifier in a seven-inch cube weighing less than ten pounds, the M-400t is powerful, accurate, and musical.

"Its distortion and noise levels are entirely negligible. It is hardly conceivable that a small, inexpensive, lightweight cube such as this could deliver as much clean power as any but a few of the largest conventional amplifiers on the market—but it does... An important new amplifier design." (Hirsch-Houck Labs in *Stereo Review*)

"Music reproduction was superb and completely free of any false bass coloration or muddiness. The amplifier handled the toughest transients we were able to feed it, with ease. It is, to put it mildly, quite an achievement and one that is likely to change the way many of us think of power amp design in the future." (Leonard Feldman in *Audio*)

Carver has utilized the basic technology of the Magnetic-Field Power Amplifier in three additional power amplifiers, the Carver M-200t (120 watts/channel), the Carver M-500t (250 watts/channel) and the Carver M-1.5t, which provides 600 watts per channel long-time-period reserve power into 8 ohms, 750 watts per channel Dynamic Headroom! The M-1.5t has been carefully and deliberately designed to reproduce the dynamic range made possible by the most advanced recording methods.

Of the Carver M-1.5t, Peter Aczel, Editor and Publisher of *The Audio Critic* has said, "... the equal of any power amplifier in transparency, focus and smoothness and, of course, far ahead of any other we tested in sheer gut-shaking power and dynamic range. We especially enjoy hearing spatial detail, instrumental definition and completely natural dynamics on familiar records to a degree we did not know was extractable from the grooves when we listened through lesser amplifiers. At this level of sonic performance, the astoundingly small size and cool operation of the M-1.5t become the icing on the cake, rather than the main attraction."*

*THE t-mod STORY: A PERSONAL MESSAGE FROM BOB CARVER

I'd like to use this space to tell you about an adventure I had in the laboratory of *The Audio Critic*. As you may know, *The Audio Critic* is a very small circulation, well respected, special interest magazine devoted completely and totally to testing, reviewing, and critiquing audio equipment.

As memory serves me, one day I received a telephone call from the publisher who proceeded to offer me the following challenge (along with a kind of back-handed slap). He said, "I challenge you to make an audio amplifier that sounds better than anything else

in the world and I don't think you can do it."

I couldn't help but self-levitate about four feet off of the ground. On my way back down to earth, quietly and with great apparent confidence, I said, "I accept any challenge you can give me. You're on."

I packed up a whole laboratory full of audio design equipment and test instrumentation. I had it shipped to New York, where it was installed in two hotel rooms. (You can imagine the looks from the hotel security personnel as all this was being installed.)

What happened in those two hotel rooms and in the laboratory of *The Audio Critic* was an adventure for me that I'll long remember. What emerged was the t-mod ("t" for transfer function, "mod" for modification).

The t-mod gives you unsurpassed sonic transparency, focus, and smoothness. You will hear spatial detail,

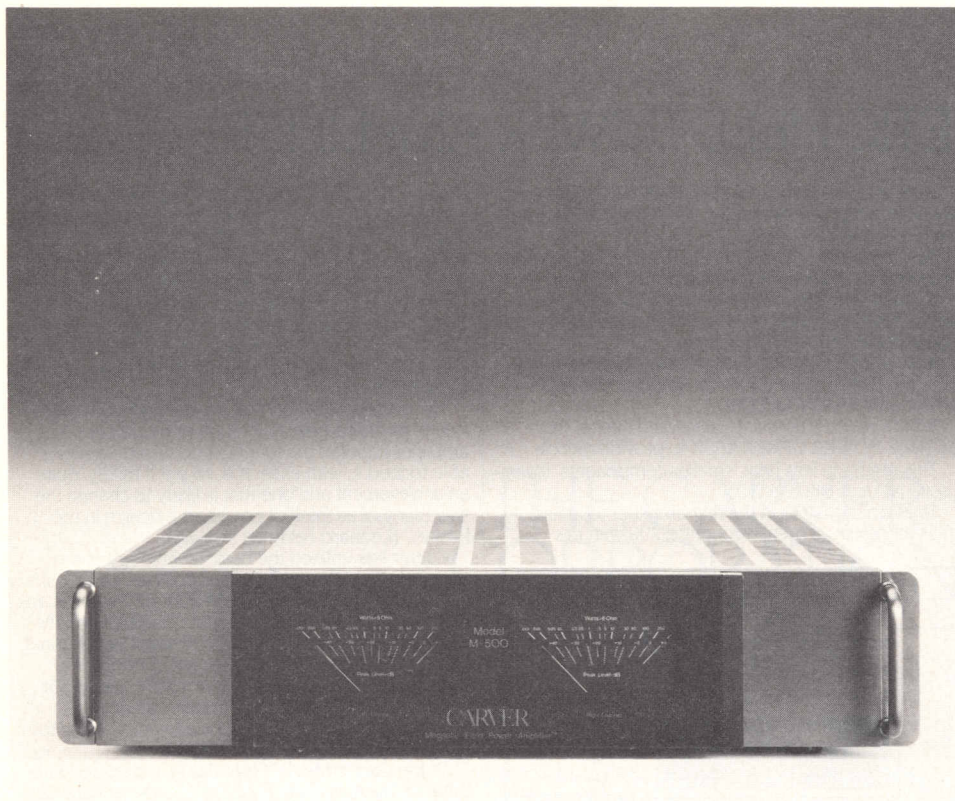
instrumental definition and completely natural dynamics to a degree that is altogether astonishing.

Bob Carver —Bob Carver

P.S. The t-mod technology is now included in all Carver Corporation amplifiers. We have a limited quantity of reprints of *The Audio Critic* article on the t-mod.

If you would like one, please send a self-addressed, stamped, 9"x12" envelope to: Carver Corporation
PO. Box 1237
Lynnwood, WA 98036
Attention: t-mod

or visit your local Carver dealer.



CARVER M-500t MAGNETIC FIELD POWER AMPLIFIER

Why you need more amplifier power. If you think two hundred and fifty watts a channel with peak reserves of up to 700 watts is overkill, read on. You'll change your mind. The reasons are logical and ultimately surprising.

RULE 1. Power is not loudness. Certainly to play music at high sound levels, speakers require more power. But we're talking high fidelity not sound reinforcement. Assume you don't intend to play your music any louder than you do now after you've bought a Carver M-500t... the improvement will still be audible.

RULE 2. LOW power kills speakers. NOT high power. Yes, illogical as it may seem, the lowly 40-watt receiver can kill a speaker faster than the M-500t! Here's why.

To produce a bass note, a woofer cone must move up to a half inch in a few hundredths of a second against the static room air mass. That can take up to 80% of an amp's power.

That's fine until you ask a woofer to move faster or farther than your receiver can provide power for. At this point the amplifier circuitry generates a high-frequency harmonic spike, a sort of electronic "squeal of anguish." The speaker crossover duly routes this nasty pulse directly to the tweeter which either produces horrible distortion or cumulatively results in the eventual burn-out of the tweeter. Thus the tweeter (and your ears) are punished for the woofer's inability to get power.

RULE 3. Adequate power makes an audible difference. While the burned tweeter example is an extreme one, some audible clipping occurs virtually every time a low bass pulse sounds, even at moderate listening levels. Sluggish meters may not record it, but the strike of a floor tom, beat of a tympani or snap of a Fender bass all can draw short peaks of over 200 watts per channel. When your modestly-powered amplifier can't handle it, there are audible consequences in the mid and high ranges.

Prove it to yourself by auditioning a good speaker with the same pre-amp, switching between power amps: The Carver M-500t and any 100-watt unit (which is probably more power than you have now.) It won't take a Golden Ear to hear the tight, crisp bass notes and the sudden absence of annoying high-end distortion you previously accepted as a normal part of music.

The M-500t doesn't color music, it frees your entire signal chain from the tyranny of insufficient power.

And if the new PCM/analog records excite you, along with the prospect of full digital sound sources within the decade, healthy power reserves are a total must. Hybrid digital technology's tremendously expanded dynamic range taxes many conventional amps; true digital will make many obsolete. Thus, an amplifier which has the power to make any record sound better now, will be the cornerstone of any conceivable future system.

An amp like the Carver M-500t.

Why you'll want the Carver model M-500t Magnetic Field Power Amplifier.

If you're wisely sold on the electronic and sonic benefits of generous power resources, read on. We'll explain why you needn't invest in a massive "arc welder" power amp to satisfy those needs.

While the M-500t is a bit larger than our remarkable M-400t cube amp, it weighs just 22 pounds. Less than some preamps!

No cooling fans vent its behind, no extruded fins protrude and the unit runs barely warm to the touch.

You see, while conventional amps continually court meltdown by converting up to 60% of their energy into heat, the M-500t transforms fully 80% of its power into useable audio energy. We have originated a more advanced, more elegant and more practical approach to the design of power supply sections. Even if we charged \$3000 an amp for exotic components, palladium wiring and kryptonite-covered capacitors, we'd still design our power supply to incorporate this new major invention. Gone are the coffee-can sized capacitors, massive power transformers and gigantic heatsinks that make old-style amps cost thousands of dollars. In their place is a patented, compact Magnetic Field coil which stores and controls energy, eliminating all need for heavy, costly parts required by the very best traditional designs.

Check under the hood of a fine conventional stereo amp and you'll see two mono amps with dual transformers, capacitors, etc. The M-500t's Magnetic Field design couldn't be farther from this approach. Each channel of the M-500t can actually BORROW unused power from the other channel during peak loads. Indeed, the M-500t can be operated as a 600-watt mono amp without any special switching!

Conventional amps may have protection circuits for themselves and speakers. But such circuits (one common design is referred to as a "crowbar circuit") are crude next to the M-500t's micro-computer monitor system. Instead of controlling input stages, which can cause delays and distortion, the M-500t's computer acts as a FINAL gate, just before the speaker terminals, for instant overload protection. Thus sonic perfection stands no risk of being marred even while fully protecting your valuable loudspeakers against potential damage. And the same circuitry lets the M-500t automatically adjust for any speaker impedance.

Dual, lighted, precision VU-ballistic meters provide a musically accurate picture of power output, averaging yet reacting to important transients.

We made sure the M-500t has a completely neutral signal path transparent in sonic character, resulting in zero listener fatigue. Combined with virtually unlimited dynamic headroom, the M-500t's performance surpasses any traditional amplifier made.

Hardware, buzzwords and specmanship aside, your final decision should be made by the sound of an amplifier. Compare the Carver M-500t to any 250-400 watt/channel conventional power amplifier around, Class A, B, H, G, Z, Q or otherwise. The class that stands out will be the superb colorless sound of the cool, unruffled, light-heavyweight M-500t.

Next compare price tags and discover what designing away all that scrap metal does to the watt-per-dollar price of a Carver Magnetic Field Amplifier.

You will be amazed at how an amp can be at once affordable, powerful and above all absolutely accurate and musical.

Specifications. Power, 251 watts/channel into 8 ohms 20Hz-20K Hz with no more than .05% THD; Power at Clipping, 270 watts/channel into 8 ohms at 1K Hz, 350 watts into 4 ohms at 1K Hz, 700 watts RMS into 8 ohms single channel; Noise, < 100dB down, IHF-A weighted, Harmonically related commutation noise is equal to or less than non linear distortion components, IHF-A weighted; IM Distortion, 0.05% SMPTE; TIM Distortion, Unmeasurable; Frequency Bandwidth, +0-3dB, 1Hz-100K Hz at 1 watt; Slew Factor, >200, Display Tracking, ± 1dB; Display Ballistics, Peak responding 1 millisecond attack, 1 second decay; Input Impedance, 15K ohms.

How to make a 250-watt receiver. You like the tuning, switching and pre-amp sections of your receiver or integrated amplifier but want to improve the 40-watt weakling power section? Simply route patch cords from the receiver pre-out or through a Carver Z-1 Wideband Accessory Coupler and into a M-500t. Now you have the power you've always needed.

CARVER M-1.5t

MAGNETIC FIELD POWER AMPLIFIER

Uncharacteristic of a spec sheet, our M-1.5t description starts out with a story.

Once Bob Carver visited a famous sound researcher who was attempting to recreate the "snip" of an ordinary pair of scissors. Between the microphone and the speakers he had installed TWENTY-FOUR 200-watt amplifiers. Yet when viewed on an oscilloscope it was apparent that the final tip of that instantaneous transient was being distorted. Believe it or not, he needed more power!

Bob was not exactly surprised. Even playing back a recording of his daughter's first cries had exhausted even HIS enormous sound system's power reserves. It was evident that real-world sound occurs very quickly and requires much more power than ANY current amplifier could produce.

The M-1.5t is a culmination of Bob's search for Enough Power.

It is intended to be the ultimate amplifier for the reproduction of music today and for years to come, far into the digital age. We recommend it without reservation for home listening, or even public address.

Although its power output capabilities are unapproached by any other commercially available audio amplifier, the M-1.5t is designed to be virtually indestructible under normal use and abnormal abuse.

Why one thousand two hundred watts? Music is full of surprises such as lightning transients, combinator crests of demand created by multiple music waveforms and the explosive levels that some well-recorded instruments can instantly attain. We hear all this in live music; indeed, this is what makes music live. But we don't hear these incredibly intense bursts of sound as being loud—they are too short in duration—just live, like the scissor snip.

Nonetheless these quick, high-intensity peaks MUST be reproduced to make recorded music feel live.

If the amplifier cannot provide the instantaneous power to surmount these rigorous musical peaks when they are presented at its inputs, it makes a sound of its own devising, literally an electronic squeal of anguish.

The result is audible degradation of your system's sound. Instantaneous clipping that has pervaded your listening for years. A form of distortion which has been difficult to avoid until the M-1.5t arrived.

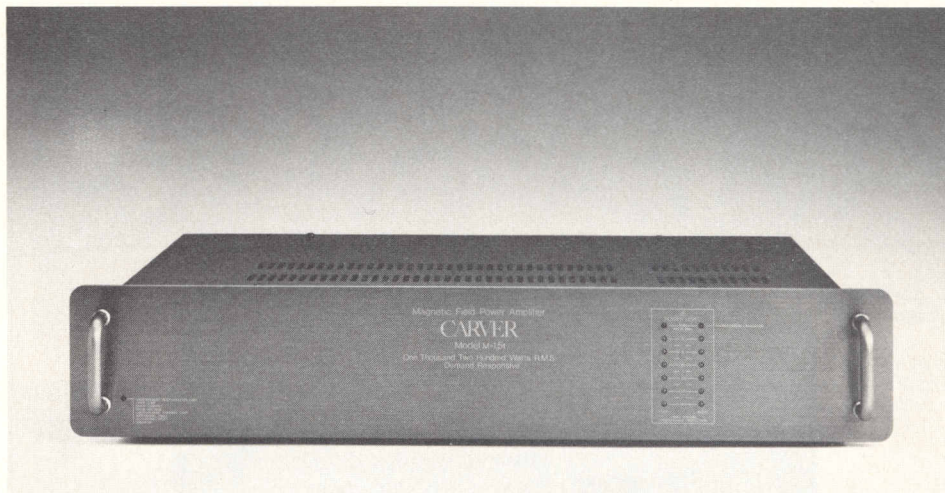
Accepting audible reasons for extremely high power means dissuading yourself that high power spells speaker burn-out. Actually, LOW power destroys many more speakers. Yes, illogical as it may seem, the lowly 40-watt receiver can "kill" a speaker far faster than the M-1.5t! Here's why.

To produce a bass note, a woofer cone must move up to a half inch in a few hundredths of a second against the static room air mass. That can take up to 80% of an amp's power. That's fine if it has the power. If it doesn't, clipping occurs. At reasonable levels, this generates distortion. At higher levels the speaker crossover duly routes this nasty pulse directly to the tweeter and midrange drivers which either cumulatively burn out or actually fry within seconds! With the power reserves of an M-1.5t, the tweeter and midrange are PROTECTED from the woofer's massive power consumption.

How can the M-1.5t weigh less than some preamps and yet pack more muscle than power amps weighing FIVE times as much?

The M-1.5t vs. convention. In a traditional amplifier, the power supply only has two chances during each AC line voltage cycle to recharge and store energy. To meet musical demands in between it must maintain a reservoir of energy. A good analogy would be a tank of water. A faucet periodically squirts some water into a tank, while on the other end, a valve opens in-time-with-demand, letting water (power) out. The tank has to be big enough to allow for the drain on it even when it can't be resupplied by the faucet (line current) at its top.

In reality this means as conventional amplifiers



grow more powerful, their transformers and supply capacitors (storage tank) must grow proportionately larger. The result is an increase in size, mass and expense. Electricity doesn't store as neatly as water: it dissipates itself in considerable, sometimes destructive heat.

But, while conventional amplifiers continually court meltdown by converting most of their energy into heat, the M-1.5t transforms almost all its energy into useable audio power with a patented power supply engineered to be directly responsive to the moment-to-moment power requirements of your music. In our water analogy, think of it as a direct valve from the water main to the outlet with no need for inefficient intermediate storage. Your speakers are literally getting their power from the power dynamo.

This is no simple feat, however and requires a special Triac switch and Magnetic Field Coil which actually spend most of their time stepping UP the line voltage values and are only called upon to handle maximum line voltages at times of maximum demand.

Rating the M-1.5t. We believe that there is more to performance-effective music amplification than the FTC "Power Disclosure" rating. The conservative 350 watt per channel rating on the back of the M-1.5t doesn't even hint at its true capabilities. Upon application of a musical input, each channel of the M-1.5t is regulated to put out 600 watts, diminishing over several seconds to the rated 350 watts.

Several seconds is a long time in the life of a music waveform. Any peaks requiring anything like 600 watts will come and go in a few HUNDREDTHS of a second and the M-1.5t will do them justice with 1200 watts of power. Let the waveform subside for as little as 1/100 of a second and the amplifier resets itself, capable of providing the full 600 watts per channel again. Because of the tremendous capacity of the M-1.5t's power supply, there has been no need to isolate the channels. Thus, when pressed hard, either channel is free to BORROW an additional 150 watts from the other for a total of 750 watts (so long as the summed output of both channels doesn't exceed 1200 watts max).

Brute power controlled. Implicit in this much power is a set of carefully designed protection circuits. For your speakers and for the 1.5t.

While it is unlikely you'll ever clip the 1.5t, a high-gain comparator circuit links input and output and responds to any significant difference between them, cutting input just enough to bring the 1.5t out of clipping. This protects your loudspeakers and protects against distortion. You'll know what form of protection has been activated just by watching the LED display.

Next we designed a set of total turn-off mechanisms into the 1.5t to protect against 1) temperatures above 70°C 2) excessive out-of-phase infrasonic/low frequency signals like dropping a tonearm 3) excessive DC currents. These protect speakers from ungrounded line-level connectors, oscillation, and real-world accidents like shorted speaker wires.

The M-1.5t's final protection mechanism is very

special. Driving your woofers with the tight high-exursion bass possible with a 1.5t, CAN heat the voice coils. While good speakers have heat dissipation safeguards, the 1.5t also keeps track. It actually averages loudspeaker input continuously and remembers for about three minutes backward in time. If it judges the amount to exceed the safe limits for high quality loudspeaker woofer voice coils, it will momentarily interrupt power to cool them.

A window on power. The fifteen LED's on the 1.5t's face do more than simply monitor power. The top LED signals headroom exhausted. When it blinks at high levels, you know the special antialiasing circuits are operating and you've used up all the headroom.

The fifteenth LED is a diagnostic fault indicator. In conjunction with the two lowest level display LED's, and an internally generated warning sound, it informs you of internal problems, routine protection shut down and other occurrences.

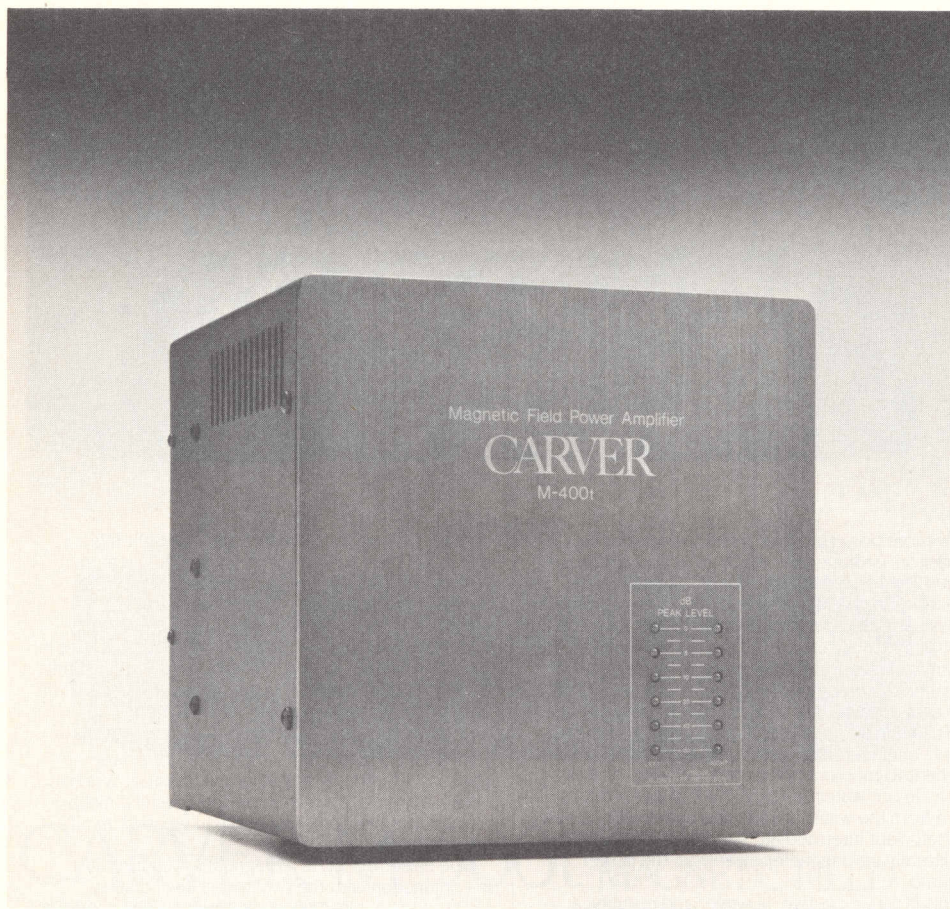
The music of power. Of the Carver M-1.5t, Peter Aczel, Editor and Publisher of *The Audio Critic* has said, "... the equal of any power amplifier in transparency, focus and smoothness and, of course, far ahead of any other we tested in sheer gut-shaking power and dynamic range. We especially enjoy hearing spatial detail, instrumental definition and completely natural dynamics on familiar records to a degree we did not know was extractable from the grooves when we listened through lesser amplifiers. At this level of sonic performance, the astoundingly small size and cool operation of the M-1.5t become the icing on the cake, rather than the main attraction."

Power for life. The Carver M-1.5t is all the amplifier your hi-fi system will ever need. No matter what advances in digital playback find their way into your signal chain. If you like the final edge of reality in your playback, no matter what sound level you choose, the M-1.5t is your answer. That it is the ultimate power amplifier ever made can only be confirmed by listening. Are you ready?

Specifications.

Power, 350 watts/channel into 8 ohms 20 Hz-20K Hz with no more than 0.1% THD; Power at clipping continuous per channel, 550 watts at 4 ohms, 430 watts at eight ohms, 240 watts at sixteen ohms. Dynamic headroom (each channel) 750 watts at 4 ohms, 750 watts at eight ohms, 380 watts at sixteen ohms. 600 watts per channel long-time-period reserve power at 8 ohms.

Noise, > 100dB down, IHF-A weighted. Harmonically related commutation noise is equal to or less than nonlinear distortion components, IHF-A weighted; IM Distortion, 0.1% SMPTE; TIM Distortion, Unmeasurable; Frequency Bandwidth, +0-3dB, 0Hz-250K Hz at 1 watt; Slew Factor, greater than 100 (small signal bandwidth equal to large signal bandwidth because of ultrasonic output filter). Display Tracking, ± 1 dB; Display Ballistics, Peak responding 10 millisecond attack, Input Impedance, 150K ohms, Infrasonic filter, -3dB at 0.4 Hz; Ultrasonic filter, better than -3dB at 80KHz (related to load impedance) 3 1/2"H, 19"W, 10 1/2"D. Wt. 16 lbs.



CARVER M-400t MAGNETIC FIELD POWER AMPLIFIER

Why you need every bit of the M-400t's power.

The remarkable Carver M-400t may very well put out more power than you ever considered necessary for accurate music reproduction at normal listening levels. The surprising fact is, you need every watt of the power provided by this remarkable little ten-pound cube. Here's why.

Music is full of surprises such as lightning transients, combinant crests of demand created by multiple music waveforms and the explosive levels that some well-recorded instruments can instantly attain. We hear all this in live music; indeed, this is what makes music live. But we don't hear these incredibly intense bursts of sound as being loud—they are too short in duration—just live.

Nonetheless these quick, high-intensity peaks MUST be reproduced to make recorded music feel live.

And that's up to the power amplifier. If the amplifier cannot provide the instantaneous power to surmount these rigorous musical peaks when they are presented at its inputs, it makes a sound of its own devising, literally an electronic squeal of anguish. It may be an inoffensive "click" at low levels, a sound you've come to accept as part of the music—or it may be an annoying "snap" which we call clipping, a sure sign the amplifier's reserves are being drained with each waveform.

The result is audible degradation of your system's sound. Instantaneous clipping that even one hundred and fifty watts per channel cannot alleviate. Compare the M-400t and any lower-powered amplifier with the same signal chain and speakers to prove to yourself that all along you've been putting up with regular clipping distortion.

Having accepted the audible reasons for at LEAST 200 watts per channel, you must also deal with several Power Myths:

MYTH 1. Power means loudness. Certainly to play music at high sound levels, speakers require more power. But we're talking high fidelity not sound reinforcement. The point of more power is to have much in reserve, not to use it blasting the neighbors. We don't intend you to play your music any louder than you did when you under powered your system without an M-400t.

MYTH 2. High power kills speakers. Actually, LOW power destroys many more speakers. Yes, illogical as it may seem, the lowly 40-watt receiver can "kill" a speaker far faster than the M-400t! Here's why.

To produce a bass note, a woofer cone must move up to a half inch in a few hundredths of a second against the static room air mass. That can take up to 80% of an amp's power. That's fine if it has the power. If it doesn't, clipping occurs. At reasonable levels, this just generates distortion. At higher levels the speaker crossover duly routes this nasty pulse directly to the tweeter which either cumulatively burns out or actually burns up within seconds! With the power reserves of an M-400t, the tweeter is PROTECTED from the woofer's massive power consumption.

MYTH 3. High power means heat and weight.

How can the M-400t weigh less than most pre-amps and yet pack more muscle than power amps weighing five times as much?

After all, no cooling fans vent it, no extruded fins protrude and the unit runs barely warm to the touch. Let's compare.

The M-400t vs. convention. In a traditional amplifier, the power supply only has two chances during each AC line voltage cycle to recharge and store power. To meet musical demands in between it must maintain a reservoir of power. A good analogy would be a tank of water. A faucet periodically squirts

some water into a tank, while on the other end, a valve opens in-time-to-demand, letting water (power) out. The tank has to be big enough to allow for the drain on it even when it can't be resupplied by the faucet (line current) at its top.

In reality this means as conventional amplifiers grow more powerful, their transformers and supply capacitors (storage tank) must grow proportionately larger.

But, while conventional amps continually court meltdown by converting up to 60% of their energy into heat, the M-400t transforms fully 80% of its power into useable audio energy with a patented power supply engineered to be directly responsive to the moment-to-moment power requirements of your music. In our water analogy, think of it as a direct valve from the water main to the outlet with no need of bulky storage. Your speakers are literally getting their power from the power dynamo.

This is no simple feat, however, and requires a special Triac commutator and Magnetic Field Coil which actually spend most of their time stepping UP line voltage values and are only called upon to handle maximum line voltages at times of maximum demand.

A 400t-watt brute hides within. The M-400t's two hundred watts per channel are "combinable" into a herculean FOUR hundred watts mono without so much as a switch. (Compare it to other designs which are either not switchable or require internal modification.) Either by pairing the units or by bi-amplification (using the 400 watts for subwoofer or low-end power), a system of great transient capability and tight response can be achieved.

Sophisticated protection for your system. To appreciate an amplifier as powerful and accurate as the M-400t, you must have high quality, hi-fi speakers. The M-400t dutifully responds to musical input and will transmit those demands to your speakers. To protect against possible damage, the M-400t has an elaborate logic-controlled protection system to prevent over-driving your valuable speakers, and to prevent clipping when power demands outstrip even the M-400t. The system simply shuts down output for several seconds before resumption, testing output demand before continuing. Should the problem be a short or other massive malfunction, no damage can occur. Instead of controlling input stages, which can cause delays and distortion, the M-400t's computer acts as a FINAL gate, just before the speaker terminals, for instant overload protection.

Physically the M-400t is simplicity itself. Only a matched set of power LED's accent its front. Volume is controlled by the input signal eliminating the need for gain controls.

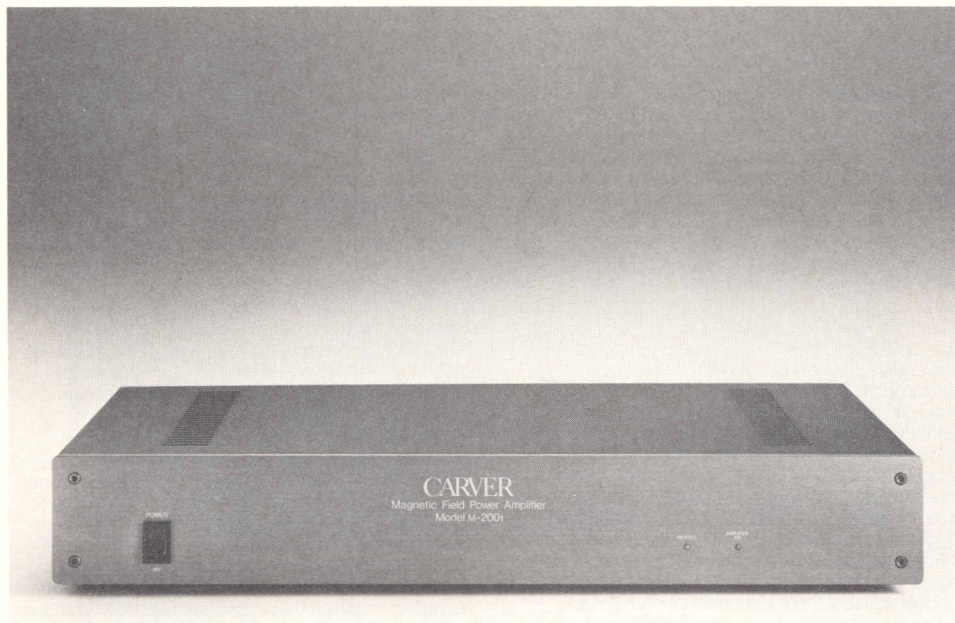
The M-400t's back utilities are spare and to-the-point: speaker terminals and input sockets.

The most important test. Hardware, buzzwords and specmanship aside, your final decision should be made by the sound of an amplifier. Compare the Carver M-400t to any 200—250 watt/channel conventional power amplifier around, Class A, B, H, G, Z, Q or otherwise. The class that stands out will be the superb colorless sound of the cool, unruffled, light-heavyweight M-400t.

Next compare price tags and discover what designing away all that scrap metal does to the wattle-per-dollar price of a Carver Magnetic Field Amplifier.

You'll be amazed at how an amp can be at once affordable, powerful and above all absolutely accurate and musical.

Specifications. Power, 201 watts/channel into 8 ohms, 20Hz-20K Hz with no more than .05% THD; Power at Clipping 250 watts/channel into 8 ohms at 1K Hz, 300 watts into 4 ohms at 1K Hz, 500 watts RMS into 8 ohms single channel!; Noise, 100dB down, IHF-A weighted, Harmonically related commutation noise is equal to or less than non linear distortion components, IHF-A weighted; IM Distortion, 0.05% SMPTE; TIM Distortion, Unmeasurable; Frequency Bandwidth, + 0-3dB, 1Hz-100K Hz at 1 watt; Slew Factor, 200, Display Tracking, ± 1dB; Display Ballistics, Peak responding 5 millisecond attack, 1 second decay; Input Impedance, 30K ohms. Size: 6 3/4" cube; wt. 9 lb.



M-200t MAGNETIC FIELD POWER AMPLIFIER

Breakthrough Technology in a More Affordable Package

With the musical demands placed on today's

stereo systems, lots of clean, dependable power is quickly becoming a necessity rather than a luxury.

With these needs in mind, Bob Carver has created a new way of delivering amplifier power without the old problems of heat, great size, and weight.

The Magnetic Field design represents the ability to deliver power with absolute clarity, in a cool running package 1/2 the size of the technological dinosaurs of the past.

The M-200t delivers power in a variety of ways not

previously possible: First, its basic ability is to produce 120W RMS per channel into 8 ohms. For special applications, both channels can be used as one without special wiring to deliver an earth-shaking 350 watts in mono!

Another innovative benefit of the M-200t is its sensitivity to your particular speakers. At all times the amplifier monitors conditions that could damage your speakers, allowing them to cool off if they begin to show signs of overuse.

When choosing an amplifier for your system, consider all the benefits Magnetic Field Technology can offer.

When you audition a Carver M-200t, you will find it to be sonically superior to any conventional amplifier on the market and far superior in dependability.

Specifications.

Power Output: 120W rms per channel into 8 ohms from 20 Hz to 20 kHz with no more than 0.15% total harmonic distortion. Power at Clipping: 130W rms per channel into 8 ohms at 1 kHz; 200W rms per channel into 4 ohms at 1 kHz; 350W mono bridged into 8 ohms at 1 kHz. Noise: Greater than 100 dB down, IHF A-weighted. Harmonically related commutation noise is equal to or less than nonlinear distortion component, IHF A-weighted. Intermodulation Distortion: 0.15% SMPTE (Maximum). Transient Intermodulation Distortion: Less than .001%. Frequency Bandwidth: -3 to +0 dB from 1 Hz to 80 kHz at 1W. Power Requirements: 120V, 60 Hz; 240V, 50 Hz (optional). Power Consumption: 500W. Dimensions: 2.55"/1.32"/9.20" (h/w/d). Weight: 10.25 lbs. Optional Accessory: Appearance Panel (Carver PN#C-HE/M-200).

CARVER Z-1 WIDE BAND Z COUPLER

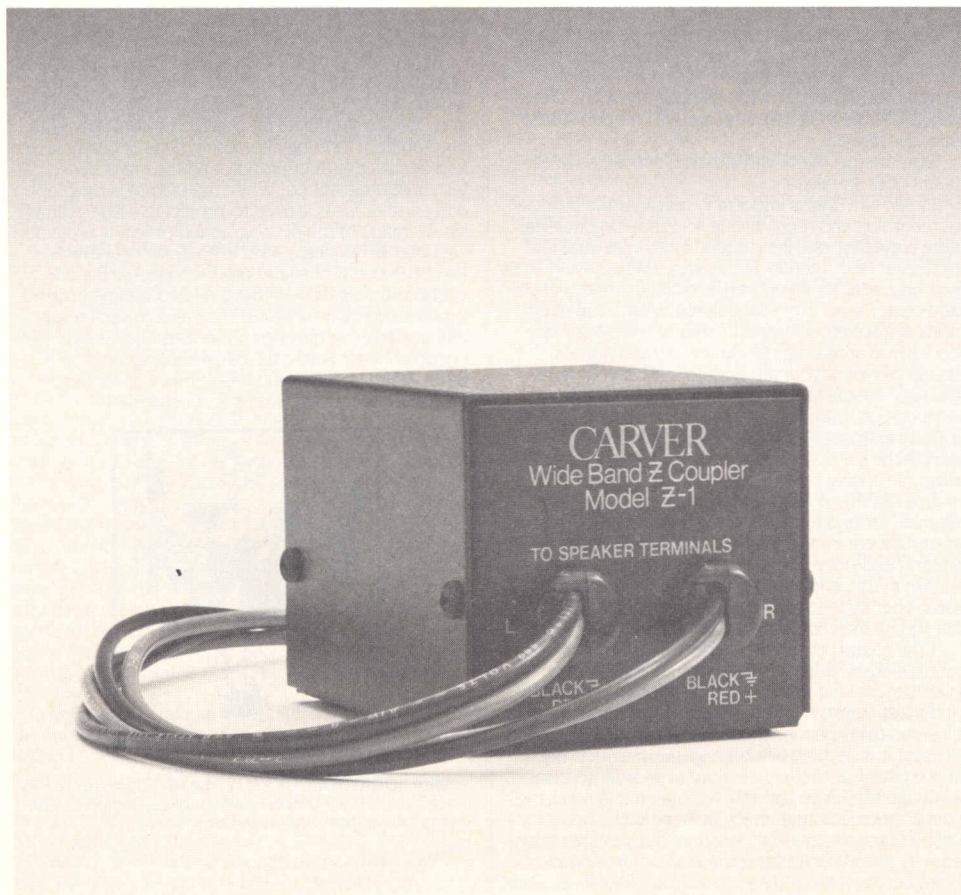
While CARVER Magnetic Field Power Amplifiers are usually found in systems which are controlled by a preamplifier, a growing number of serious audiophiles with modest budgets utilize a Magnetic Field Power Amplifier (connected through a CARVER Z-1 Wide Band Z Coupler) with low-power receivers or integrated amplifiers.

The CARVER Model Z-1 Wide Band Z Coupler is an impedance matching device which enables a receiver or integrated amplifier to be used with CARVER Magnetic Field Power Amplifiers.

Many low-power receivers and integrated amplifiers have excellent phono stages and line amplifiers. However, their power amplifier sections, in addition to being underpowered, are frequently incapable of even mediocre performance with many loudspeaker loads.

The Z-1 presents an optimum noninductive load to the power amplifier in the low-power receiver or integrated amplifier. When coupled with the Z-1, the outputs of the receiver or integrated amp are used to drive the CARVER Magnetic Field Power Amplifier. The result is awesome sonic performance from a relatively inexpensive system.

Dimensions: 2" x 2" x 2 3/4"



SONIC HOLOGRAPHY

The problems of sonic imagery inherent in conventional stereophonic reproduction have been solved by the Sonic Hologram Generator, available in three different components: The C-4000 and C-1 Pre-amplifiers and the C-9 Sonic Hologram Generator.

Very briefly, the Sonic Hologram presents timing and phase information that exists in stereo program material—but is normally inaudible. With Sonic Holography, this information emerges in three-dimensional space around the listener who is thus able to establish the precise location of the instruments and voice. The impact on the listener of Sonic Holography is best described by the most experienced and knowledgeable experts in the audio industry.

"When the lights were turned out we could almost have sworn we were in the presence of a real live orchestra."

Hal Rodgers, Senior Editor,

Popular Electronics

"The effect strains credibility—had I not experienced it, I probably would not believe it... the 'miracle' is that it uses only the two normal front speakers."

Julian Hirsch, Hirsch-Houck Labs,

Stereo Review

"...it brings the listener substantially closer to that elusive sonic illusion of being in the presence of a live performance."

Larry Klein, Technical Director,

Stereo Review

"...seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers... terrific."

High Fidelity



Live Performance

Note that in a concert hall setting the sound is heard with timing and amplitude cues. Three dimensional!



Conventional stereo

Note that when listening to conventional stereo the sound is heard, more or less, on a flat curtain of sound between the two speakers. Volume differences only. The timing cues are gone!

Stereo sound is an illusion, and for some listeners it is not a particularly successful or convincing one. Stereo reproduction is subject to fundamental distortions of spatial perspective, sufficiently severe that no six-year-old with normal hearing will be fooled into confusing a stereo playback with a real, live sonic event. The imaging of stereo is an acquired taste which audiophiles learn to be sensitive to—acclimating to its unnatural perspective in order to enjoy the portrait of sound which the stereo system paints upon the wall between the loudspeakers. Consider, for analogy, the illusion of depth perspective that is provided in photographs and paintings by converging straight lines and the hazy reduction of contrast in "distant" objects. The geometry of perspective is part of the perceived real world, and rendering it is an essential requirement for any landscape painter. Certainly the historic discovery of optical perspective a few hundred years ago resulted in paintings that are generally more pleasing to view than, for instance, the flat two-dimensional figures in Egyptian paintings from the tombs of the Pharaohs. Still, few people viewing paintings have ever been fooled into believing they were looking through a window at a real three-dimensional scene. And while stereo sound is both more realistic and more pleasing than monophonic reproduction, it is still only an attractive illusion.

Many listeners don't care about its limitations. For most people, a stereo system is a pleasant vehicle for listening to recorded music, and—like a Renaissance painting—it is not judged on its ability to deceive our senses. Most listeners accept the stereo illusion on its own terms, imperfect as it is, and don't let it stand in the way of enjoying the rest of the sonic experience: the rhythms, melodies, harmonies, orchestration, song lyrics, the power of pipe organ pedals and the crisp impact of percussion.

But some of us who are audiophiles want more. For decades "high fidelity" has been billed as providing either they-are-here or you-are-there realism, and this is what we look for. Historically the strongest push for the continued improvement of recording and playback systems has come from the desire to recapture the elusive sense of "being there"—in the night club with the jazz trio, in the concert hall with the symphony orchestra, in the cathedral with the choir. Realism is the criterion. And by this criterion stereo sound is flawed.

Now, the problem with stereo is simple: each ear hears both speakers.

To see why this is important, consider the process of recording and reproducing a sound—one musical note played by one instrument, located several feet to the left of the center of the stage. What would you hear as a listener if you were located in an ideal front-and-center seat? The sound spreads out in all directions at a speed of approximately 1100 feet per second. If you are facing the center of the stage, the sound arrives at your left ear first and at your right ear very shortly afterward—how long afterward depends on its angle of arrival. If the sound source is exactly in front of you, identical signals arrive at both ears at the same time. Since the instrument in our example is only a few feet left of stage center and so is only slightly to the left of front (rather than 90 degrees around to the left), the arrival of the sound at your right ear is delayed by a small fraction of a millisecond and since your head blocks high frequencies, but isn't large enough to be an effective barrier for lows, your right ear receives a sound that is slightly filtered by the acoustic shadow of your head.

If the sound is recorded and later played back via loudspeakers, the result will depend on the microphone technique employed. Consider the simplest and most common: the sound is recorded via a single close-up microphone whose signal is "panpotted" i.e. split and recorded in both stereo channels but slightly stronger in the left channel in order to place its image slightly to the left of center. In playback the sound emerges simultaneously from both speakers (a little louder in the left). Assume that you are sitting equally distant from the speakers, facing the midpoint between them. The sound from the left speaker

arrives at your left ear, and at the same time the sound from the right speaker arrives at your right ear. A fraction of a millisecond later the sound from the left speaker, after filtering by the acoustic shadow of your head, arrives at your right ear; and similarly the sound from the right speaker arrives at your left ear. In the "live" listening experience the single sonic event produced two arrivals at the ear: the delay and frequency-spectrum differences between the arrivals at the two ears are the primary cues which the brain uses to determine the direction of the sound source. In the "panpotted" stereo recording and playback, the sonic event has produced a total of four arrivals at the ears, the first two being simultaneous and identical in frequency spectrum—a very different set of cues.

There are additional stereo miking techniques in common use, but all share the characteristic that every sound is present to some degree in both channels. Therefore every sonic event always produces four sonic arrivals at the ears in stereo playback—instead of the two which in life provide the brain's primary cue for localizing the direction of a sound. Of course this problem is avoided in a "ping-pong" recording, in which the sound emerges only from the left speaker or only from the right; but that's not stereo and cannot present a panoramic image spanning the space between the speakers.

The goal of the Carver Sonic Hologram Generator is to eliminate the "extra" two sonic arrivals that occur with conventional stereo playback, but which do not occur in real life. The ear/brain system can thus receive the unambiguous timing and phase information that exists when we listen to real sonic events with only two arrivals, one per ear. A great deal of the subtlety of a real performance, including a clear sense of the size, or "sonic signature" of the performance environment can be recovered from the recording, which is all but lost in conventional stereo playback.

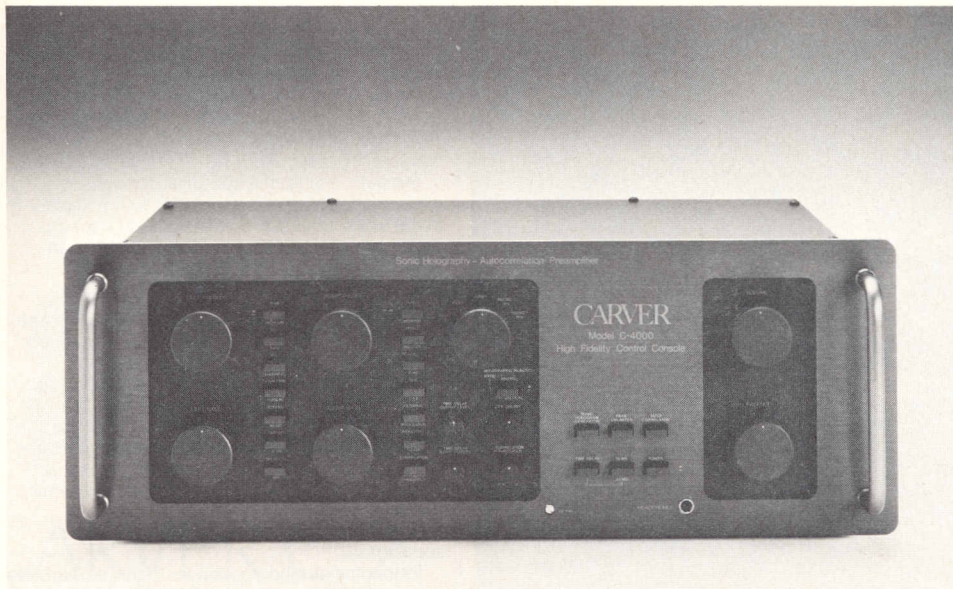
By acoustically cancelling the two unwanted arrivals, Sonic Holography restores perception of differences in depth and ambience in the stereo image which are "masked" in ordinary stereo playback.

Why is this process called Sonic Holography? An optical hologram is a photograph made with a laser whose coherent beam of light is split into two beams and used to illuminate an object; the two beams are recombined, forming alternating rings of constructive and destructive interference, and the interference pattern is photographed. When the picture is developed and another laser is used to project it, a three-dimensional image of the photographed object is projected in space. By analogy, a sonic hologram generator takes the beam of sound produced by each loudspeaker and splits it so that a related beam of sound is produced by the opposite speaker in such a way that acoustic interference patterns of the sounds occur in the air near each ear, revealing the true three-dimensional sound image that was hidden in the stereo recording. And it is spectacular!



Sonic Holography

With SONIC HOLOGRAPHY, the sound is reproduced much like that of a concert performance, complete with timing, phase, and amplitude cues.



CARVER C-4000 HIGH FIDELITY CONTROL CONSOLE

Under all the buttons and knobs is, first and foremost, one of the finest audio preamplifiers in the world. Although the C-4000 can combine up to five separate functions to recreate the vivid reality of live sound, its primary role is that of a fine "straightwire" preamplifier dedicated to perfectly amplifying real-world musical signals without a trace of distortion.

Its phono stage lets you match virtually any cartridge to the ultra-sensitive phono preamp stage where the infinitesimal impulses from your cartridge are raised to line level and equalized. Not only does the C-4000 allow capacitance matching between itself and the cartridge/cable load, it treats the signal to state-of-the-art ultra low noise, high current transistors in the first critical stages, eliminating a main source of noise and distortion. As the signal passes through successive stages it retains fidelity to the point where one watt of real-world output results in just 0.00000251 watts of distortion. Zero normalized phase shift. Zero group delay. Noise performance within 1dB of the theoretical limit of real-world cartridges. No slew limiting. No overload.

A superb range of controls. There are separate tone controls for each channel plus a choice of turn-over frequencies with a defeat for instant comparison. A 12dB/octave infrasonic filter helps eliminate speaker woofer cone flutter and distortion caused by warped records, acoustic feedback, tonearm resonances and floor movement. A discrete headphone amplifier is included. A speaker mute switch allows you to cut sound momentarily without changing master volume control setting. A stereo-mono switch lets you instantly check for cartridge and speaker phasing errors. You can dub between two tape decks interchangeably. Additional external processors may be added at any time and switched from the front panel. While the antitheses of "straightwire" thinking, these human-engineered controls let you truly enjoy your music. And of course ALL sound processing circuitry is instantly defeatable for comparison and for the pursuit of eternal flatness, may it exist in all our hearts and longings.

Yet we think there is more to reality than flatness...

Consider the nature of music. Music arrives at our ears in-phase, alive with all nuances of the reverberant room, the crisp dynamics of instruments, the position, sound quality and even natural spectral frequency responses all vivaciously present. It was this challenge of reproducing reality which set Bob Carver to creating the complete C-4000.

The achievement of Sonic Holography. Consider each sonic event of a musical performance. For

example, when a drum strikes a note in front of you, each ear receives a sound arrival which tells it just where that drum is in space by comparing the two sounds. One sound source; two sound arrivals. A stereo speaker simulates this effect by beaming sounds from two points ahead of you. For a split-second, your ear is deceived by the two sound arrivals, just like in real life. But then each ear gets another sound arrival from the opposite speaker. Two sound sources; four sound arrivals. The ear-brain localizing center is confused with multiple sound arrivals and can barely perceive a "center" to the sonic event.

Sonic Holography generates another set of signals which exactly cancel the spurious second set of sound arrivals. Thus unconfused, your ear again hears true sound. Just two sound arrivals as in real life, once again. Instead of merely "imaging" between the speakers, sound suddenly bursts forth wider than your speakers.

Higher (and lower) than your speakers. Closer and farther back—even to the sides of you. Instead of a tiny window, the image of sound is a giant panorama freeing you from the room's dimensions.

Popular Electronics said "...the result was positively breathtaking! When the lights were turned out we could almost have sworn that we were in the presence of a real live orchestra."

Omni Magazine noted that "Instruments and performers are located where they belong whether to the front of, between, beside or behind the speakers—in short, anywhere in a 180 degree arc facing the listener."

Julian Hirsch said "The effect strains credibility—I had I not experienced it I probably would not believe it myself."

Example: "Time" from Dark Side of the Moon by Pink Floyd. Each clock is individually discernible. Did you know that they were set up in rows?

Example: Suite in F by Holst. You can discern the position of the first and second trumpet sections and even the three saxophones. The tuba's valve sounds are discernible below the sound emanating from his bell!

Example: Your favorite music no matter what your tastes.

Restoring the hall: Time Delay. Now that the sound field in front of us has been made real again, it is time to consider the total listening environment including reflected sounds received from behind us. These place us within the listening environment, giving depth and dimension. The emotional impact of music is increased, yielding the impression that your body is immersed in sound rather than simply being present near the source.

The time delay system built into the Carver C-4000 is designed to re-create the larger feeling of acoustic space. Delayed sounds are reproduced by small secondary sound sources of fifteen watts each, freeing the main front channels to reproduce the direct sound of music. This requires just two inexpensive speakers which may be unobtrusively placed behind the listener. Adjustments allow you to control the "size" of the environment you wish to simulate and match the output to the needs of your listening space. A line level output is provided should more than fifteen watts per channel be desired.

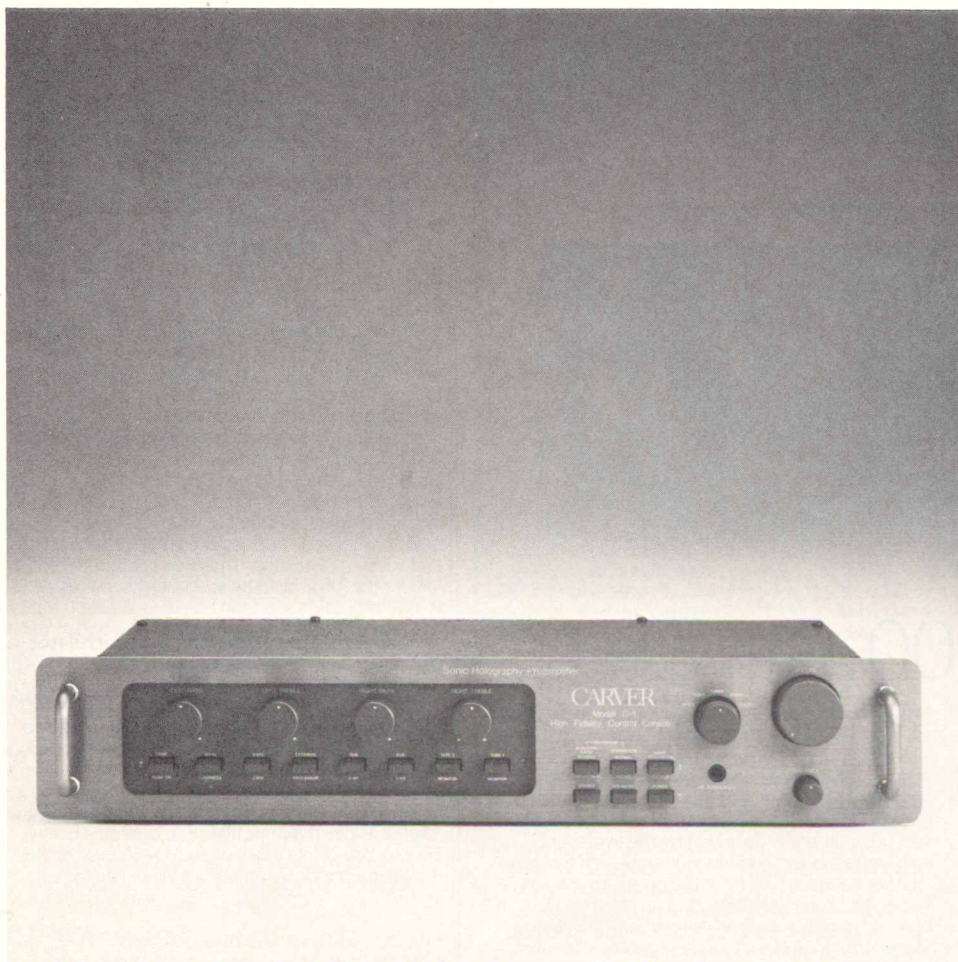
Putting the punch back in: The Peak Unlimiter Circuit. Recording tape simply cannot capture the dynamics of sound. Soft passages mix with tape hiss; loud passages saturate and distort the tape. Recording engineers compensate with electronic devices that "limit" loud sections and boost or "compress" soft sections. The result is a dynamically neutered sound unlike the delicate pianissimos and thundering forte's of live sounds. The C-4000's Peak Unlimiter circuit automatically senses when the dynamics have been "squashed" and restores their punch, quickly and without distortion. Thus you hear louder louds and softer softs; in short, a sound dynamically closer to reality.

Eliminating the noise: The Autocorrelator Noise Reduction System. Tape inevitably adds hiss to recordings. Vinyl adds surface noise. So do your cartridges, electronics and turntable. Eliminating this final veil between you and reality is achieved by a special circuit which discriminates between random noise and musical information, removing hiss over the range of 2kHz to 20kHz. Non-random, low frequency noise such as hum and rumble are removed by a level-sensitive dynamic filter that operates below 200Hz. You get as much as 10dB less noise so that music emerges from an almost silent background.

- Precision, gold band, laser trimmed resistors.
- 24K gold contacts on all mating surfaces insure perfect signal transfer.
- G-10 glass/epoxy circuit boards insure electrical stability year after year after year.
- Precision machined (not stamped) metal parts.
- Sealed, lubricated switches eliminate noisy switches over the lifetime of the instrument.
- High clamping pressure, hot molded external connectors with dual wipers insure absolute electrical contact.

The Carver C-4000 as an instrument. With SONIC HOLOGRAPHY, Time Delay, Autocorrelator and Peak Unlimiter features, the Carver C-4000 departs from the standard concept of how a pre-amplifier should perform. The C-4000 opens the opportunity for truly realistic sound reproduction. And you are in control. The Carver C-4000 becomes an instrument you play in creating that unmistakable presence of a live performance.

Specifications. Phono stages, Frequency response: within ± 0.25 dB extended RIAA. Phono 1: moving magnet. Phono 2: moving coil. Frequency response: 20Hz to 20 kHz ± 0.25 dB. 1.5Hz to 60k Hz + 0, -3dB. S/N ratio (IHF "A"): 86dB re 0.5V. Distortion: THD 0.05% at rated output. Typically 0.003%. SMPTE IM 0.05% at rated output. Typically 0.003%. T.I.M. unmeasurable. Infrasonic Filter, -3dB at 15Hz, 12dB/octave, -22dB at 5Hz. Autocorrelation, High-frequency noise reduction, -3dB at 1.5k Hz, reaching -8dB at 2.5 k Hz, extending to 20k Hz. Low-frequency noise reduction -3dB at 200Hz, reaching -10dB at 100Hz extending to 20Hz. Peak Unlimiter, Total dynamic range recovery approximately 5.5dB. Sonic Hologram Generator, Image resolution: better than 5° arc in the horizontal plane, better than 20° arc in the vertical plane (Holographic Injection Ratio set to Theoretical). Time Delay, Delay: 15 or 25 ms, switch selectable. Echo recirculation: variable from 0 to 100%. Distortion: less than 0.25%. Dimensions 19 x 6 3/4 x 8 1/2". Weight: 11 lbs. (5 kg).



CARVER C-1 SONIC HOLOGRAPHY PREAMPLIFIER

The C-1 as one of the world's best preamplifiers. Forget for a moment the miracle of Sonic Holography.

Concentrate on one of the best preamplifiers on the market today.

Accurately amplifying the infinitesimal output of a moving magnetic phono cartridge (with its varying impedance and capacitance) while matching the theoretical RIAA equalization curve built into every master disc is the true determiner of a preamplifier's "sound." We start with two separate extended-curve phono stages utilizing the quietest multiple emitter transistors in the world. The result is virtually no cartridge interaction. Zero normalized phase shift. Zero group delay. Noise performance within one dB of the theoretical limit of real-world cartridges. No slew limiting. No overload. Unmeasurably low TIM distortion. In fact, its output can drive virtually any load. No matter how resistive; no matter how capacitive.

Many esoteric preamplifiers would stop here, making a name for themselves just on the elaborate technology we have incorporated into the C-1's phono stage.

But we paid close attention to the following stages, designing out group and phase delay to the point that, driven with real-world musical inputs and driving real-world loads, the C-1 has an input to output null in excess of 86dB. That means a watt of output signal tracks the input signal with such astonishing precision that just 0.000000251% of the output signal is imperfect, a level absurdly lower than the molecular level of your eardrum.

Included is a precision, infrasonic filter circuit to cut power robbing, destructive cone flutter. Infrasonics are caused by a combination of "real-world" phenomenon such as warped records (most are), floor vibrations (many do), direct drive turntable resonances (almost all do) and acoustic feedback from high listening levels. The result is visible cone flopping, especially in systems with vented speakers. Amplifier power is wasted and obvious distortion occurs. Careful research has shown that 12dB/octave allows maximum elimination of subsonics without inducing loudspeaker group delay which can become audible with sharper (18dB/octave) filter circuits.

Next we added a set of variable turnover tone equalization controls, allowing general room and speaker adjustment. By providing variable "turn-over" points for both bass and treble controls, we allow you to change the "shade" as well as the intensity of shelf equalization. And of course the entire tone control section can be removed from the signal path at any time for instant sound comparison.

A good preamplifier should also be the total nerve center of your stereo component system. So we were careful to include five important switching features besides source selection.

Not only can you operate two tape decks through the C-1, you can dub from one to the other without reconnection.

A special external processor loop allows you to add onboard devices without engaging a tape monitor circuit. A stereo/mono switch lets you check

speaker and signal source phasing.

Finally, instead of simply providing a powered headphone outlet which cuts out speakers when you plug in, we designed a speaker defeat switch which lets you select speakers, headphones or both.

Put quite simply, the specifications, features and performance of the C-1 preamplifier should place it in the \$1000 to \$3000 price range. Yet it is surprisingly affordable AND includes the amazing art of Sonic Holography which makes the C-1 worth any price.

The C-1 as your gateway to sonic holography.

Think of a TV dinner; now think of a seven-course French meal with wine.

That's the sensually stunning leap beyond conventional stereo that Sonic Holography provides.

We're not exaggerating. While the best you can claim from good stereo is that it "images between the speakers," Sonic Holography expands that postcard of sound into a magnificent cycloramic mural.

Wider than your speakers. Higher than your speakers.

Extending around you, closer than, yet many feet deeper than your speakers. A true three-dimensional stage.

The difference between a porthole and picture window.

How does Sonic Holography work? Snap your finger a few feet from your right ear. That single "sonic event" resulted in two "sound arrivals." One to your right ear and one at your left ear. The two sounds differ at each ear by frequency distribution, time of arrival and sound pressure level and that's how you can tell where the sound came from. Now while ALL sound events in real life result in two sound arrivals, conventional stereo bombards the ear with FOUR sound arrivals; two per speaker per ear, a muddled and completely different set of cues than your ear-brain system has learned to process over a millenia of evolutionary adaptation.

Put simply, Sonic Holography CANCELS, in the air and acoustic space around you, two of the four sound arrivals, restoring stereo program sources to a much more lifelike form which our ear-brain system can process realistically.

High Fidelity magazine said it "seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers."

Julian Hirsch of Hirsch-Houck Labs noted, "...the effect strains credibility."

Hal Rogers of Popular Electronics observed that, "...when the lights were turned out we could have almost sworn we were in the presence of a real live orchestra."

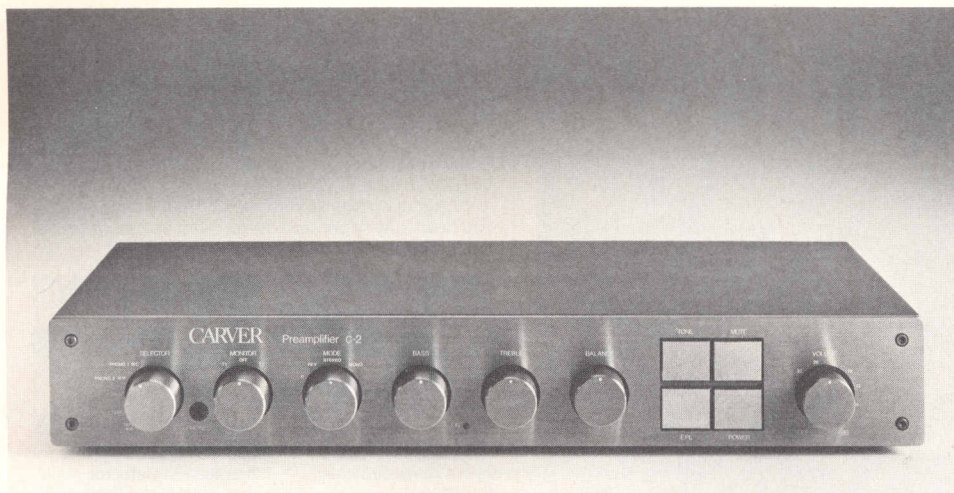
All with two ordinary stereo speakers and the C-1's Sonic Hologram section.

Since two fundamentally different miking techniques are used for modern recording (naturally-spaced and multi-mike/mixdown), two different modes are provided, Theoretical and Normal.

Quite frankly, while Sonic Holography works with virtually any speaker system, it requires precise attention to initial speaker placement. This initial set-up is made easier by detailed, lucid instructions and rewards the listener with a quantum leap in sound reality, whether you fancy Lizzt or Led Zeppelin.

No matter how many years you have spent building up your system, you will have doubled its effectiveness in a matter of hours with the C-1.

Specifications. Phono Inputs, RIAA \pm 0.25dB "extended" RIAA curve, overload 110mV at 1k Hz; High Level Inputs, Freq. resp. 5Hz-200 kHz + 1-3dB, Infrasonic filter, Tone, Hologram OUT; Infrasonic Filter, 12dB/octave below 20Hz, $f_3 = 15$ Hz; Noise, Phono 1, 82dB, IHF-A, below 5mVrms at 1 kHz, Phono 2, 86dB, IHF-A, High Level, 96dBv, IHF-A, below 1Vrms, Hologram, 92dBv, IHF-A, below 1Vrms, Hologram, 92dBv, IHF-A; Distortion (worst case) THD, 0.05% or less, below 3Vrms out, (typical case, see text paragraph 5). IM (CCIR or SMPTE), 0.04% or less, TIM, unmeasurable; Sonic Hologram, Image Resolution, 5° horizontal, 20° vertical in Theoretical Mode; Dimensions 19 x 3.5 x 10"; Weight, 6lb (2.7 kg)



CARVER C-2 STEREO PREAMPLIFIER

The C-2 Preamplifier Joins a Tradition of Excellence

Imagine a sound system in your home utilizing your favorite turntable with either a moving coil or moving phono cartridge being taped by your cassette deck and reel to reel.

Now imagine taping from one tape deck to another with the ease of just one click. Then, when you wish

to move on to new dimensions, switch to either your digital disc player, your tuner or an extra signal processor at will.

All this flexibility is offered by the C-2 with one overriding prime directive: To reproduce your music with absolute sonic purity. This is made possible with the use of the finest quality electronic components, mounted on the highest quality, glass-epoxy circuit boards. The end result is the virtual absence of distortion (.000000251%).

The CARVER C-2 preamplifier offers the discriminating audiophile with a relatively moderate budget the opportunity for uncompromised sound and handsome design.

The CARVER C-2 preamplifier features a switchable phono input which allows for use with either moving magnet or moving coil cartridge. A moving coil preamp is built into the unit. Inputs on the back of the unit afford the user the opportunity to plug in the cartridge loading network of his choice. The C-2 offers an infrasonic filter, base and treble controls, tone control by-pass, a tuner input, two tape inputs, provision for two-way dubbing, an auxiliary input, an external processor loop and a mode switch. A rear panel jack allows for a high-level gain choice of 15 or 25 dB. The preamplifier measures 17.3 inches wide, 9 inches deep, 2.55 inches high. Weight approximately 6.5 pounds.

Specifications. Phono Inputs: RIAA ± 0.25 "extended" RIAA curve; Overload Moving Coil = 15 mV, Overload Moving Magnet = 100 mV. High Level Inputs: Frequency Response -3 dB at 3 Hz and 80 kHz (infrasonic Filter out). Infrasonic Filter: 18 dB per octave below 20 Hz, $f_3 = 15$ Hz. Noise: Moving Coil, 77 dB; IHF A-weighted re 500 μ V; Moving Magnet, 83 dB, IHF A-weighted re 5 mV; High Level, 96 dBV, IHF-A, below 2V rms; Infrasonic Filter, 95 dBV, IHF-A; Tone, 96 dBV, IHF-A. Distortion: THD, 0.05% below 6V rms out; IM (CCIR or SMPTE), 0.04% or less; TIM, unmeasurable. Tone: Bass, Max Boost = +10 dB @ 100 Hz; Max Cut = -7 dB @ 100 Hz; Treble, Max Boost = +7 dB @ 10 kHz; Max Cut = -3.5 dB @ 10 kHz. Line Gain: HI 25.0 dB, LO 15.0 dB. Output Impedance: 600 ohms. Input Impedance: Line, 100k ohms in parallel with 150 pf. Phono: Moving magnet, 47k in parallel with 100 pf (may be infinitely programmed); Moving Coil, 47k in parallel with 100 pf (may be infinitely programmed).

CARVER C-9 SONIC HOLOGRAM GENERATOR

Think of artificial flowers.

Now think of a rose garden in full summer bloom.

That's the sensually-stunning leap beyond conventional stereo that the C-9 Sonic Hologram Generator provides.

We're not exaggerating. While the best you can claim from good stereo is that it "images between the speakers," Sonic Holography expands that postcard of sound into a magnificent cycloramic mural.

Wider than your speakers. Higher than your speakers.

Extending around you, closer than, yet many feet deeper than your speakers. A true three-dimensional stage.

The difference between a porthole and a picture window.

How does Sonic Holography work? Snap your finger a few feet from your right ear. That single "sonic event" resulted in two "sound arrivals." One to your right ear and one at your left ear. The two sounds differ at each ear by frequency distribution, time of arrival and sound pressure level and that's how you can tell where the sound came from. Now while ALL sound events in real life result in two sound arrivals, conventional stereo bombards the ear with FOUR sound arrivals: two per speaker per ear, a muddled and completely different set of cues than your ear-brain system has learned to process over a millenia of evolutionary adaptation.

Put simply, Sonic Holography CANCELS, in the air and acoustic space around you, two of the four sound arrivals, restoring stereo program sources to a much more lifelike form which our ear-brain system can process realistically.

Executionally this simple effect is an extremely complicated process of generating interference signals which perfectly cancel the spurious extra sound arrivals with a complex, ever-varying sequential mix of spectral shading and time domain correction based on interaural ear spacing. The result is a psychoacoustic filtering of all but the true sound destined by nature to reach right and left ear. Once again, as in live listening, each ear is receiving only the information intended, by placement, for it.

Don't confuse Sonic Holography's natural sound with the plethora of artificial ambient add-ons and speakers which abound today. While they toss off terms such as "random reflection" and "spacial extension," the achievement of a merely "spacey" sound inevitably comes with the cost of even more confusing sound arrivals and sonic smearing. By making sound more NATURAL, the C-9 will never tire a listener the way mere "stereo enhancement" devices often can sound.

High Fidelity magazine said it "seems to open a curtain and reveal a deployment of musical forces extending behind, and beyond the speakers."

Julian Hirsch of Hirsch-Houck Labs noted, "...the effect strains credibility."

Hal Rogers of Popular Electronics observed that, "...when the lights were turned out we could have almost sworn we were in the presence of a real live orchestra."

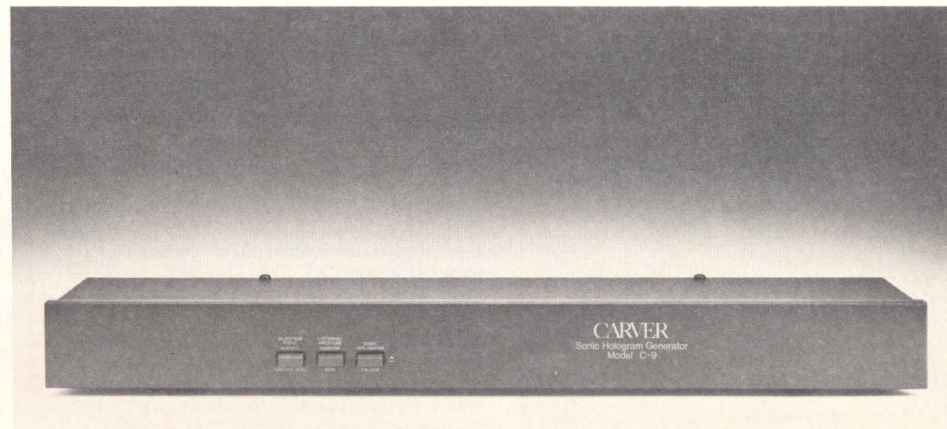
Since two radically different types of recording techniques are used in modern recording (two-microphone and multi-mike/mixdown), two different processing modes are provided. Theoretical and Normal.

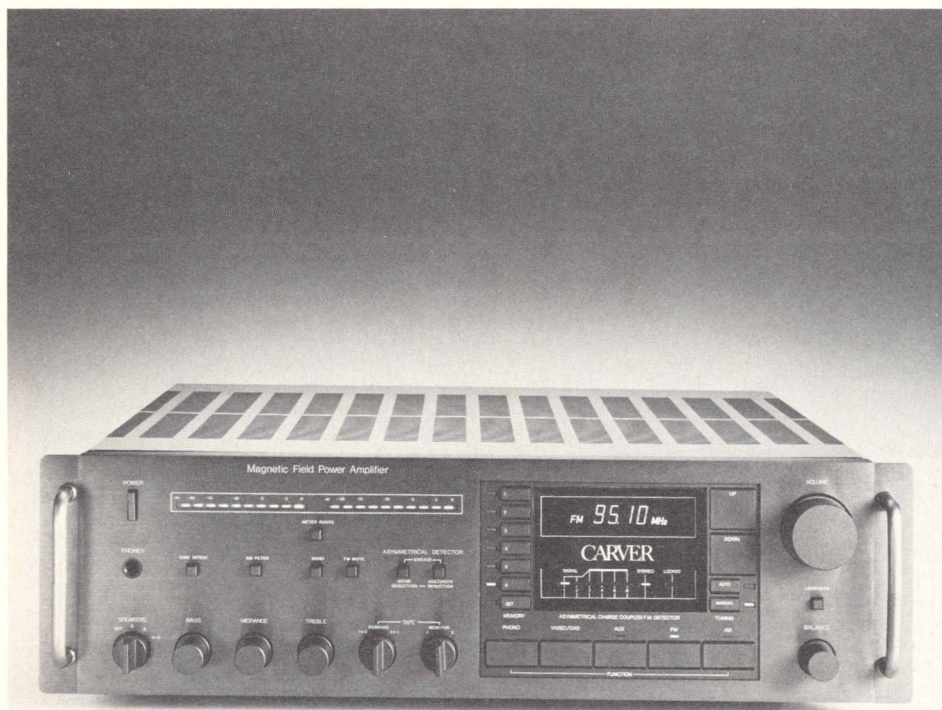
Also, to enhance the effect in rooms with less than optimum acoustics, a Listening Aperture switch is provided for Normal and Narrow settings.

And there IS a switch to take the Sonic Holography circuitry in and out of the signal chain. Yet, once installed we're certain you'd no sooner do without the C-9 than you'd trade your speakers for a transistor radio. The switch becomes solely a way of showing your friends what they're missing.

Instead of adding and complicating your sonic landscape you've actually brought it into better focus by eliminating spacially confusing noise. The result is not just an improvement in sound, it is an improvement on what you always thought was sonic reality. Ask for a demo today.

Specifications. Rated Output, 2 Vrms; Maximum Output, 6 Vrms; Distortion, THD, less than 0.05% 20 Hz-20 kHz, IM Distortion, less than 0.05% SMPTE, TIM Distortion, Unmeasurable; Noise, < 100 micro volts, A-weighted; Sonic Hologram Generator, Image resolution, 5° horizontal, 20° vertical in Theoretical mode; Dimensions, 13 1/4" x 3 3/8" x 17". Weight 3.5 lbs. (1.6 kg). Utilities, 1 unswitched 110V outlet.





THE CARVER RECEIVER

When Bob Carver designs a receiver you can be sure it is like no other. To give you the power you need for today's recording advances plus virtually noise-free stereo FM reception, CARVER has designed a receiver with astonishing performance. This extraordinary instrument incorporates two of the high fidelity art's most advanced technological breakthroughs: Bob Carver's Magnetic Field Power Amplifier and his Asymmetrical Charge Coupled FM Detector.

With the CARVER Receiver you command 130 watts per channel* and a fully digital, quartz synthesized AM-FM stereo tuner through a highly sophisticated and meticulously engineered preamplifier section.

CONTROL: At your fingertips, the comprehensive control of your entire system. On the front panel: control for turntable, video/audio disc player selection, an auxiliary input selector, two tape input selectors, bass, midrange, treble, and balance controls; switches so you can defeat the tone controls if you wish, listen to monaural, select speakers, monitor as you tape, dub tapes, mute the FM, filter AM noise and choose the loudness contour. You may also preset into memory six FM and six AM broadcast stations.

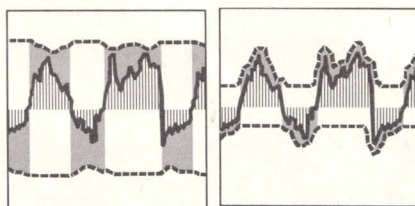
POWER: Live music is full of lightning-fast transients, combinant crests of demand created by multiple music waveforms and high intensity peaks. To reproduce the full sound of the music now made

possible by the most recent recording advances in fine analog recordings and especially DIGITAL AUDIO DISCS, your system needs large amounts of power to accommodate the dynamic range without distortion.

The Magnetic Field Amplifier in the CARVER Receiver gives you 130 watts per channel* of pure, clean power so you can truly appreciate the music.

The technological elegance of the Magnetic Field Amplifier enables it to produce large amounts of power (absolutely necessary for the accurate reproduction of music) without the need for heavy heat sinks, massive transformers, and enormous power capacitors required by conventional amplifier design.

Unlike conventional amplifiers which produce a constant high voltage level at all times, irrespective of the demands of the ever-changing audio signal and indeed even when there is no audio signal in the circuit at all, the Magnetic Field Amplifier's power supply is signal responsive and highly efficient. It produces *exactly and only* the power needed to carry the signal with complete accuracy and fidelity.



Conventional power amplifier Magnetic field amplifier.

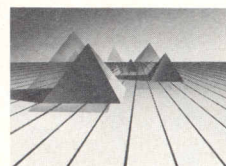
Solid line: audio output signal. Broken line: power supply voltage. Shaded area: wasted power. Vertical lines: power to speakers.

RECEPTION: The CARVER Receiver gives you FM stereo performance unmatched by that of any other receiver.

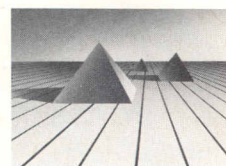
As it is transmitted from the station, the stereo FM signal is extremely vulnerable to distortion,

noise, hiss and multipath interference. In fact, because of the transmission system in use today, the signal to noise ratio of FM stereo has been degraded fifteen times (more than 23 dB!).

However, when you engage CARVER's Asymmetrical Charge Coupled FM Detector circuit, the stereo signal arrives at your ears virtually noise-free. You hear fully separated stereo with space, depth and ambience!



Reflected multi-path signals cause audible distortion.



Asymmetrical Charge-Coupled FM Detector gives your ears a true sonic image.

You will also appreciate the AM section. Meticulous attention to every aspect of tuner performance gives you an AM section with true high fidelity response. You will not find another receiver with such high performance anywhere.

The CARVER Receiver has been designed for serious music listeners who seek fidelity, accuracy and musicality.

We know you will want to visit your nearest CARVER dealer for a personal audition of this remarkable instrument.

Specifications. FM SECTION.

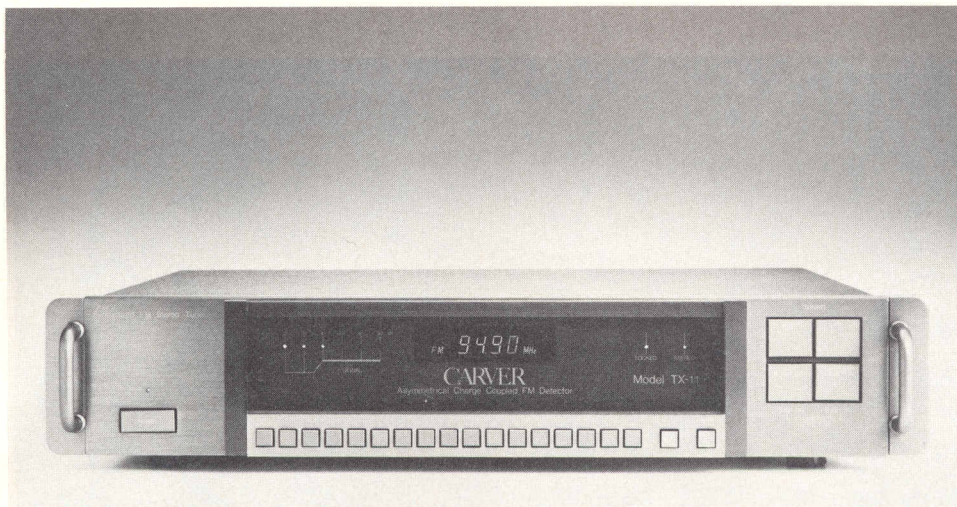
Tuning Range: 87.5 MHz-108 MHz; Antenna Term: 75 ohms unbal. coax. input, 300 ohms bal.; Intermediate Freq.: 10.7 MHz; Frequency Response: 20 Hz-15 kHz ± 1 dB; Alt. Chan. Selectivity: 58 dB; Capture Ratio: ± 1.5 dB; AM Suppression Ratio: 50 dB, 65 dB with CCD; Image Response Ratio: 75 dB; IF Response Ratio: 100 dB; Spurious Response Ratio: 100 dB; Output Level (7.5 kHz Dev.): 700 mV, 600 ohms; System: PLL Crystal-locked Digital Synthesizer System.

	MONO	STEREO W/O CHARGE-COUPLED DETECTOR	STEREO WITH CHARGE-COUPLED DETECTOR
USABLE SENSITIVITY	75 ohms, 11.3 dBf/1.0 μ V 300 ohms, 11.3 dBf/2.0 μ V	34 dBf/14 μ V 34 dBf/28 μ V	16.3 dBf/1.78 μ V 16.3 dBf/3.57 μ V
50 DB QUIETING SENS.	75 ohms, 16.1 dBf/1.7 μ V 300 ohms, 16.1 dBf/3.4 μ V	37 dBf/19 μ V 37 dBf/39 μ V	23.5 dBf/4.0 μ V 23.5 dBf/8.0 μ V
SIGNAL/NOISE RATIO	75 ohms, 82 dB @ 85 dBf 300 ohms, 82 dB @ 85 dBf	74 dB @ 85 dBf 74 dB @ 85 dBf	85 dB @ 85 dBf 85 dB @ 85 dBf
STEREO SEPARATION (WIDE)		1 kHz: 45 dB 100 Hz: 36 dB 10 kHz: 36 dB	45 dB 30 dB 25 dB

AM SECTION. Tuning Range: 520-1710 kHz; IF Rejection Ratio: 45 dB; Output Level at 1 kHz: 160 mV ± 2.5 dB

PREAMP SECTION. Phono RIAA: ± 0.25 dB; Phono S/N ratio: 80 dB ref. 5 mV; Input Impedance: Phono: 50k; Video/DAD: 50k; Auxiliary: 50k; Tape 1: 50k; Tape 2: 50k; THD: 20 Hz: 0.05%; 1 kHz: 0.05%; 20 kHz: 0.05%; Frequency Response: 20 Hz-20 kHz, ± 0.5 dB; Tone Controls: Bass, Max @ 100 Hz, +10 dB; Min @ 100 Hz, -10 dB; Treble Max @ 10 kHz, +10 dB; Min @ 10 kHz, -10 dB; Midrange Max @ 1.5 kHz, +6 dB; Min @ 1.5 kHz, -6 dB; High Filter: -3 dB point: 5 kHz (6 dB/octave).

POWER AMP SECTION. *Power 20 Hz-20 kHz: 130W/both channels into 8 ohms; THD @ Rated Power: .05%; IM Distortion: 0.1% SMPTE; TIM Distortion: Unmeasurable; Frequency Response: ± 0.5 dB, 20 Hz-20 kHz; Damping Factor: 60; Noise: >100 dB, IHF-A weighted.



CARVER TX-11 STEREO FM TUNER

Finally an FM stereo tuner which can drastically reduce multipath and distant station noise and still provide fully separated stereo reception with space depth and ambience.

We were almost tempted to say, a sound as it was intended thirty years ago.

Thirty years?

Yes. Back then, FM was a noise-free, wide-band alternative to static-filled AM. But it was in mono and in the Fifties the stereo phenomenon hit.

And unfortunately the transmission system selected to augment mono FM ended up degrading the ratio of signal to noise FIFTEEN TIMES! (More than 23dB)

That's the system we live with today; hiss and distortion-filled unless you're in direct line with a strong station.

Understanding FM. Stereo Frequency Modulation transmission is a lot more complicated than you might think. But understanding it will clarify both the problems and Carver's brilliant solution.

Stereo FM is not like a 2-track cassette with separate signals next to each other. Rather there is a Left-Minus-Right and a Left-Plus-Right signal. A receiving circuit adds and subtracts sums and differences to get Left-only and Right-only signals. (As you might have guessed, Left Plus Right comes in just fine on mono receivers because it IS mono.)

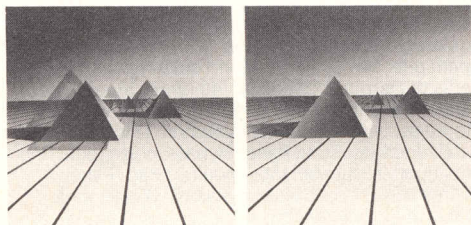
It's that Left-Minus-Right signal that's to blame.

These signals are transmitted at different parts of the audio spectrum and unfortunately L-R is extremely prone to mishaps on the way to your home.

Audio Ghosting. To get stereo FM perfectly, you'd have to be the only house in the middle of a vast flat plain with no other buildings anywhere on the plain.

Because any protruding mass—hills, mountains, skyscrapers, other antennas, even bridges—looms up to reflect signals while on their way to your tuner.

Then you get TWO signals. One directly, and one or more a fraction of a second later, after it's taken a longer angular path of bouncing off something. (This happens with TV and AM, too. AM isn't audibly affected, but you can see the frustrating result on TV: a second, third and fourth image.)



These additional images are disastrous to FM reception because they reinforce and then remove part of the signal alternately. As the main signal deviates in frequency, it beats with the reflective signal, causing constructive and destructive interference patterns which bear no resemblance to the original signal. An engineer calls these "beats" *phase modulation*.

While stereo FM receivers have made much of cancelling one component of this interference, they have never addressed the truly audible distortion caused by phase modulation.

Without waxing too technical, suffice to say that your FM receiver is tricked into reading phase modulation as frequency modulation, which is decoded and made into a brand new signal. The better your current tuner, the more faithfully it's deceived!

Thus instead of just degrading the existing signal, multipath reception problems actually CAUSE NEW AUDIBLE SOUNDS. And we've all heard how bad these sounds sound.

Charge-Coupling Delay. The "Find and Cancel" circuit. Almost all noise and distortion is exactly 180 degrees out of phase with itself. For every instantaneous noise or distortion voltage, there is a replica in the opposite channel.

Simply put, the TX-11's Charge-Coupled Delay Line detects these tell-tale dirty mirror images and cancels them before they reach your ears.

But mere elimination of redundancy is not enough. The L-R channel is a necessary evil and throwing the baby (our stereo signal) out with the bathwater (noise and multi-path), is too sonically drastic.

While eighty-five percent of the information carried in the crud-filled L-R channel is duplicated by clean L + R signal (and can be compared and "edited" by Charge Coupling), fifteen percent is totally different. It contains instantaneous phase relationships which produce our ambient stereo experience.

Stopping at 85% would give us stereo plus 15% distortion. Here's how we shaved that number considerably finer.

The Leading Edge Detector. Through ear-brain research which brought us Sonic Holography, Carver discovered that, if properly matrixed, only one third of non-redundant L-R information is required to convince our senses of a fully separated stereo experience.

The Carver Leading Edge Detector operates only that part of the L-R signal required for our ears and brain to construct true stereo localization, using only one third of the critical 15%. By combining that 5% in the FM receiver's matrix, a net reduction of 93.5% or in excess of 20dB of noise reduction is achieved!

All of the ambient and localizing information is recovered.

Without the hiss.
Without the distortion.

Sixteen presets for a reason. All this technical discourse is given meaning when you hook even a modest "t" antenna to the TX-11 and press the

sweep panel. The TX-11 will stop at places where only static existed before.

You'll suddenly pull in stations in surprisingly distant cities and suburbs. Underpowered but interestingly-programmed college FM stations will be noise and distortion-free. Stations previously overpowered by strong adjacent signals will sound as steady as if they were alone on the dial. Stations which threw intermittent tantrums of intolerable racket will be pacified. The TX-11's special circuitry can't make weak stations louder—you'll have to do that with your volume control—but when you crank up a feeble station it will not be submerged in a sea of hiss and multipath.

So unless you live in Adak, sixteen presets might not be enough!

Because the TX-11 is built around two precedent-setting, problem-solving circuits, we've left its superb regular tuning features until now. But even if the TX-11 didn't sport special features, it would be a superb value.

Quartz synthesis. The TX-11 uses an incredibly precise circuit which generates a perfect replica of the desired FM frequency and then matches the incoming signal for perfect drift-free reception.

Digital tuning... with your digits. Touch the UP or DOWN button and the tuner electronically moves across the FM band, stopping at each FM station it can adequately tune.

The TX-11 remembers. Not only will it store sixteen stations—even when unplugged for up to three weeks—it also remembers the last station you played before it was shut off.

Wide and narrow band selection. Remember, unlike AM, an FM station isn't a fixed frequency... it's a BAND of frequencies. In areas with many FM signals, these bands can end up close enough to cause interference. The Narrow setting "focuses" the edge of the station's frequency by "cropping" it just slightly. Use the Wide mode when such interference is not a problem to receive slightly greater dynamic range.

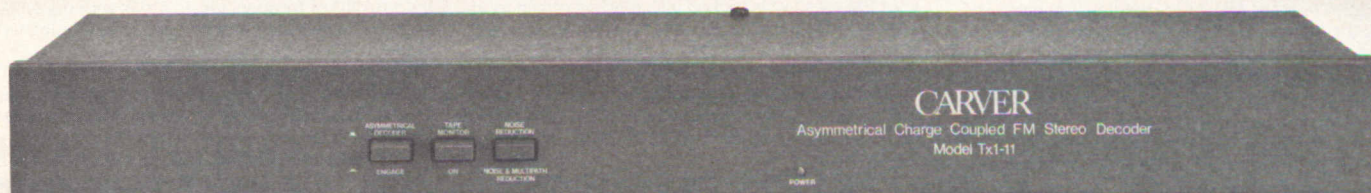
Full instrumentation. Not only does the TX-11 digitally read out station response, it also reads out six 10-dB signal strength stops, indicates when the Quartz circuitry has closed on a station and when a stereo (that ole' L-R band) station has been detected.

How to sell yourself a TX-11. Visit your dealer and ask to hear the most expensive, famous or esoteric tuner he sells. Tune to a multipath-ravaged, hiss filled station and compare the sound to the basic Carver TX-11.

Now press TX-11's Multipath and Noise Reduction Circuits. And appreciate what Carver technology has done for the FM tuner.

Specifications. Tuning range: 87.5 MHz—108 MHz; Antenna term.: 75 ohms, unbal. coax. input, 300 ohms bal.; Interm. freq.: 10.7 MHz; Freq. resp.: 20 Hz—15 kHz, ± 1 dB; Selectivity: 90 dB at 400 kHz (narrow) 35 dB (wide). Capture ratio: 1.0 dB; AM suppression ratio: 50 dB, 65 dB with CCD; Image resp. ratio: 110 dB; IF resp. ratio: 110 dB; Spurious resp. ratio: 110 dB; Output lev. (75 kHz dev.): 700 mV, 600 ohms; System: PLL crystal-locked digital synthesizer system; Power req.: 120 Vac, 60 Hz; Power consumption: 15 W; Dim. (w/h/d): 17½x3½x12½" (w/o rackmount); Wt. 11¼ lb; Supplied access: FM ribbon antenna, RCA patch cords.

	MONO	STEREO W/O CHARGE- COUPLED DETECTOR	STEREO WITH CHARGE- COUPLED DETECTOR
USABLE SENSITIVITY	75 ohms: 11.3dBf/1.00µV 300 ohms: 11.3dBf/2.00µV	75 ohms: 34dBf/14µV 300 ohms: 34dBf/28µV	75 ohms: 16.3dBf/1.78µV 300 ohms: 16.3dBf/3.57µV
50 dB QUIETING SENS.	75 ohms: 16.1dBf/1.7µV 300 ohms: 16.1dBf/3.47µV	75 ohms: 37dBf/19µV 300 ohms: 37dBf/39µV	75 ohms: 21dBf/3.1µV 300 ohms: 21dBf/6.2µV
SIGNAL NOISE RATIO	75 ohms: 82dB@85dBf 300 ohms: 82dB@85dBf	75 ohms: 74dB @ 85dBf 300 ohms: 85dBf	75 ohms: 85dB ² @ 85dBf 300 ohms: 85dB ² @ 85dBf
STEREO SEPARATION (WIDE)		1 kHz: 45dB 100 Hz: 36dB 45dB@-10dB 10 kHz: 36 dB	30dB@-15dB 15dB@-23dB



CARVER TX1-11 ASYMMETRICAL CHARGE COUPLED FM DECODER

The CARVER TX1-11 Asymmetrical Charge Coupled FM Decoder is a unique instrument. It will enable you to receive virtually noise-free and multipath-free stereo FM reception with your present stereo FM receiver or tuner.

Ever since his TX-11 tuner became available in late 1982, Bob Carver has been deluged with requests for an add-on component to give existing tuners and receivers the kind of stereo FM performance that had been considered impossible before the invention of CARVER's Asymmetrical Charge Coupled FM Circuit.

CARVER's response to those requests is the TX1-11 Asymmetrical Charge Coupled FM Decoder which improves the stereo quality of any stereo FM tuner or receiver by 20 dB. That's 10 times quieter!

A number of manufacturers and designers of tuners and receivers have dealt with the noise problem by either *blending* the stereo signals essentially into *mono* or *automatically switching* into *mono* when the

stereo signal becomes weak. The benefits of *stereo* sound are sacrificed for less noisy reception.

However the Asymmetrical Charge Coupled FM Decoder in both the TX1-11 and the TX-11 tuner is unique. You hear full stereo separation.

Charge-Coupling Delay: The "Find and Cancel" circuit. Almost all noise and distortion is exactly 180 degrees out of phase with itself. For every instantaneous noise or distortion voltage, there is a replica in the opposite channel.

Simply put, the TX1-11's Charge-Coupled Delay Line detects these tell-tale dirty mirror images and cancels them before they reach your ears.

But mere elimination of redundancy is not enough. The L-R channel is a necessary evil and throwing the baby (our stereo signal) out with the bathwater (noise and multi-path), is too sonically drastic.

While eighty-five percent of the information carried in the crud-filled L-R channel is duplicated by clean L + R signal (and can be compared and "edited" by Charge Coupling), fifteen percent is totally different. It contains instantaneous phase relationships which produce our ambient stereo experience.

Stopping at 85% would give us stereo plus 15% distortion. Here's how we shaved that number considerably finer.

The Leading Edge Detector. Through ear-brain research which brought us Sonic Holography, Carver discovered that, if properly matrixed, only one third of non-redundant L-R information is required to convince our senses of a fully separated stereo experience.

The Carver Leading Edge Detector operates only that part of the L-R signal required for our ears and brain to construct true stereo localiza-

tion, using only one third of the critical 15%. By combining that 5% in the FM receiver's matrix, a net reduction of 93.5% or in excess of 20 dB of noise reduction is achieved!

All of the ambient and localizing information is recovered.

Without the hiss.

Without the distortion.

With the TX1-11 you will be able to enjoy stations from surprisingly distant cities and suburbs. Underpowered but interestingly programmed college FM stations will be noise and distortion-free.

The TX1-11 can't make weak stations louder—you do that with your volume control—but when you do increase the volume the stations' sound will emerge without hiss and multipath.

We encourage you to visit your dealer for a demonstration of the TX1-11. And expect to be astonished.

Specifications. Rated output voltage: 0 dB (2.4V); Maximum output voltage: 6V; Frequency response: -3 dB at 5 Hz and 60 kHz; Total harmonic distortion: 0.05%, 20 Hz-20 kHz; Intermodulation distortion: SMPTE 0.05%, CCIF 0.05%; Separation, better than 30 dB, 20 Hz-20 kHz; 50 dB stereo quieting: Will improve existing tuner or receiver stereo quieting by 20 dB, (10 times quieter); Multipath rejection: Will improve multipath rejection by 10 dB; Mono quieting: 0 dB (no effect); Output impedance: 910 ohms; Input impedance: 50k ohms; Turn-on muting delay: Less than three seconds; Power consumption: 15W; Controls and functions: Front Panel: Bypass; noise reduction; multipath reduction; tape monitor; Back Panel: Threshold set control; Dimensions: 17 3/8 in. long, 1 3/4 in. high, 5 in. deep.

CRITICAL ACCLAIM

The Magnetic Field Power Amplifier

The technology of the Carver Magnetic Field Power Amplifier solves some of the most basic problems of conventional power amplifiers: high cost, great weight, and excessive heat generation.

The Carver M-400 is the first amplifier to utilize this technological breakthrough. A 200 watt per channel amplifier in a seven-inch cube weighing less than ten pounds, the M-400 is powerful, accurate, and musical.

"Its distortion and noise levels are entirely negligible. It is hardly conceivable that a small, inexpensive, lightweight cube such as this could deliver as much clean power as any but a few of the largest conventional amplifiers on the market—but it does... An important new amplifier design."

(Hirsch-Houck Labs in **Stereo Review**)

"IHG IM and CCIF IM were both too low to be reliably measured... we weren't able to read significant amounts of TIM when we tried to measure that parameter either. Music reproduction was superb and completely free of any false bass coloration or muddiness. The amplifier handled the toughest transients we were able to feed it, with ease. It is, to put it mildly, quite an achievement and one that is likely to change the way many of us think of power amp design in the future."

(Leonard Feldman in **Audio**)

Of the Carver M-1.5t, Peter Aczel, Editor and Publisher of **The Audio Critic** has said, "...the equal of any power amplifier in transparency, focus and smoothness and, of course, far ahead of any other we tested in sheer gut-shaking power and dynamic range. We especially enjoy hearing spatial detail, instrumental definition and completely natural dynamics on familiar records to a degree we did not know was extractable from the grooves when we listened through lesser amplifiers. At this level of sonic performance, the astoundingly small size and cool operation of the M-1.5t become the icing on the cake, rather than the main attraction."

Sonic Holography

The problems of sonic imagery inherent in conventional stereophonic reproduction have been solved by the Sonic Hologram Generator, available in three dif-

ferent components: The C-4000 and C-1 Preamplifiers and the C-9 Sonic Hologram Generator.

Very briefly, the Sonic Hologram presents timing and phase information that exists in stereo program material—but is normally inaudible. With Sonic Holography, this information emerges in three-dimensional space around the listener who is thus able to establish the precise location of the instruments and voice.

The impact on the listener of Sonic Holography is best described by the most experienced and knowledgeable experts in the audio industry.

"When the lights were turned out we could almost have sworn we were in the presence of a real live orchestra."

Hal Rodgers, Senior Editor,
Popular Electronics

"The effect strains credibility—had I not experienced it, I probably would not believe it... the 'miracle' is that it uses only the two normal front speakers."

Julian Hirsch, Hirsch-Houck Labs,
Stereo Review

"...it brings the listener substantially closer to that elusive sonic illusion of being in the presence of a live performance."

Larry Klein, Technical Director,
Stereo Review

"...seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers... terrific."

High Fidelity

"Instruments and performers are located where they belong whether to the front of, between, beside or behind the speakers—in short, anywhere in a 180 degree arc facing the listener."

Omni Magazine

"The effect is both impressive and exciting to experience."

Stereo Review

Breakthrough in FM Stereo Reception

Carver's most recent technological breakthrough is the Asymmetrical Charge-coupled FM Detector circuit, a special feature of the Carver TX-11 FM Stereo Tuner.

This unique circuit drastically reduces multipath and distant station noise, while providing fully-separated stereo reception with space, depth and ambience.

The TX-11 has received unprecedented acclaim from reviewers:

"It is by a wide margin the best tuner we have tested to date."

"What distinguishes the TX-11 is its ability to pull clean noise-free sound out of weak or multipath ridden signals that would have you lunging for the mono switch on any other tuner we know of."

High Fidelity (January, 1983)

"Breakthrough in FM tuner performance: Carver TX-11."

"The significance of its design can only be fully appreciated by setting up the unit, tuning to the weakest, most unacceptable stereo signals you can find, then pushing those two magic buttons."

"Separation was still there; only the background noise had been diminished, and with it, much of the sibilance and hissy edginess so characteristic of multipath interference."

"A tuner which long-suffering fringe area residents and those plagued by multipath distortion and interference have probably been praying for..."

Leonard Feldman,
Audio (December, 1982)

"...enjoy the music and forget about noise and distortion."

"Under conditions of weak signal stereo reception the effectiveness is almost magical."

Ovation (December, 1982)

"A major advance..."

"Its noise reduction for stereo reception ranged from appreciable to tremendous."

"It makes the majority of stereo signals sound virtually as quiet as mono signals, yet it does not dilute the stereo effect."

Julian D. Hirsch,
Stereo Review (December, 1982)

CARVER

Carver Corporation
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