1. The Carver Corporation profile

Our past, products and principles

1.1 How we created an audio revolution in a can of Folger's coffee.

In the late 1970's, high-powered audio was two things: something everyone wanted, and something few people could afford. While a decade of advances such as applied feedback, complementary circuitry, FET's and differential design all helped improve the sound of transistorized amplifiers, there was no corresponding breakthrough in amplifier *efficiency.* As long as amplifiers depended on a lot of output devices– and the clunky power supplies, chassis and enclosures required to support them– clean, high audio power would remain something most enthusiasts would dream about instead of own. Ironically, with advances in loudspeaker design and improvements in musical sound sources (such as records, tapes and FM) high power was becoming more important than ever.

The little amp that shook the audio world. Carver's revolutionary M-400 delivered high-end performance for a price considered impossible.

M-400 Power Amp

It was during this conflict, between amplifier performance and price, that an emerging audio company from the Pacific Northwest came up with a better way. Visitors to the 1979 Winter Consumer Electronics Show looked on and listened in amazement as an experimental 200 Watt per channel amplifier in a Folger's coffee can was used to drive a high-end loudspeaker system– at a quality level indistinguishable from the best conventional designs then available. The secret of this extraordinary new amplifier was a regulated power supply capable of "smart" operation– in other words, it anticipated musical power demands and adapted to them by making more efficient use of the power available from the wall socket itself. Regulated power supplies were already being used in aerospace electronics and laboratory measurement instruments.

1.2 *Carver turns radical technology into best-selling consumer products.*

What the new audio company had accomplished was the successful identification and application of a promising electronic technology with the goal of making high-end audio more practical than ever. Many companies would consider themselves lucky to experience one such breakthrough. For the new Carver Corporation, it was just the start of a pattern of audio innovation that continues unbroken to this day.

The company followed-up with the introduction of the M-400 production model, a nine-pound cube amplifier with an unheard-of price/power ratio: 400 Watts of clean, dynamic power for just $399.00. Audio dealers and consumers responded by making the M-400 the best selling amplifier in history– a record which, according to the Electronics Industry Association, was finally broken in the early 1990's by another Carver amplifier, the TFM-35!

Recognizing that there was room for improvement throughout the audio chain, Carver also introduced the equally-innovative C-4000 preamplifier. Along with being the first high-end audio product to offer surround-sound, the C-4000 also introduced the audio world to Sonic Holography, a patented circuit that re-creates the depth and ambiance of a live performance from two speakers. Here is how a leading audio magazine of the time described the C-4000:

C-4000 Preamp

With its Sonic Holography preamplifiers, Carver Corporation established itself overnight as a leader in signal processing and advanced audio design.

"It was with a great deal of anticipation that we awaited the first production samples of Carver's original approach to more believable sound reproduction... The Carver preamp is the sum of more parts than any model within memory... **the C-4000 is the most fascinating hands-on preamp we know of."**

High Fidelity, January 1980

Sonic Holography was the foundation for today's Cinema Holography – as well as the "inspiration" for a number of audio imitations. Most important, it broke ground in audiophile circles for the role of active signal processing, and established Carver as a leader in *sound re-creation* instead of just reproduction. This principle still guides the development of Carver products today.

1.3 *The 'new technology leader' becomes a leading brand.*

From the beginning, Carver enjoyed a unique position as a research and development innovator, instead of a marketing and sales company like most of its competition. In fact, during much of the first decade at Carver the biggest challenge was filling backorders as demand for the brand surged. Carver's success was based on its ability to:

1.) **Identify and adapt new technologies** that showed the potential to dramatically improve the audio experience (starting with the magnetic field amp and Sonic Holography, and later expanding into innovative circuitry to improve FM reception, CD playback, home theater and much more).

2.) **Combine its own *domestic* resources with selected *global* resources** to effectively translate those technologies into affordable high-end audio products.

The Carver philosophy had such an industry-wide impact during its first few years that one leading Japanese manufacturer even rushed out an imitation Carver line (complete with "X Power Supplies" and "Spatial Expanders") just to stay competitive with dealers who were fighting over the Carver franchise!

Today Carver is one of the most recognized brands in consumer audio, one that is synonymous with high-performance amplifiers and separate audio components. More than any particular product or technology, *Carver's real strength is in its brand equity.*

1.4 The Carver value story: high-end audio without sticker shock.

Nowhere is Carver's unique combination of performance and value more visible and noteworthy than in the consumer and audio press:

> "...you really start to wonder how some companies can charge so much for so little, and you start to wonder where the nearest Carver dealer is."
>
> *The $ensible Sound,* preamp/tuner review, 1996

> "...its price is ridiculously low for what it does and considering what comparable products cost."
>
> *Stereo Review,* ribbon loudspeaker review, 1993

> "...you get a 250 wpc bargain at 150 wpc prices...If the Carver sounds as good in your system as it did in mine, grab the bargain and don't worry."
>
> *The $ensible Sound,* amplifier review, 1993

> "...virtually unchallenged in its power/price class."
>
> *Consumer Digest,* amplifier ratings, 1985

At Carver, we don't think that high-end audio has to be above the majority of listeners in cost or complexity. Our mission has always been to make high end audio more ownable and understandable. That's why Carver is a popular "step-up" from receivers, and a very sensible one considering that a set of Carver separates need not run substantially more than a single high-power receiver! Carver even developed a new amplifier design theory, called Transfer Function Modification (TFM), to make it possible for a relatively inexpensive amplifier to sound identical to one selling for many times its price.

TX-11 Tuner

Carver FM tuner circuit design made it possible to receive even the weakest stations with high-fidelity sound quality.

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Almost anyone can achieve excellence when price is no object. This is why the aptly-nicknamed "lunatic fringe" of the high-end audio industry is dominated with multi-kilobuck preamps and designer poweramps– useful for getting on magazine covers, perhaps, but with little relevance for the rest of us. But true engineering is when one achieves that same level of performance in an affordable, practical design. True engineering is behind every Carver product. That's why Carver products, in every category, have a long track record as "best buys" with dealers, end-users, and most important with leading consumer publications:

The Carver Receiver

As Carver refined and integrated its advanced audio technologies, its products– such as The Carver Receiver– were awarded with "Best Buy" ratings by leading consumer magazines.

***Consumers Digest* Best Buys in Stereo Components.**

Best Buy: The Carver Receiver
"Still a stellar performer, this handsome unit is top-notch..."

Best Buy: The Carver 900 Receiver
"The Carver receiver is the most powerful modestly priced receiver we've found..."

Best Buy: Carver M-200t amplifier
"...virtually unchallenged in its power/price class."

***Consumer Guide* Best Buys and Discount Prices.**

Best Buy: Carver M-1.5t amplifier
"...an incredibly compact amplifier considering how much power it can deliver."

Best Buy: The Carver Receiver
"It is a superb engineering achievement... This receiver performs every bit as well as more expensive separates..."

Best Buy: Carver M-500t amplifier
"...distinguished by its very high power output capability and small bulk and weight."

Best Buy: Carver TX-11 tuner
"...a remarkable tuner... in addition to special circuits, the tuner is outstanding in its own right... especially recommended for use in weak-signal fringe areas."

1.5 *Carver today.*

While Carver pays careful attention to its traditional business in power amplifiers and control centers, the product line now includes source components such as CD changers and cassette decks, multi-room components, and even full-range ribbon loudspeakers. Carver has even redefined the standard system control center with a line of preamplifier/ tuners, a component integration that gives the listener the full benefits of separate components in an extremely cost-effective format. The expanded line concept applies Carver design and engineering values to every part of the audio system. Each product offers technical innovation and performance that is unprecedented in its price class.

Most important, Carver is at the forefront of the revolution in home theater. Carver multi-channel amplifiers and Pro-Logic™ preamp/tuners frequently appear in showcase custom home theater installations, and enjoy a considerable reputation in both high-end and consumer publications. Proprietary Carver technologies such as Power Steering and Cinema Holography, derived from company's considerable experience in active signal processing, are combined with formats such as THX to create a home theater listening experience that outperforms any conventional presentation– and rivals even the new digital surround systems in realism and accuracy.

Lightstar Amplifier

Even with its current amplifiers ranked as industry best-sellers, Carver continues to advance the field of electronic design. The awesome Lightstar amplifier from Carver Research is both a technical triumph and blueprint for the future.

AL-III Plus Speakers

When Carver first introduced its Amazing Loudspeaker, Stereo Review magazine said it all: "Its overall sound is spectacular, its stereo imaging is outstanding, and its price is ridiculously low for what it does."

2. Carver Technology

We don't just reproduce sound– we re-create it.

2.1 *The basics.*

Until Carver came along, audio designers were obsessed with creating preamps and amps that did little else except preamplify and amplify. The long-held theory was that an amp should be nothing more than "a straight wire with gain." And then Carver threw them a curve.

We worked off the idea that rather than reproducing test signals, an amplifier should be competent at reproducing complex musical waveforms. And a preamplifier should be able to take a stab at re-creating the live event, and not simply passing it along. Any doubts that dyed-in-the-wool purists might have had disappeared with the appearance of the first critical Carver reviews– *a process that continues to this day*:

> "But the overriding question raised by the unit is how its holographic generator sounds... Our answer: Terrific. ...the stereo image– even with recordings that, because they are multi-miked, depart from Carver's theoretical ideal– **generally is crystalline in a way that almost beggars normal stereo reproduction."**
>
> *High Fidelity*, January 1980

> **"...the results of Sonic Holography were often startling... it is a spectacular feature,** and with the right recording, really does enhance the location of singers and instruments."
>
> *The $ensible Sound,* Spring 1996

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Since 1979, Carver has developed more innovative audio technologies than any dozen of our competitors. Basically, Carver's inventions can be divided into four categories:

1. **Power management technology–** Lightstar, Magnetic Field and Power Steering amplifier designs, which make far more effective use of available power, voltage, current and other electrical parameters.

2. **Sound *presentation* technology–** Sonic Holography, Dipole ribbon speakers, Headphone Recorrelation and Transfer Function Modification amplifiers. All these elevate the listening experience beyond system and room limitations.

3. **Sound *restoration* technology–** Digital Time Lens and Asymmetrical Charge Coupled FM (ACCD). Both compensate for deficiencies in their respective areas (compact discs and FM broadcasts).

4. **Home theater technology–** Cinema Holography, Vocal Zoom, Power Steering (because it dramatically improves imaging by eliminating audible "seams") and Infinite Decorrelation. These techniques work together to bring home theater listening to full-theater proportions.

Carver has a program of continually refining existing innovations in addition to developing new ones. Part of the exceptionally high value inherent in Carver components comes from the fact that these technical innovations don't raise the price of our products– in some cases (such as Magnetic Field and Transfer Function Modification [TFM]) ***they actually lower prices while raising the level of performance!***

2.2 Carver amplifier technology

Overview.

By 1970, solid-state amplifiers had reached the point where they rivaled their tube predecessors in power output capability, and surpassed them in total harmonic distortion specifications. Since that time, amplifier development has concentrated on areas other than power and THD– such as efficiency, circuit topology, and (most important!) perceived sound quality. Carver's own role has been to bring amplifier design beyond the "brute force" school with smart electronic devices and smarter engineering, and in the process breaking all the traditional amplifier price/performance barriers.

While the past 25 years have seen nearly that many amplifier design and hardware fads, there are still just four parameters governing performance: current output, voltage output, power output, and frequency response at output. Regardless of the amplifier's "class," or type of output device or power supply used, overall sound depends on these factors and how they interrelate. In fact, amplifier "controversies" such as MOSFET vs. bipolar transistors, or even tubes vs. transistors, are really distractions in comparison.

Merely achieving good measurements in one of the critical factors is useless– an important point to remember given the overuse of the phrase "high current" these days! Every Carver amplifier is engineered with all these factors taken into careful consideration, brought into precise balance in exceptionally efficient, cost-effective designs.

Simultaneous high current and high voltage = undistorted, 'real world' high power.

Six years ago, a Carver white paper on amplifier design observed that the phrase "high current" was "starting to show up as a 'buzz word' in our competitor's literature." Today, the phrase has become almost meaningless through overuse by enthusiastic marketers and misinformed salespeople as they attempt to make the most ordinary electronics sound like something special.

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Carver amplifier technology *(continued)*

High current *does* matter– but only if voltage and impedance are taken into consideration as well. Current without adequate voltage results in low power, *especially at lower impedances.* And a high current rating at low impedance often means the amplifier can't perform at higher, real-world impedances (between 4-8 Ohms) because it can't maintain both high current *and* high voltage. Considering that the impedance of a typical high-performance loudspeaker might "swing" between 2-30 Ohms (depending on operating frequency), the interdependency between current, voltage and impedance is obvious.

This problem was solved by Carver in its very first amplifier, using a "smart," or regulated power supply to achieve **simultaneous high current and high voltage.** Regulated power supplies are familiar in aerospace and test equipment applications, where precision and balance are preferable to the "brute force" approach of huge transformers and capacitors. A Carver regulated power supply can produce up to 5 times as much power as a conventional power supply of the same size and cost! Carver's patented smart power supply technology (and associated circuitry) is the main reason why Carver amplifiers are famous for performing as well, or even better, than amplifiers many times their size and price. It also satisfies the conditions of current, voltage and power output.

Transfer Function Modification (TFM).

The critical factor of frequency response is addressed by yet another Carver innovation: TFM design. Audiophiles and equipment reviewers have long been aware that high-performance amplifiers sound different from each other, even if they possess identical specifications. Carver was the first company to fully explain amplifier differences in a mathematical relationship based on the differences between an amplifier's input and output characteristics (its transfer function) and the energy imbalances that result.

TFM design starts with an amplifier platform that already excels in current, voltage and power characteristics, and uses a meticulous testing process to calibrate that amplifier's transfer function toward that of a laboratory reference standard. This combination of high current/voltage/power and a reference-standard transfer function is the Carver formula for achieving state-of-the-art performance in an affordable, practical design.

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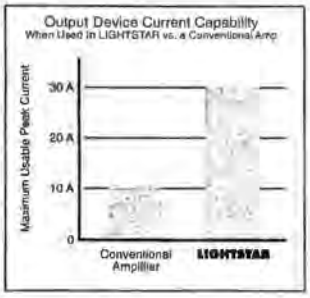
Carver amplifier technology *(continued)*

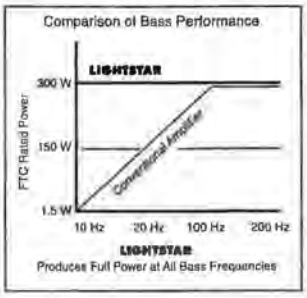
Lightstar– the ultimate Carver amplifier.

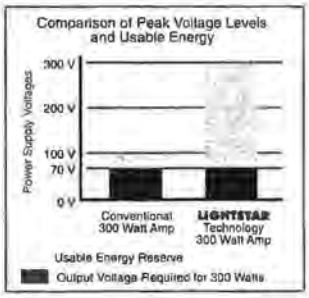
Lightstar is the term for Carver's most advanced expression of applied electronics technology. While the Lightstar amplifier differs in appearance from its predecessors, it shares a foundation of high-current, high voltage/high energy storage, and a breakthrough power supply (in this case Carver's radical Digital Transformer™). Lightstar is based on a power system that amplifies the audio signal independent of reactive currents "kicked back" from the speakers. In other words, instead of fighting reactive loads like a conventional amplifier, Lightstar works with them. This effortless energy flow within the amp/speaker system allows input signals to be reproduced with all their natural qualities intact– pure, accurate response regardless of changes in the loudspeaker load.

Lightstar's power supply has 5-10 times the usable energy storage of conventional amplifiers, accomplished through high-speed regulation within the Digital Transformer and by storing energy at more than 3 times the voltage of a conventional amplifier. Musically, this translates into remarkable bass extension and precise control of low-frequency transients, regardless of any complex load impedances at output. The Lightstar combination of high-energy power supply, high-current load-independent design and Digital Transformer delivers the most powerful, neutral listening experience achievable today.

The knowledge learned in developing the first Lightstar amplifier is now finding applications throughout the Carver line. As Carver develops new audio technologies, Lightstar-level products will serve a vital role as proving ground for their research, development and ultimate introduction into the marketplace.







Comparison of Lightstar Amplifier to Non-Carver Amplifier.

2.3 *Sonic Holography*™

The short form: *Sonic Holography extends the soundstage far beyond two stereo speakers by adding signals that convince the ear the sound is coming from a live source. The listener is transported into a three-dimensional soundstage, with all the sound realistically placed in front of, to the side and even behind the listener.*

This fundamental Carver innovation was the result of a wide gap between stereo audio reproduction and the sound of a live performance. While system components and sound sources– even in the late 1970's– had reached the point where they were theoretically capable of re-creating a live performance, the perceived soundstage was not very convincing to the human ear. All the sound seemed to come from the two stereo loudspeakers and the area between them, while in live performances each musician or singer would produce a sound image not confined between two speakers.

After investigating the problem, Carver discovered that conceptual flaws had been introduced through the whole sound recording chain, from microphone to monitor. The problem arises because each ear hears two sound arrivals, one from each speaker. But in a live performance each ear hears only one sound arrival from that original singer allowing the brain to process the one arrival per ear to pinpoint the location of the sound.

When each ear hears two arrivals (one from each speaker) the brain now has to process *four* signals, which results in the sound appearing to generate somewhere in-between the two speakers. To fix this, Sonic Holography adds yet two more signals, specially designed to cancel out the two unwanted signals. The effect is startling! Suddenly instruments and singers have a three dimensional reality. The audience applauds and the listener hears clapping even *behind* them.

In addition to launching Carver Corporation and serving as the technology platform for one of its most successful products– the C-4000 preamplifier– Sonic Holography has contributed to the performance of preamplifiers, pre-amp tuners, outboard processors, receivers and even televisions. Almost two decades after its introduction, critics are re-discovering and raving about the virtues of this legendary Carver invention.

2.4 *Cinema Holography*™

The short form: *using the same principle as Sonic Holography– but completely re-engineered for today's complex multi-channel surround systems– Cinema Holography extends the audio/video soundstage far beyond individual speaker locations, resulting in a seamless, panoramic soundfield. Special effects "pan" effortlessly across the soundstage, and the surround experience exceeds the quality heard in the best theaters.*

The goal of home theater surround such as Dolby and THX is to reproduce the panoramic sound experience heard in the theater. While these techniques have come a long way, some weaknesses still exist. Five speakers may each individually reproduce the correct portion of sound, but what happens as the sound moves *between* the speakers often compromises the total effect. Many sound sources simply don't "pan" well across the speakers. And depending on how the steering cues are done, much of the time the sound is still confined between the two front loudspeakers even with a center channel. Music videos in particular suffer from the confined effects of a limited apparent soundstage between the speakers.

It was to solve this problem that caused Carver to re-engineer its stereo Sonic Holography for audio/video applications. The result is an entirely new system: Cinema Holography, an entirely new design for 3 channel logic, 5 channel Dolby Pro-Logic™ or 5.1 channel use. As with its stereo predecessor, the effect is dramatic and decisive. The most complex special effects pan convincingly across the soundstage, with no "seams" or gaps in the sound presentation. Music videos are reproduced with pinpoint accuracy.

Like Sonic Holography, Cinema Holography works by playing directional signals to eliminate the unwanted additional sound arrivals from loudspeakers. The result is a soundstage widened to true theater proportions, well beyond the confines of the listening/viewing area. Better yet, imaging along the side and rear is actually superior to that experienced in even the best theater surround systems. Cinema Holography is compatible with all home surround-sound formats, from 3-channel Dolby to THX, and can actually "upgrade" 3-channel Dolby to sound more like 5-channel Dolby Pro Logic.

2.5 *Power Steering*™

The short form: *Power Steering redistributes an amplifier's unused power capacity to the channel asked to play the loudest at any given moment. The result is an amplifier that can precisely "track" the audio signal.*

In a movie soundtrack, the sound has much more mobility between channels than in music reproduction because it must follow the action on the screen. During the sound mixing or "dubbing" stages of film production, these panoramic (or "pan") effects are created by raising or lowering the level of sound as it moves from one channel to the next. During playback, the level of power needed in each channel constantly changes, with one channel usually dominating the others at any particular instant.

The ideal amplifier would be able to follow the process by constantly redistributing its power. However, conventional audio amplifiers– even multi-channel designs– are still designed like stereo amplifiers, which means that while one channel is being driven to full power the other channel (or channels) sit in a wasted "idle" state.

Carver saw this unused amplifier power as an opportunity to radically re-think amplifier design for surround-sound systems. The technique is Power Steering, which allows the amplifier to focus a greater percentage of its continuous power toward the channel working the hardest at any given time. With this innovation, a 130 Watt per channel amplifier with 5 channels driven can deliver over 200 Watts to the one channel requiring the most power at that instant. The power is "steered" around the 5 or 6 channels by the soundtrack itself. Because Power Steering "tracks" the audio signal, it reproduces sound effortlessly as it moves from one channel to the next. When combined with Cinema Holography, the effect is a total movie experience at home.

2.6 *Infinite Decorrelation*™

The short form: *rear channel surround information is a mono, correlated signal, which often lacks depth and width. Infinite Decorrelation expands the rear soundstage past the listener by manipulating the signal, creating a more lifelike and dramatic soundfield.*

Much of the home theater experience depends on surround-sound for realism, usually as played through a Dolby Pro Logic system. Dolby Pro Logic works by extracting a signal difference (left minus right) from the program source, delaying it and sending this fully correlated, mono signal to the rear surround channels and speakers. Because the same signal is coming from both surround speakers, it lacks the left/right spaciousness of stereo, and can have a headphone-type "centered" sound.

The situation is serious enough that Lucasfilm/THX uses a decorrelation circuit just to re-create some sense of rear channel spaciousness. Carver has applied its psychoacoustical research experience to the problem and developed the next generation: Infinite Decorrelation. The Carver system generates the maximum number of surround space and directional cues possible by inverting the surround signal difference at critical frequencies above 200 Hz. The effect is quite realistic as the rear surround field takes on greater left-right proportions and properly fills-out the room.

A historical footnote: In 1979, Carver introduced surround-sound and an early version of Infinite Decorrelation in the revolutionary C-4000 preamplifier.

2.7 Headphone Recorrelation

The short form: *This innovative Carver circuit eliminates "headphone sound" through advanced psychoacoustics, by playing corrective signals along with the primary audio signal. The listener hears a natural, balanced soundfield on music and video.*

Just as fundamental problems exist with stereo recordings played over two (or five) speakers, equally severe problems exist when stereo recordings are played on headphones.

Through sophisticated circuitry, Sonic Holography and Cinema Holography both address the problem with speaker listening by playing additional signals to cancel unwanted directional cues. The results are outstanding.

Headphones were designed originally as monophonic work tools for communications and broadcast, and have always represented something of a compromise for spatially-accurate high fidelity listening. When stereo hi-fi became popular in the 1960's acoustic engineers discovered that headphones only reproduced the soundstage correctly when recordings were made binaurally, which unfortunately never caught on. It wasn't until Carver developed Headphone Recorrelation some three decades later that headphone listening finally came into its own.

Headphone Recorrelation adds corrective signals back into each channel in manner similar to Sonic Holography, but uses different style corrective signals in different frequency spectra. The technique moves the soundstage beyond the headphones and into the listening room. As an added bonus, Headphone Recorrelation does an excellent job of reproducing surround-soundtracks on headphones for late-night home theater listening!

2.8 Ribbon Dipole Technology

The short form: *The ribbon is as close to an ideal loudspeaker as present technology allows. It responds faster and more accurately to music, and is a seamless line source because it has no woofers, tweeters, midranges or crossovers. Carver has made ribbons practical and affordable– and in the process created an audiophile classic.*

> "The AL-III loudspeakers provide spectacular musical pleasures with transparency, vivid definition, extraordinarily fine imaging and soundstage, and great, defined tight bass. Given plenty of power, the Carver AL-IIIs perform with **great tonal integrity and so much clarity that it is difficult to walk away from the musical experience at the end of a listening session.** These speakers are highly recommended."
>
> *High Performance Review,* Winter 1992/1993

> "...I expected effortless transparency, and I was not disappointed. Whether I was a foot from the speaker or across the room, the highs were always crystal clear and unstained... **It is a very addictive quality– difficult to describe, but once experienced, never forgotten!"**
>
> *Stereo Review,* July 1993

Audiophiles and loudspeaker engineers alike have long appreciated the potential advantages of the panel membrane category of loudspeakers. Sometimes called planar loudspeakers, they use a large membrane surface with embedded conductors set into motion either with a large electrostatic charge or by being suspended in a field of magnets. Planar sound is more open and natural, partly because these speakers opearate in two directions as a dipole. However, the practical difficulties of planar loudspeakers (including their fragility, driving difficulties, limited bass response and inherently high cost) have relegated them to a footnote in loudspeaker design– a situation that Carver Corporation resolved to change through extensive research into new fields of planar speaker design.

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Ribbon Dipole Technology *(continued)*

The solution revolves around our patented dipole ribbon drivers. The Carver ribbon is a seamless linesource using lightweight aluminum conductors embedded in space-age Kapton®, a temperature resistant, stretch proof material borrowed from the space program. The ribbon membrane, suspended in a 22 foot magnetic structure, has a lower mass/surface area ratio than any conventional cone and dome speaker design. In the Carver speaker, the full-range ribbon is mated to a built-in subwoofer to reproduce the bottom musical octaves with full impact. The result is the best of both worlds: true full-range planar speaker performance at a price competitive with conventional designs.

The Carver ribbon speaker's low-mass Kapton diaphragm responds to music faster and more accurately. It is the ideal line source– there are no seams or gaps in the music, because there are no crossovers, woofers, tweeters or midranges in the critical range! The ribbon speaker is more immune to room reflections and resonance, and its non-reactive resistive nature makes it an ideal match for high performance amplifiers.

An interesting fact: Carver manufactures its own ribbon assembly, and supplies this very same ribbon to other speaker companies for use in "esoteric" audiophile speakers priced at up to $90,000! At under $2,000 the pair, the Carver ribbon is a bargain in every sense of the word.

2.9 Vocal Zoom

The short form: *Home theater systems often sound wrong when playing back music. Carver's Vocal Zoom allows the listener to adjust the center channel relative to left and right. On audio/video sources, Vocal Zoom enhances dialogue presence.*

> "...while I half expected the VOCAL ZOOM feature to be a gimmick, **it worked surprisingly well.** Rotated about halfway up, it did an unexpectedly good job of making dialogue more intelligible at low volume settings– **a great convenience late at night."**
>
> *Sound & Image,* Summer 1994,
> review of CMV-1185 integrated amp

Vocal Zoom is featured on selected Carver preamp/tuners and preamplifiers, and is designed with today's 5-channel surround speaker systems in mind. A signal enhancement that operates in the human voice frequency range, Vocal Zoom serves three purposes:

1. **Dialogue enhancement–** in a movie theater, dialogue reproduced through behind-the-screen loudspeaker arrays is part of what "locks" the image onto the screen as far as the viewer/listener is concerned– it tightens the sound image on a larger-than-life screen. Home theater systems provide a center channel and speaker to mimic the effect. However, some parameters are reversed in the home. Here, the center channel speaker is rarely located behind the screen, and the screen is much *smaller* than life. Vocal Zoom can compensate, by increasing vocal presence and re-establishing a strong center image on critical dialogue passages.

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2. **Level matching–** on a 5-channel system, often the tonal match between left, right and center speaker is incorrect due to speaker differences and placement variations. Vocal Zoom can be used to adjust the center channel relative to its two flanking counterparts, resulting in a more coherent soundfield. *Vocal Zoom also permits the listener to increase intelligibility without increasing volume – a very handy feature for late night and family viewing.*

3. **Stereo listening–** on music-only listening, most people notice some unnatural tonal balance when they switch from a 2-channel to 5-channel system. Vocal Zoom enables the listener to re-tune the front channels for music-only listening and restore the unique tonal characteristics of live music.

3. Carver Positioning

3.1 Carver in the audio market.

Carver's market segment is separate components. Carver's market position is that of *the company making audio technology and performance available at price points previously considered impossible*– a position Carver has owned (in all audio product categories) from its first magnetic field amplifier in 1979 to the latest version of its acclaimed ribbon loudspeaker. Leadership in this area bends the rules of competition somewhat, as many competitors also become imitators. Since 1979, Carver has been imitated many times by the Japanese companies dominating the popular hi-fi market.

3.2 The receiver era.

Whether stereo or home theater, the all-in-one receiver remains a popular point of entry for audio consumers. Developed in the 1950's as an alternative to purchasing a separate amplifier, control center and tuner, receivers became very popular during the 60's and 70's with the growth of component stereo. While the receiver's common chassis, power supply and enclosure dictated performance compromises, they weren't all that noticeable with the speakers and sound sources typical of that era. And the very high cost of separate electronics kept receivers as an attractive alternative.

All that changed in the 1980's with two technological revolutions. The first was a giant leap forward in audio source quality with the compact disc (and subsequently the laser disc as home theater took off). Suddenly, the need for electronics with better dynamics was obvious. The second were advances in electronic design– exemplified by Carver's own radical magnetic field amplifier– that broke the "dollar-per-watt" barrier and brought separates sound quality within the reach of a wider range of listeners.

3.3 *The separates edge.*

Many first-time buyers consider today's typical receivers good enough. People used to think that console stereos, all-in-one compact stereos and later rack systems were acceptable as well. **The role of an audio specialist– then as now– is to demonstrate that next level of performance, the one that transports the listener close to the original event, and upgrade the experience by professionally matching different components.** Today, that means taking the customer past the receiver entry level and into Carver's realm of separate components.

Here are the 5 essential reasons to own audio separates:

1. **Better performance.** This is the most important advantage of separate components. After all, every receiver is really a preamp, poweramp and tuner in one box. Every audio specialist is familiar with receiver brands supposedly "known" for their FM quality, or abundance of features, or high power for the money, or "purist" design– but never all-of-the-above. This is because receivers must hit certain price points, and a receiver with "separates" performance in each of its three sub-functions would carry far too much sticker shock to remain competitive.

   Separates let the buyer have it all: the best power amp, preamp and tuner they can afford, each chosen for its excellence in its particular area. Separate power amplifiers have the highest voltage and current capabilities, and separate preamplifiers combine state-of-the-art audio specifications with the ultimate in control flexibility. Most important, separates always have the most honest, conservative "real-world" specifications. A well-planned separates system literally has no weak links.

(continued)

2. **Future ready.** As they hear all about emerging technologies in audio and home theater, today's buyers are increasingly concerned about obsolesce. The fact is that from digital FM tuning to THX, new technologies traditionally appear first in separate components. [Carver buyers have an even greater advantage here, as Carver is famous for offering advanced audio technologies not available elsewhere in its separates.] Equally important, it's much easier to integrate new technologies– such as Dolby AC-3– into a separates system, as one does not have to replace everything or start over.

3. **More flexibility.** Separates allow the buyer to take a building-block approach, and upgrade their system in power and features as their needs require and budget permits. One can, for example, start with an excellent two channel stereo system and later expand into five-channel home theater. Separates also offer the maximum in *system control flexibility* as well.

4. **Superior overall "build quality."** Separates engineers design to performance standards instead of price points. As a class, separate components feature discrete electronic components in the audio signal path, usually selected from the highest grade parts available. That's why separates can drive high-performance loudspeakers better than even the best receivers on the market. Receiver designers often must resort to power IC's for amplifiers for reasons of economy, and the difference can be easily heard even by the uninitiated! Separates also have the advantage of isolated power supplies which reduces noise.

5. **Better investment.** Superior construction means better reliability, and the use of top-grade electronic parts means that separate audio components will meet or exceed their conservative specifications for many years– even decades. Separate components also command higher prices at trade-in time because they are more desirable.

3.4 *The Carver separates advantage.*

When Carver introduced its revolutionary magnetic field amplifier in 1979, the company established a new price standard for separate component excellence. Carver maintains a position squarely between the mass-market Japanese companies (who practice "price point engineering") and the so-called "esoteric" companies (whose technical excellence few people can actually afford) through the following:

1. **Local and global resources.** Carver engineers all of its components and builds many of them in the U.S.A. Through its unique combination of domestic manufacturing and global resources, Carver can offer true separates quality at a price closer to the premium receiver level.

2. **Value-adding technology.** Patented Carver technology is dedicated to making components perform better without increasing their overall cost. TFM amplifier design, for example, enables Carver to offer a true high-end power amplifier at "mid-fi" prices. The Carver ribbon speaker is comparable to esoteric designs costing *from 5 to 50 times as much.* From radical FM reception circuitry to Cinema Holography, every Carver technology is developed for the purpose of making high-end audio more affordable than ever.

3.5 *If separates are so great, why does Carver build a receiver?*

If you read the advertising copy for supposedly "high-end" receivers, you'll note that they claim to offer "separates" performance. Carver thought it important to establish a benchmark for valid consumer comparison and make it possible for those who simply must, for either budget or space restrictions, own a receiver, to still enjoy uncompromised audio performance. The difference is that Carver has one or two receiver models rather than a price-point driven line, and that *each Carver receiver is designed to the performance standards of Carver separates.* Carver's receivers also include hallmark technologies such as Sonic Holography and ACCD FM.

Perhaps the most meaningful difference is the respect Carver receivers are given by audio critics and consumer magazines. *Consumer Guide* rated three Carver receivers as "Best Buys." The audiophile publication *The $ensible Sound*, when comparing two A/V receivers (including Carver's latest model), against far more expensive separates, called them *so damn good they ought to be outlawed...I'd be tempted to buy one just for the tuner/preamp! If you're truly $ensible, run, don't walk, to your nearest store and buy one of these units."*

3.6 Carver Value Comparisons– amplifiers

Brand	Model	8 Ohm Power	Sugg. Retail	Cost per Watt
60 Watt/2-channel				
Carver	**TFM-6cb**	**65 x 2**	**$399**	**$3.07**
Adcom	GFA-5200	50 x 2	$350	$3.50
Rotel	RB-970BX	60 x 2	$380	$3.17
Parasound	HCA-600	60 x 2	$395	$3.29
100 Watt/2-Channel				
Carver	**TFM-15cb**	**100 x 2**	**$549**	**$2.75**
Adcom	GFA-5400	125 x 2	$700	$2.80
Rotel	RB-980BX	120 x 2	$600	$2.50
Parasound	HCA-1000	110 x 2	$575	$2.61
NAD	216THX	125 x 2	$699	$2.80
200 Watt/2-Channel				
Carver	**A-400x**	**200 x 2**	**$685**	**$1.71**
Adcom	GFA-5500	200 x 2	$1000	$2.50
Rotel	RB-990BX	200 x 2	$1000	$2.50
Parasound	HCA-1200II	205 x 2	$975	$4.64
NAD	2700THX	150 x 2	$829	$2.76
250 Watt/2-Channel				
Carver	**TFM-35x**	**250 x 2**	**$899**	**$1.80**
Adcom	GFA-5800	250 x 2	$1600	$3.20
Parasound	HCA-2200II	250 x 2	$1795	$3.59
NAD	208THX	250 x 2	$1649	$3.30
350 Watt/2-Channel				
Carver	**TFM-55x**	**380 x 2**	**$1249**	**$1.64**
5-Channel		***front/center/surround***		
Carver	**AV-405**	**100/110/50**	**$849**	**$2.07**
Adcom	GFA-6000	100/100/60	$900	$2.14
Rotel	RB-985	100/100/100	$1000	$2.00
6-Channel THX-certified		***power x 6/bridged***		
Carver	**AV-806x**	**133/360**	**$1750**	**$1.62**
Parasound	HCA-1206	135/300	$1950	$2.40

Carver prices effective January 1996; all others effective Fall 1995.
Sources include manufacturers' literature and industry buying guides.

4. The Carver Product Line

4.1 Multi-channel audio/video amplifiers.

With its room-shaking special effects, incisive dialogue requirements and overwhelming surround presence, home theater sound reproduction places demands on amplifiers that were unheard of even just a few years ago. *This is exactly the type of amplifier performance on which Carver built its reputation.*

Carver multi-channel amplifiers use true mono-block architecture where each channel is actually a complete sub-amplifier right down to its heat sink. All-discrete circuitry ensures absolute signal purity and full dynamic punch. All specifications are extremely conservative– typically "worst case"– and all power ratings are for all channels driven.

AV-806x- the "Magic" amplifier

AV-705x Premiere amplifier (NEW)

AV-405 amplifier

(continued)

AV-806x- the "Magic" amplifier.

Flagship of the Carver line, the 6-channel AV-806x is a THX-certified powerhouse that exceeds even those stringent requirements. In its first full production year the AV-806x has earned more critical acclaim than possibly any other multi-channel amplifier design. It is built at Carver's manufacturing facility in Lynnwood, Washington.

What the critics have to say:

"The AV-806x...is, to put it mildly, **a power amplification monster.** .. the AV-806x was implacable when asked to drive the estimable Wilson Audio WATT/Puppy V speaker system,* never evincing the slightest hint of strain."

Tom Miiler, ***Sound & Image,*** April/May 1995
*reference speaker system

"...on a dynamic basis, the amp pumped out 610 watts! When I see a product that beats its spec by this wide a margin, I know that conservative engineers, not freewheeling marketers, are writing the specs! ...I attribute this exceptional performance to an exceedingly well designed layout and excellent component selection."

"Every now and than, we come across a product that is *egregia cum laude*– one that stands apart from the flock of basically good but otherwise indifferent products. AV-806x is such a product, and **it's simply superb... this US-built amplifier is well worth its suggested retail price of $1,750 in my book."**

Edward Foster, ***Home Theater,*** July 1995

"...may well be the Clark Kent of multichannel amplifiers... **I was expecting competent performance; what I got was magic..."**

"... I nearly ran out of positive things to say about the Carver in my listening notes. It had a natural warmth and palpability that served all music well but was particularly disarming on vocals. Its top end was wonderfully subtle and self-effacing...it had all the detail and delicacy I could wish for...the bottom end of the Carver was amazingly potent and full-bodied. It never ran out of steam, and it kept pace with other amplifiers having significantly more power."

"... if you've seen my three recommended system in this issue, you'll note that I chose to use the AV-806x in two of them– including the highest-priced system. **That, I believe, says it all."**

Thomas J. Norton, ***Stereophile Guide to Home Theater,*** Fall 1995

(continued)

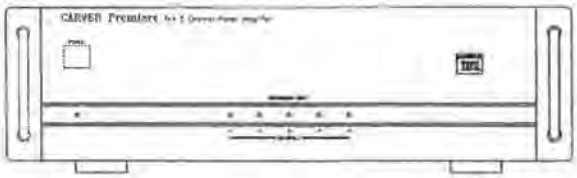
4.1 *AV-806x- the "Magic" amplifier.* *(continued)*

- **$1,750 suggested retail**
- Certified for use in Home THX audio systems
- Six channel 133 watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Six channel 180 watts @ 4 ohms, rated full power bandwidth 20-20 kHz
- Two channel 400 watts @ 2 ohms dynamic headroom power
- Bridgeable mono operation of 360 watts @ 8 ohms
  (Tests on the bench confirm over 500 watts @ 8 ohms)
- DB-25 data-grade connector for THX controller interconnection
- RC-5 remote control bus for remote turn-on
- Discrete output circuitry
- Separate monoblock amplifier modules for maximum channel separation and minimal cross-channel interaction
- THD at 1 kHz is typically less than 0.01% into 8 ohms
- Signal to Noise A-weighted, referenced to full power, is greater than 115dB
- High-speed triple diffused bipolar output devices
- Discrete heat sinks for each amplifier channel with pressed fin open-frame construction to maximize surface area and reduce internal heating
- Double shielded dual power transformers with thermal protection for superior magnetic field isolation
- Distributed AC power system using filter storage capacitors designed for audio applications
- Three way protection circuitry
- Dual-redundant speaker relay contacts for maximum reliability

(continued)

4.1 *Premiere AV-705x (NEW).*

Inspired by the AV-806x, the new 5-channel AV-705 is sure to be a benchmark in its own right. The unique Power Steering feature directs unused extra power capacity to the channel being driven the hardest at any given moment. Like the AV-806x, this THX-certified amplifier uses true monoblock architecture for maximum independent channel integrity.



Preliminary specifications:

- **$1,200 projected retail**
- Certified for use in Home THX audio systems
- Five channel 130 watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Discrete output circuitry
- Power Steering circuitry directs extra amplifier capacity where most needed
- Separate monoblock amplifier modules for maximum channel separation and minimal cross-channel interaction
- THD at 1 kHz is typically less than 0.01% into 8 ohms
- Signal to Noise A-weighted, referenced to full power, is greater than 115dB
- Triple-diffused planar high-current output devices
- Massive discrete heat sinks for each amplifier channel with high aspect ratio fin open-frame construction to maximize surface area and reduce internal heating
- Oversized power transformer with thermal protection
- Three way protection circuitry

4.1 *AV-405.*

This 5-channel Carver power amplifier is probably the most powerful argument in existence for choosing separates over a receiver. Matched with a Pro-Logic™ preamp/tuner, it easily competes in "high-end receiver territory" while offering true separates performance.

- **$849 suggested retail**
- Left/Right channel 100 Watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Left/Right channel 150 Watts @ 4 ohms, rated full power bandwidth 20-20 kHz
- Left/Right channel 200 Watts @ 2 ohms dynamic headroom power
- Center channel 110 Watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Rear channels 50 Watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Stereo power (left/right operation)150 Watts @ 8 ohms, rated full bandwidth
- Power Enhancement circuit for rear channels with optocoupled attenuators prevents the rear channel from hard clipping
- Discrete output circuitry on all 5 channels
- Separate monoblock left, right and center amplifier modules for maximum channel separation and minimal cross-channel interaction
- THD at 1 kHz is typically less than 0.05% into 8 ohms
- Signal to Noise A-weighted, referenced to full power is greater than 95dB providing a dynamic range suited to digital signal sources
- High-speed triple diffused bipolar output devices
- Discrete heat sinks for left, right and center amplifier channels to maximize surface area and minimize internal heating
- Self-shielded toroidal power transformer with integral grain-oriented shielding strap for superior power supply regulation
- Four-way protection circuitry
- Five-way thermal protection system
- Separate rear channel power supply section to better isolate front and rear channels

4.2 Two-channel stereo amplifiers.

Carver is, first and foremost, famous for amplifiers– not surprising for a company that started with introduction of a radical amplifier design which completely rewrote the price/performance ratio rules for amplifiers. The fact is that many companies have been trying to catch up to Carver since the original M-400. The four two-channel models shown next demonstrate just how wide that lead remains.

Two-channel amplifiers are no longer just "stereo" amplifiers. Many of them become building-blocks for ultra high-end home theater systems, some become part of custom-installed multi-room systems, and still others provide service as monoblocks when enormous amounts of clean power are needed. Whatever the application, Carver has the right amplification tool for the job.

TFM-55x amplifier

TFM-35x: "A 250 wpc bargain" amplifier

TFM-15cb amplifier

TFM-6cb amplifier

(continued)

4.2 *TFM-55x.*

Arguably the most powerful THX-certified amplifier on the consumer market, the TFM-55x is powerful enough to run a full-sized motion-picture theater- and more than a few are in professional service doing just that! The epitome of high voltage, high current excellence, the TFM-55x is Carver's finest two-channel design yet and a reference point for the industry-at-large. In fact, when Carver's competitors rip apart samples to learn our "secret," more often than not this is the model they use.

The TFM-55x incorporates the latest refinements in Carver's hallmark Magnetic Field Technology. The amplifier's six distributed power supplies and associated control circuitry directly responds to moment-to-moment peak power demands imposed by the loudspeaker and signal source. This Carver technology places less stress on output devices, resulting in a cooler, more powerful amplifier. In addition to its six distributed supplies (also found in the TFM-35x), the TFM-55x also has an advanced Magnetic Field Power Supply with AC power control circuitry for exceptionally stable operation.

- **$1,250 suggested retail**
- Certified for use in Home THX audio systems
- Two channel 380 watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Two channel 500 watts @ 4 ohms, rated full power bandwidth 20-20 kHz
- Two channel 1100 watts @ 2 ohms dynamic headroom power
- Bridgeable via rear panel switch for mono operation of *1000 watts* @ 8 ohms
- Discrete circuitry through critical signal path (high gain precision front end incorporates a state-of-the art operational amplifier)
- Precision, user-friendly meters: taut band movements and custom-designed meter drive circuit provides wide-range musically responsive ballistics; meter light on-off switch to provide romantic distraction-free operation in the evenings
- THD at 1 kHz is typically less than 0.03% into 8 ohms
- Signal to Noise A-weighted, referenced to full power, is greater than 115dB
- High-speed triple diffused Motorola bipolar output devices– the same type used in most professional amplifier designs
- Separate heat sinks for left and right amplifier channels for ideal heat transfer
- Double-shielded power transformer for superior magnetic field isolation
- Triple over-temperature protection
- Five way protection circuitry per channel (this amplifier is virtually bullet-proof!)
- Manufactured in Lynnwood, Washington

4.2 *TFM-35x: "A 250 wpc bargain."*

The TFM-35 is the first amplifier to break the sales record set by Carver's own M-400, and the best-selling amplifier in America according to sales figures from the Electronics Industry Association. The TFM-35x is a purist audiophile amplifier capable of meeting the dynamic requirements of home theater, and has achieved almost a "cult" status in the industry because of it.

What the critics have to say:

"...I can certainly recommend the Carver TFM-35 for a listening evaluation by anyone seeking a power amp. Build quality is solid, the power supply is clearly the equal of other amps in this price range even without Carver's design claims– and if it's right you get a 250wpc bargain at 150wpc prices... **If the Carver TFM-35 sounds as good in your system as it did in mine, grab the bargain and don't worry."**

GK, ***The $ensible Sound,*** Winter 1993/1994

- **$899.00 suggested retail**
- Certified for use in Home THX audio systems
- Two channel 250 Watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Two channel 350 Watts @ 4 ohms, rated full power bandwidth 20-20 kHz
- Two channel 800 Watts @ 2 ohms dynamic headroom power
- Bridgeable via rear panel switch for mono operation of 700 Watts @ 8 ohms
- Discrete circuitry through critical signal path (high gain precision front end incorporates a state-of-the art operational amplifier)
- Precision, user-friendly meters: taut band movements and custom-designed meter drive circuit provides wide-range musically responsive ballistics; meter light on-off switch to provide romantic distraction-free operation in the evenings
- THD at 1 kHz is typically less than 0.01% into 8 ohms
- Signal to Noise A-weighted, referenced to full power, is greater than 115dB
- Motorola bipolar output devices
- Manufactured in Lynnwood, Washington

4.2 *TFM-15cb.*

Built like a tank and with the sound of an amp costing many times its price, the outstanding TFM-15cb is just business as usual for Carver. Audiophiles, audio critics, custom installers and audio salespeople are unanimous in ranking this one of the most versatile audio components in the market today.

This status was noted by *Audio Video International* magazine, when it gave special recognition to the TFM-15cb in its 17th annual Hi-Fi Grand Prix awards for its "combination of output power and special features." The features the magazine referred to are mono bridgeability and input level controls, unusual for an amplifier in this price/performance class.

What the critics have to say:

"In general the sound conveyed by the Carver was so open, musical, and seductive that more often than not I found myself getting lost in the music instead of reviewing... **Am I going to miss that open, spacious sound and amazing bass extension when I have to send the amp back to Carver? You better believe it!"**

"...The listening panel down here was impressed that a relatively inexpensive amplifier could sound so refined overall. Add to the good sound the fact that the amp comes with features such as volume pots and speaker switching... **and you have the best under-$400 amplifier* that we have yet encountered."**

GDB & KWN, ***The $ensible Sound,*** Fall/Winter 1991
*Review of earlier TFM-15

- **$549.00 suggested retail**
- Two channel 100 Watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Two channel 140 Watts @ 4 ohms, rated full power bandwidth 20-20 kHz
- Two channel 300 Watts @ 2 ohms dynamic headroom power
- Bridgeable for mono operation of 300 Watts @ 8 ohms
- Discrete circuitry through signal path
- Dual analog power meters
- Input level controls
- A/B speaker selector
- THD at 1 kHz is typically less than 0.02% into 8 ohms
- Signal to Noise A-weighted, referenced to full power, is greater than 100dB
- Bipolar output devices

4.2 *TFM-6cb.*

An unusually low-profile amplifier physically, the TFM-6cb is a high-current powerhouse and a stock item for the high-end custom installation market. It also has a strong following among consumers, as the ideal power building-block for multi-channel home theater systems. The amplifier is designed around a precision torodial power supply and incorporates all of Carver's considerable expertise in packing high power and performance into an exceptionally efficient package.

- **$399.00 suggested retail**
- Two channel 65 Watts @ 8 ohms, rated full power bandwidth 20-20 kHz
- Two channel 100 Watts @ 4 ohms, rated full power bandwidth 20-20 kHz
- Two channel 200 Watts @ 2 ohms dynamic headroom power
- Bridgeable for mono operation of 180 Watts @ 8 ohms
- Discrete circuitry through signal path
- Input level controls
- A/B speaker selector
- THD at 1 kHz is typically less than 0.02% into 8 ohms
- Signal to Noise A-weighted, referenced to full power, is greater than 92dB
- Bipolar output devices

4.3 *Pro-Logic™ Control Centers*
(preamplifier and preamp/tuners)

Carver's separates reputation was built as much on innovative technology to control and manage the audio signal as well as amplify it. Starting with its first preamplifier– the renowned C-4000– Carver established itself as a leader in sound *re-creation* as opposed to simple reproduction. As one critic after another noted, the C-4000 brought new levels of sonic realism to the living room, with stereo imaging described in one review as *"crystalline in a way that almost beggars normal stereo reproduction."* This tradition thrives today in Carver's preamplifier and line of preamp/tuners.

Every Carver control center reflects the state-of-the-art in preamplifier design and execution. Carver has taken the concept an important step further with the preamplifier/tuner, an integration of two very compatible components that creates value without compromising performance. In a system consisting of a preamp/tuner and power amplifier, the primary beneficiary of an independent chassis and power supply– the amplifier– remains isolated. Only the preamplifier and tuner, with their relatively modest power supply needs, are combined. The preamp/tuner concept delivers it all: the dynamic, clean power of a separate power amplifier, and the savings associated with integrated components. In fact, some audio magazine reviewers have noted that the Carver preamp/tuners would be highly competitive just on their preamplifier strengths alone– the high-end tuner is an "audiophile's bonus!"

The Carver preamplifier and preamp/tuners marry purist audio specifications with the ultimate in control flexibility and features. Selected models offer Advanced Dolby Pro Logic and THX processing for home theater applications, augmented by Carver technologies such as **Cinema Holography** for a perfect soundstage, **Infinite Decorrelation** for heightened rear-channel realism and **Vocal Zoom** for clear, incisive dialogue reproduction.

CT-30 Director (NEW) Pro Logic/THX preamp/tuner

CT-28v Pro Logic preamp/tuner

CT-26v (NEW) Pro Logic preamp/tuner

CT-23 stereo preamp/tuner

C-15v Pro Logic™ preamplifier

(continued)

4.3 What the critics have said about Carver's preamp/tuner concept:

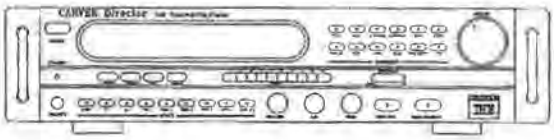
"...a somewhat unusual but **highly effective core component for a music system–** a modest midprice system, a high-price, super-power system, or anything in between."
Stereo Review, November 1990, Carver CT-6

"This preamp will do just about everything except serve you your morning coffee... Whew! **I am impressed...** I have to say I think this product is on the edge of the future...All in all, **a marvel of an audio product and a gift from the heavens for the buyer who is looking for the ultimate control center** or audio electronic gadget."
$ensible Sound, Summer, 1992, Carver CT-17

"Great blend of features and performance... "
Audio, December 1990, Carver CT-17

Director CT-30x (NEW) Pro Logic/THX preamp/tuner.

Carver's new control flagship, the CT-30x is designed with the future of home theater technology in mind. Along with offering advanced Dolby Pro Logic and THX processing, the CT-30x can also upgrade to Dolby AC-3 with an external processor through its rear-panel DB-25 data-grade connector. Carver's exclusive Cinema Holography re-creates an absolutely seamless soundstage. Dual-Zone capability enables the CT-30x to run a complete, custom-installed multi-room system.



Preliminary information:

- **$1,500 projected retail**
- THX-certified
- Cinema Holography
- Dolby AC-3 compatible with DB-25 data-grade input
- 7 surround modes
- On-screen display
- Dual-Zone capability
- Remote control

4.3 *CT-28v Pro Logic preamp/tuner.*

This is Carver's finest Advanced Dolby Pro Logic control center, and a remarkable value: a state-of-the-art preamp, a high-end tuner, and a surround-sound processor comparable to costly outboard designs in one package for just under $1,000. Vocal Zoom adds new clarity and brilliance to dialogue, a critical feature for home theater listening. In the Carver tradition, the CT-28v combines audiophile performance with a full complement of audio/video control features.

> **What the critics have to say about Carver's Vocal Zoom:**
> "...while I half expected the VOCAL ZOOM feature to be a gimmick, **it worked surprisingly well.** Rotated about halfway up, it did an unexpectedly good job of making dialogue more intelligible at low volume settings– **a great convenience late at night."**
> *Sound & Image,* Summer 1994, review of CMV-1185 integrated amp

- **$999 suggested retail**
- Advanced Dolby Pro Logic DSP surround processor with 7-mode surround and adjustable delay
- 5 surround-sound outputs
- 7 audio inputs, 3 composite video inputs, 3 S-video inputs
- 18dB/octave adjustable subwoofer output
- EQ/processor loop
- On-screen display
- Vocal Zoom for enhanced midrange presence on dialogue
- Full function RC-5 remote control
- Signal-to-noise, IHF A-weighted: greater than 85dB
- Maximum output level: 7 Vrms

4.3 *CT-26v (NEW) Pro Logic preamp/tuner.*

The CT-26v is Carver's new entry in preamp/tuners, one designed for both high-value and high-end audio performance. Crafted from the same standard as Carver's CT-28, the CT-26 enhances the home theater experience with Infinite Decorrelation, an exclusive technology that actually widens the rear channel soundstage. A full complement of audio/video inputs and outputs make the CT-26v future-ready and an ideal investment for those planning their first separate component system.

Preliminary information:

- **$649 projected retail**
- Dolby Pro Logic surround with 5-mode adjustable delay
- Infinite Decorrelation widens rear soundstage
- 3 audio inputs
- 2 audio/video inputs
- Composite video outputs
- EQ/processor loop
- Subwoofer output
- Remote control

4.3 *CT-23 stereo preamp/tuner.*

Since its introduction, the CT-23 has earned considerable praise from audio reviewers and consumers alike for its unique combination of "audiophile" performance and control versatility. Competitive on the basis of its preamp section alone, the CT-23's high-end tuner makes it an outstanding value– literally an audio bargain. The unit's Advanced Sonic Holography is the highest expression of one of Carver's hallmark technical developments, and provides the critical listener with a startling level of realism.

What the critics have to say:

> "Its excellent performance and exceptional price make it **a very $ensible buy!** When you stop and really think about getting a well-made and good-sounding preamplifier that includes a phono stage, plus the Sonic Holography circuitry, plus an excellent tuner, and all of this for well under a grand, then **you really start to wonder how some companies can charge so much for so little, and you start to wonder where the nearest Carver dealer is."**
>
> *The $ensible Sound,* Spring 1996, Carver CT-23 preamp/tuner

- **$649 suggested retail**
- Advanced Sonic Holography
- 7 audio inputs, 3 composite video inputs
- Full function RC-5 remote control
- Signal-to-noise, IHF A-weighted: greater than 85dB
- Maximum output level: 7 Vrms

4.3 *C-15v Pro Logic™ preamplifier.*

An advanced control center for a state-of-the-art home theater system, the C-15v is also ideal for custom installation with its multi-room Dual-Zone feature. The unit features both Advanced Dolby Pro Logic surround decoding and Carver's unique Vocal Zoom feature for enhanced theater realism. Full audio/video inputs and outputs, along with expansion provisions for external processors and subwoofers, ensure that the C-15v owner is always fully compatible with the future of home entertainment.

- **$849 suggested retail**
- Advanced Dolby Pro Logic DSP surround processor
- Dual-Zone for multi-room application
- 8 audio inputs, 3 composite video inputs, 1 S-video input
- Subwoofer output
- EQ/processor loop
- Full function RC-5 remote control
- Signal-to-noise, IHF A-weighted: greater than 85dB
- Maximum output level: 7 Vrms

4.4 *Carver Receivers*

As primarily a separates company, Carver created quite a stir when it entered the receiver business in the mid-1980's. But the challenge of seeing just how much "separates" performance could be engineered into a receiver was irresistible. Carver's traditional audio values quickly proved themselves at home with the receiver format. The very first model, known simply as "The Carver Receiver," earned a Best Buy rating from both *Consumers Digest* and *Consumer Guide* magazines, the latter describing the unit as *"a superb engineering achievement."* For those who simply could not move up to separates for whatever reason, Carver performance and value had arrived.

Unlike typical receiver companies, Carver does not have a model at each price point. Rather, Carver engineers strive for a performance standard set by Carver's own separate components. That performance threshold, and not a sales & marketing department, is what determines the price of a particular Carver receiver. If it were done any other way, Carver would have little reason to be in the receiver business!

Almost every company likes to describe its top-of-the-line receiver as having "separates" performance. At Carver, we agree that this is the level to which a receiver should aspire. The difference is that we set the separates performance standard to begin with– and in a Carver receiver, that performance isn't just wishful thinking!

HR-895 Dolby Pro Logic Cinema Receiver

HTR-880 (NEW) Home Theater Receiver

HR-895 Dolby Pro Logic Cinema Receiver.

The ultimate receiver by anyone standards, comparable only to Carver's own separate components. The HR-895 is not the most expensive receiver on the market– but it is arguably the finest. Along with a high-current 5-channel power amplifier and Dolby Pro Logic, the HR-895 offers Carver's exclusive Sonic Holography for spaciousness as well as ACCD FM circuitry. The latter, introduced in Carver's landmark TX-11 tuner, actually improves reception of weak stations by restoring their sound quality back to hi-fi levels. Pre-out/main-in connections on all 5 channels enable the HR-895 to function as the control center of a radically upgraded system or even a multi-room custom-installed system.

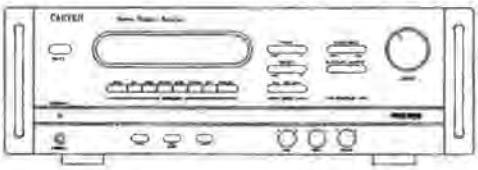
What the critics have to say:

> **"The Carver HR-895** and Marantz SR-92 receivers are **so damn good they ought to be outlawed...**I'd be tempted to buy one just for the tuner/preamp! If you're truly $ensible, **run, don't walk, to your nearest store and buy one of these units."**
>
> *$ensible Sound,* Fall 1993, review of Carver HR-895 and Marantz SR-92 receivers compared to separate components

- **$1,399 suggested retail**
- Dual-Zone for multi-room application
- 110 Watts x 2 front, 75 Watts center, 35 Watts x 2 rear channels at 8 ohms, 20-20kHz
- Less than 0.01% THD at 1kHz
- 7 audio inputs, 4 composite video inputs, 3 S-video inputs
- Sonic Holography
- ACCD FM tuner circuitry
- Pre-out/main-in on all 5 channels
- Multi-room kit provided
- Subwoofer output
- RC-5 remote control

4.4 *HTR-880 Home Theater Receiver (NEW).*

At first glance, the HTR-880's clean functional appearance seems a direct contrast to the typical front-panel light show found on Japanese A/V receivers. The HTR-880's real difference is inside, where it makes full use of Carver technology and performance to provide its competition with a real run for the money! This receiver is built around an all-discrete design 5-channel high-current amplifier capable of driving virtually any surround speaker system to cinema realism. Carver's exclusive Infinite Decorrelation delivers a wider, more lifelike rear soundstage. For those who have longed for the performance of audio separates but have had to put them off, the HTR-880 is a solution without compromise.



Preliminary information:

- **$799 projected retail**
- Dolby Pro Logic surround with 5 modes and adjustable delay
- 80 Watts x 3 front channels, 30 Watts x 2 rear channels
- Discrete high-current amplifier design on all 5 channels
- Infinite Decorrelation for a wider rear soundstage
- 3 audio inputs, 2 audio/video inputs, 1 composite video output
- EQ/processor loop
- Remote control

4.5 *Carver Source Components*

More than anything, Carver is a technology company. It was applied technology that made the first Carver amplifiers and preamplifiers overnight best-sellers, as these products achieved performance levels seemingly impossible for their price. Since then, Carver has turned to developing advanced technology to achieve similar breakthroughs in FM reception, digital disc playback, and anywhere else there is room for improvement. Each of the following Carver source components reflect the company's technical contribution and commitment to that particular area of audio. *Combined, they enable the discerning listener to assemble a system with no weak links.*

SD/A-360 CD changer

TDR-1550 Cassette Deck

TX-8R FM/AM tuner

4.5 *SD/A-360 CD changer.*

Look carefully at the typical CD changers on the market, and you'll find two striking similarities: they have an over-abundance of features and average performance specifications. Carver took the opposite approach with the SD/A-360. This machine is a high-end single player at heart, with essential convenience features and carousel operation carefully engineered back in. The result is a no-compromise unit with exceptional performance and the most requested features.

- **$599 suggested retail**
- 5 disc capability
- Dual bitstream D/A converters
- Single bit decoding
- Analog/digital output filtration
- Optical digital output
- 3 random play modes
- 3 repeat modes
- Remote control

4.5 *TDR-1550 Cassette Deck.*

Some companies have used digital as an excuse to stop refining the analog cassette format. The TDR-1550 is Carver's statement about remaining committed to its customers. This is the best cassette to wear the Carver name, which nominates it as one of the best cassette decks ever made. The TDR-1550 is capable of near-digital performance through its combination of advanced electronics (including Dolby HX Pro circuitry) and superb mechanical precision. The TDR-1550 is quite able to make a recording indistinguishable from the source material– and with today's sound sources, this is a true engineering feat! It is a fitting partner in an all-Carver system.

- **$599 suggested retail**
- Dolby B, C, HX-Pro
- 2 DC servomotors
- Hard Metal alloy record/playback head
- 40-19kHz frequency response, 73dB S/N with Type IV tape (metal)
- Audio reverse with full logic control
- Synchro record with SD/A-360 changer
- Music search & Quick Reverse
- Remote Control

4.5 *TX-8R FM/AM tuner.*

When Carver introduced its first tuner on the market, the field was already crowded with good designs. The reason the Carver tuner became a best-seller – even rated a "Best Buy" in consumer magazines– was because it achieved new levels of performance at a price well below the "audiophile" models. That tradition is carried on in the Carver TX-8R, a low profile, modestly-priced design with outstanding capabilities. Like other Carver source components, the TX-8R is engineered first for audio performance and is equipped with essential features. Ideal for use in custom installations as well as in high-end component systems, the TX-8R incorporates Carver's considerable tuner expertise in an exceptionally efficient form.

- **$449 suggested retail**
- low-profile design
- auto/manual scan selection
- FM stereo/mono selector
- 20 presets
- analog signal strength meter
- Full function remote control
- IHF sensitivity mono/stereo dBf: 12.8/22
- 50dB quieting sensitivity mono/stereo: 17.2/40.7
- Capture ratio: 1.5 dB
- S/N stereo: 70dB

4.6 *Carver Ribbon Loudspeaker AL-III Plus*

Not that we've saved the best for last, but the Carver ribbon is an achievement in which the company takes considerable pride. The benefits of planar speakers have long been known to the audiophiles willing to invest the many thousands of dollars they typically cost, and willing to restructure their living area to accommodate them. By developing the full-range ribbon approach, Carver achieved both a manufacturing and performance breakthrough. The result: a true audiophile loudspeaker for under $1,000, one that actually works better in the average listening room than most conventional designs!

The dipole ribbon radiates sound from both the front and rear, creating a sense of ambiance presence surpassed only by live music itself. The full-range ribbon reproduces the audible music range seamlessly, with no woofers, midranges, tweeters or crossovers to interfere with the presentation (extreme low bass is handled by the AL-III Plus built-in subwoofer). The single Kapton® diaphragm has a mass/surface area ratio far superior to any conventional tweeter/midrange array, enabling it to "track" complex musical details much more accurately. Because the ribbon is an ideal line source, it is far less affected by room interaction.

Carver also supplies ribbons for audiophile speakers made by other companies selling for *50 times as much* as the AL-III Plus. Every product in this book is an exceptional value. *At $995, the AL-III Plus is a steal.*

4.6 *Carver Ribbon Loudspeaker AL-III Plus* *(continued)*

What the critics have to say:

"Its overall sound is spectacular...**its price is ridiculously low for what it does and considering what comparable products cost."**

Stereo Review, December 1986,
Carver Amazing Ribbon loudspeaker

"A speaker system that is accurate, coherent, musical and which packs a load of bass that is well-defined and literally room-shaking. The more power you give them, the better the sound gets...In all, the Carvers illuminated the back of the hall in a way we have never heard before."

"The AL-III loudspeakers provide spectacular musical pleasures with transparency, vivid definition, extraordinarily fine imaging and soundstage, and great, defined tight bass. Given plenty of power, the Carver AL-IIIs perform with great tonal integrity and so much clarity that **it is difficult to walk away from the musical experience at the end of a listening session. These speakers are highly recommended."**

High Performance Review,
Winter 1992/1993

"The AL-III really shines when it comes to price and practicality....I expected effortless transparency, and I was not disappointed. Whether I was a foot from the speaker or across the room, the highs were always crystal clear and unstained... **It is a very addictive quality–difficult to describe, but once experienced, never forgotten!"**

Stereo Review, July 1993

- **$995 suggested retail (each)**
- 48 inch dipole ribbon driver with 22 foot-long magnetic circuit
- 10 inch downward firing subwoofer in Quasi-Butterworth 3rd order alignment
- Subwoofer crossover point: 150 Hz
- Impedance: nominal 4 Ohms
- Sensitivity: 86 dB ref. 1 Watt, 1 meter
- Available in black and natural oak finish

Carver controllers and adapters

4.7

Z-5 Power Expander

The Z-5 Power Expander makes it possible to upgrade a low-to-mid-powered 5-channel A/V receiver to component audio standards by enabling it to function as a preamp/tuner driving a separate power amplifier. It is a most cost-effective start toward a separates system, and an excellent alternative to starting over with completely new components.

An impedance-matching interface that essentially converts a receiver's high-level speaker outputs into Class-A line-level preamplifier outputs, the Z-5 transforms virtually any receiver into a surround-sound preamp/tuner with good specifications. Each channel has a separate passive level control for optimizing balance, headroom and signal-to-noise performance. A precision component designed to be used with any separate power amplifier, the Z-5 is designed to dock directly to the Carver AV-405 5-channel amplifier for added convenience.

- **$85 suggested retail**
- Input impedance: 2 kOhms
- Output impedance: 600 Ohms nominal
- Separate precision passive level control for each channel
- Maximum input: 40 Volts/channel (equivalent to 200 Watts/channel into 8 Ohms)
- Input connections: 5 pairs spring-clip speaker terminals (gold plated)
- Output connections: standard RCA phono (gold plated)
- Provided with 5 gold plated RCA male/male adapters for amplifier docking

5. Carver Audio System

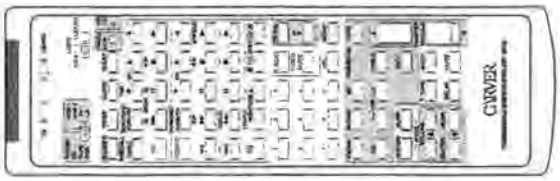
Home Theater Receiver

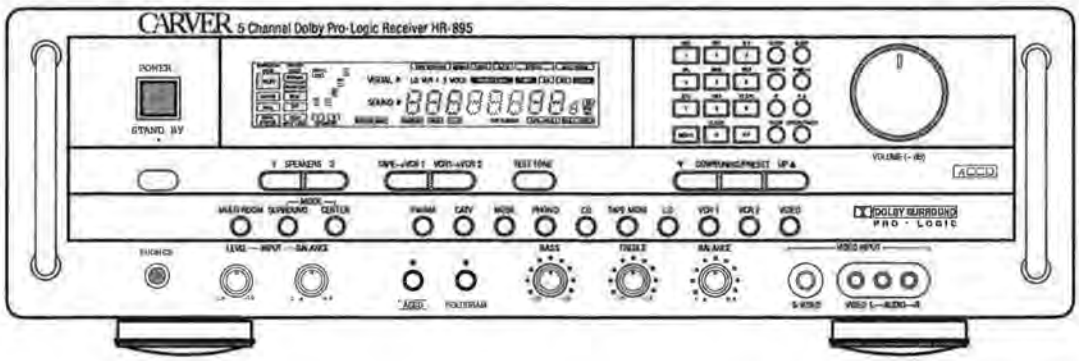
5.1 HR-895 Cinema Receiver *with Dolby Pro Logic™*

The HR-895 Receiver represents a totally integrated approach to Home Theater. It contains a preamp/tuner with audio and video switching, a Dolby Pro Logic surround sound processor and five amplified outputs. Just add speakers and you're ready to go!

HR-895 Key Features

- ❑ Seven audio inputs, four composite video inputs and three S-Video inputs
- ❑ Five amplifier channels:
  - 2 x 110W Front
  - 2 x 35W Rear Surround
  - 1 x 75W Center
  - (8 ohm ratings)
- ❑ Built-in Dolby Pro Logic surround decoder with digital delay provides theater-like sound
- ❑ Equipped with subwoofer line output
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Exclusive Carver ACCD for improved reception of FM signals with multipath interference
- ❑ Preset up to 30 AM/FM stations with user-entered 5-digit station names
- ❑ Carver's patented Sonic Holography® for improved stereo imaging
- ❑ Built-in program timer with ONCE and DAILY timer functions for unattended operation of connected components
- ❑ Sleep timer automatically turns off the unit after a specified time period (up to 2 hours)
- ❑ Multi-room selector for playing different sources in different rooms simultaneously
- ❑ Programmable Remote Control





About Home Theater Surround Sound

The heart of the Home Theater experience is the Dolby Pro Logic surround decoder. A direct descendent of Dolby Stereo used in movie theaters, Dolby Pro Logic recreates the big screen experience in your living room. When soundtracks are encoded with Dolby Pro Logic surround sound (as indicated by this logo DOLBY SURROUND), the left and right channels can be decoded into four channels (Left Front, Right Front, Center and Surround) and played back over six speakers (Left Front, Right Front, Center, Left Surround, Right Surround and Subwoofer). You are surrounded with sound as you experience the drama unfolding before your eyes and ears.

Hookup Instructions:

1. Connect the Left and Right Front binding post speaker outputs from the HR-895 to the Left and Right Front Speakers.

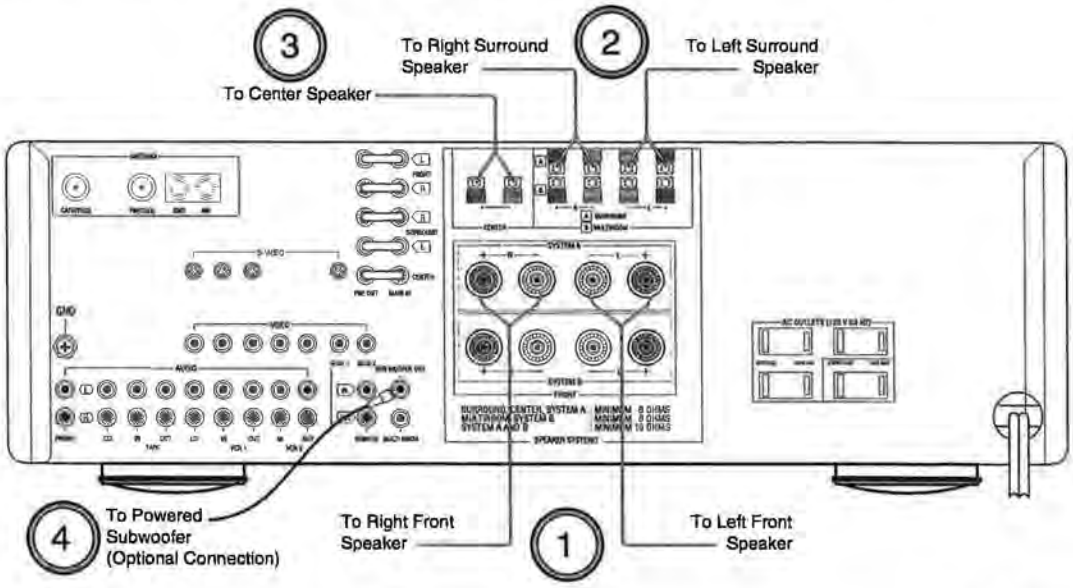
   Note: There are two sets of Front Speaker outputs – System A and System B. These can be switched on and off individually from the front panel. Use 8 ohm speakers if only one System is to be used at any one time. Use 16 ohm speakers if they are both to be used at the same time.
2. Connect the Left and Right SURROUND speaker terminals to the Left and Right Surround Speakers.
3. Connect the CENTER speaker terminal to the Center Speaker.

Note: Use heavy gauge speaker wire as recommended in the HR-895 Owner's Manual.

4. Optional Connection: Connect the SUBWOOFER OUT jack to a powered subwoofer using a standard RCA type interconnect cable.

Hints:

- ❑ Allow space around the HR-895 Receiver for ventilation.
- ❑ Connect the AC linecords from source components to the switched and unswitched AC outlets on the back of the HR-895 Receiver.
- ❑ Switch on the Sonic Holography processor for added ambience and depth to stereo or surround sound encoded programs.



Multiroom Home Theater Receiver with additional Stereo Power Amplifer

5.2 *HR-895 Cinema Receiver with Dolby Pro Logic™ TFM-35x THX Power Amplifier (2 x 250 watts)*

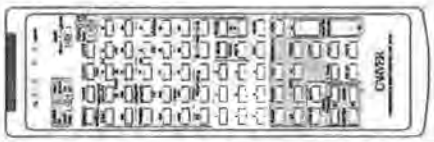
The HR-895 Receiver has line level outputs for all five channels which allows you to upgrade to more power if desired. This feature-laden receiver also provides a stereo speaker output for a separate room (multiroom) and a method for infrared remote control from the secondary room.

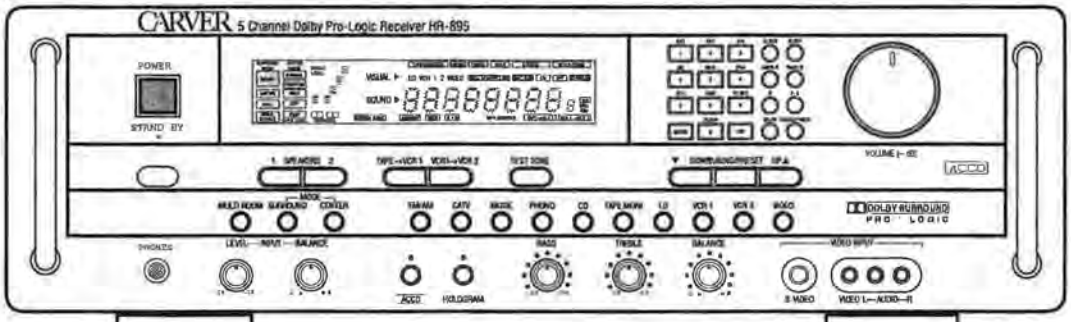
HR-895 Key Features

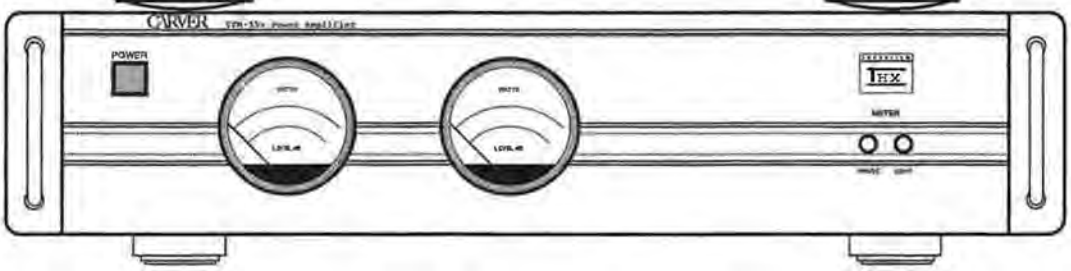
- ❑ Seven audio inputs, four composite video inputs and three S-Video inputs
- o Five amplifier channels:
  - 2 x 110W Front
  - 2 x 35W Rear Surround
  - 1 x 75W Center
  - (8 ohm ratings)
- ❑ Built-in Dolby Pro Logic surround decoder with digital delay provides theater-like sound
- ❑ Equipped with subwoofer line output
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Exclusive Carver ACCD for improved reception of FM signals with multipath interference
- ❑ Preset up to 30 AM/FM stations with user-entered 5-digit station names
- ❑ Carver's patented Sonic Holography® for improved stereo imaging
- ❑ Built-in program timer with ONCE and DAILY timer functions for unattended operation of connected components
- ❑ Sleep timer automatically turns off the unit after a specified time period (up to 2 hours)
- ❑ Multi-room selector for playing different sources in different rooms simultaneously
- ❑ Programmable Remote Control

TFM-35x Key Features

- ❑ 250 watts per channel into 8 ohms
- ❑ Dual analog lighted meters with range selection switch
- ❑ Meter light ON/OFF switch
- ❑ Certified by Lucasfilms, Ltd. for use in Home THX Audio Systems







About Home Theater Surround Sound

The heart of the Home Theater experience is the Dolby Pro Logic surround decoder. A direct descendent of Dolby Stereo used in movie theaters, Dolby Pro Logic recreates the big screen experience in your living room. When sound-tracks are encoded with Dolby Pro Logic surround sound (as indicated by this logo), the left and right channels can be decoded into four channels (Left Front, Right Front, Center and Surround) and played back over six speakers (Left Front, Right Front, Center, Left Surround, Right Surround and Subwoofer). You are surrounded with sound as you experience the drama unfolding before your eyes and ears.

Hookup Instructions:

1. Remove the U-shaped jumpers from the Left and Right Front PRE OUT/ MAIN IN jacks. Keep them in a safe place in case you should need them again.
2. Connect the Left and Right Front PRE OUT jacks to the Left and Right Inputs on the TFM-35x using standard RCA-type interconnect cables.
3. Connect the Left and Right binding post speaker outputs from the TFM-35x to the Left and Right Front Speakers.

   Note: This procedure disables the internal Front amplifiers in the HR-895. The A and B Speaker Switches on the front panel of the HR-895 will also be disabled.
4. Connect the Left and Right SURROUND speaker terminals to the Left and Right Surround Speakers.
5. Connect the CENTER speaker terminal to the Center Speaker.
6. Connect the MULTIROOM speaker terminals to the speakers in the secondary room.

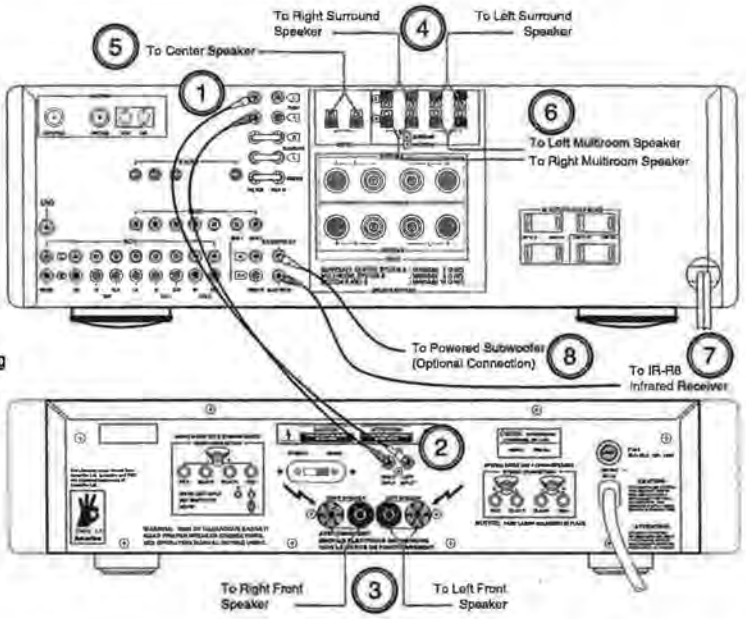
Note: Use heavy gauge speaker wire as recommended in the HR-895 and TFM-35x Owner's Manuals.

7. Connect the IR-R8 Infrared Receiver to the MULTIROOM RCA jack on the HR-895. Use the cable supplied for this purpose.
8. Optional Connection: Connect the SUBWOOFER OUT jack to a powered subwoofer using a standard RCA type interconnect cable.

Hints:

- ❑ Allow space around the HR-895 Receiver and TFM-35x for ventilation.

  Note: The HR-895 and TFM-35x will generate heat, the amount of which is determined by how much power is required for the application. Therefore, it is not recommended that the HR-895 and TFM-35x be stacked directly on top of one another.
- ❑ Connect the AC linecords from source components to the switched and unswitched AC outlets on the back of the HR-895 Receiver. **DO NOT** connect the TFM-35x linecord to the HR-895 AC outlets.
- ❑ Switch on the Sonic Holography processor for added ambience and depth to stereo or surround sound encoded programs.



1/29/96 Rev. A

Normal Stereo

5.3 *CT-23 Stereo Preamplifier/Tuner TFM-55x THX Power Amplifier* *(2 x 380 watts)*

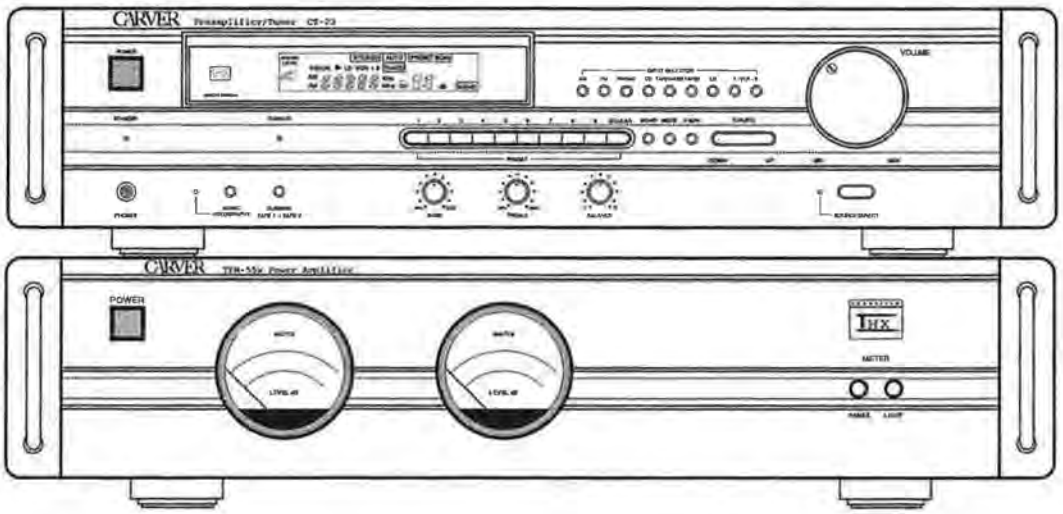
This system is very flexible and easy-to-use; an ideal match of components with the power to fill a large room with clean, accurate sound.

CT-23 Key Features

- ❑ Carver's patented Sonic Holography
- ❑ Seven audio inputs and three composite video inputs
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Tape 1 to Tape 2 dubbing switch
- ❑ Bass and Treble tone controls with Source Direct switch
- ❑ Headphone jack
- ❑ Full function remote control

TFM-55x Key Features

- ❑ 380 watts per channel into 8 ohms
  500 watts per channel into 4 ohms
- ❑ Dual analog lighted meters with range selection switch
- ❑ Meter light ON/OFF switch
- ❑ Certified by Lucasfilms, Ltd. for use in Home THX Audio Systems



Normal Stereo (Continued)

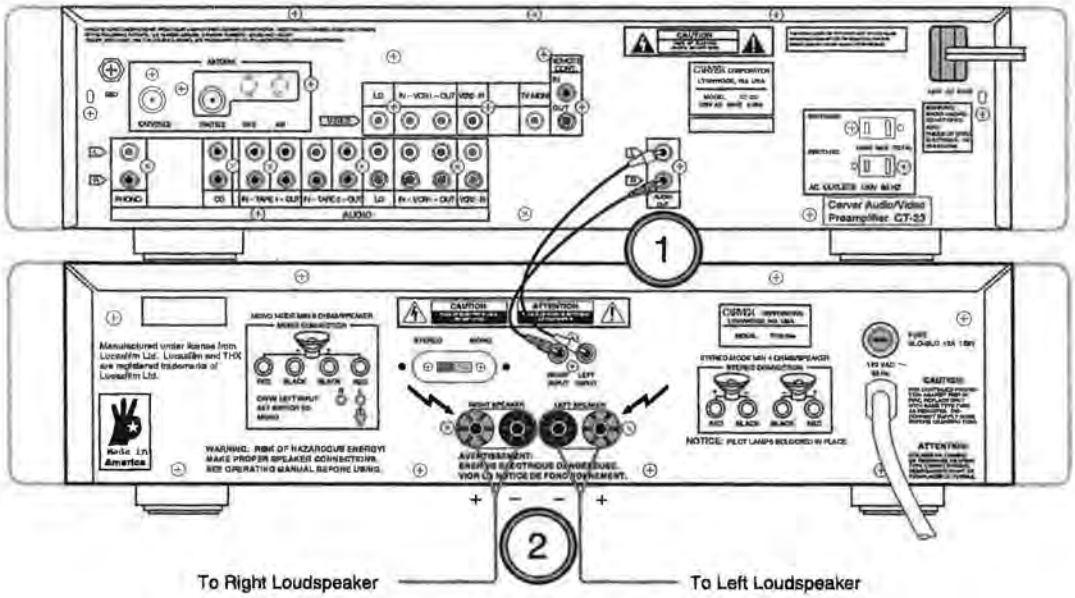
CT-23 Stereo Preamplifier/Tuner TFM-55x THX Power Amplifier (2 x 380 watts)

Hookup Instructions:

1. Connect the Left and Right AUDIO OUT from the CT-23 to the LEFT and RIGHT INPUTS on the TFM-55x using the supplied RCA patch cords.
2. Connect the LEFT and RIGHT SPEAKER binding post outputs from the TFM-55x to the input terminals on the loudspeakers using heavy gauge speaker wire.

Hints:

- ❑ Allow space around the TFM-55x power amplifier for ventilation.
- ❑ Connect the AC linecords from source components to the switched and nswitched AC outlets on the back of the CT-23 preamp/tuner. **DO NOT** connect the TFM-55x linecord to the CT-23 AC outlets.



Home Theater Preamp/Tuner
with 5-Channel Power Amplifer

5.4 *CT-28v Preamp/Tuner with Dolby Pro Logic™*
AV-405 5-Channel Power Amplifier

(2 x 100 watts; 1x 110 watts; 2 x 50 watts)

This system represents an ideal compromise between the integrated approach of a receiver and the quality and reliability of separates. The CT-28v Preamp/Tuner has a built-in Dolby Pro Logic Surround Processor and provides line level outputs for Left and Right Front, Left and Right Surround, Center and Subwoofer. The AV-405 has five channels of amplification, and is a perfect match for the CT-28v and most Home Theater applications.

CT-28v Key Features

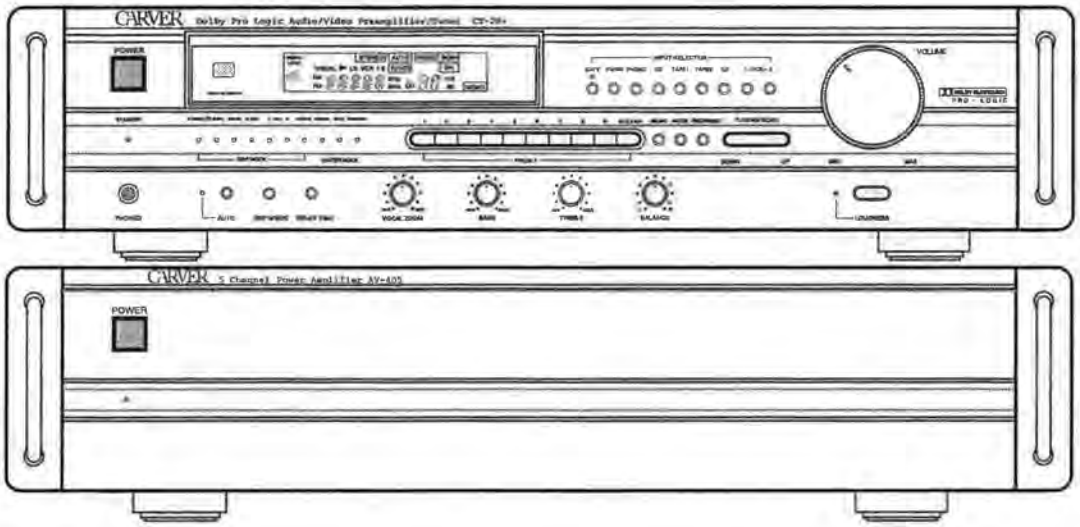
- ❑ Seven audio inputs, three composite video inputs and three S-Video inputs
- ❑ Five outputs for Surround Sound operation: Left and Right Front, Two Surround and one Center
- ❑ 18dB/octave Subwoofer output with independently adjustable volume control
- ❑ Advanced Dolby Pro Logic Surround decoder with adjustable digital delay and auto-input balance provides theater-like sound
- ❑ Movie, 3 Channel Logic, Hall1, Hall2 and Matrix Surround modes with DSP and adjustable delay from 0-90mS
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Preset up to 30 AM/FM stations
- ❑ Vocal Zoom™ control for enhancing vocal or dialog presence
- ❑ Full function remote control
- ❑ Two AC outlets, one switched and one unswitched

AV-405 Key Features

- ❑ Front Channels
  100 watts per channel (x2) into 8 ohms

  Center Channel
  110 watts (x1) into 8 ohms

  Surround Channels
  50 watts per channel (x2) into
  8 ohms
- ❑ All discrete output stages for the best possible performance
- ❑ Power Enhancement™ circuit on the surround channels delivers more average power when it's needed



About Home Theater Surround Sound

The heart of the Home Theater experience is the Dolby Pro Logic surround decoder. A direct descendent of Dolby Stereo used in movie theaters, Dolby Pro Logic recreates the big screen experience in your living room. When sound-tracks are encoded with Dolby Pro Logic surround sound (as indicated by this logo), the left and right channels can be decoded into four channels (Left Front, Right Front, Center and Surround) and played back over six speakers (Left Front, Right Front, Center, Left Surround, Right Surround and Subwoofer). You are surrounded with sound as you experience the drama unfolding before your eyes and ears.

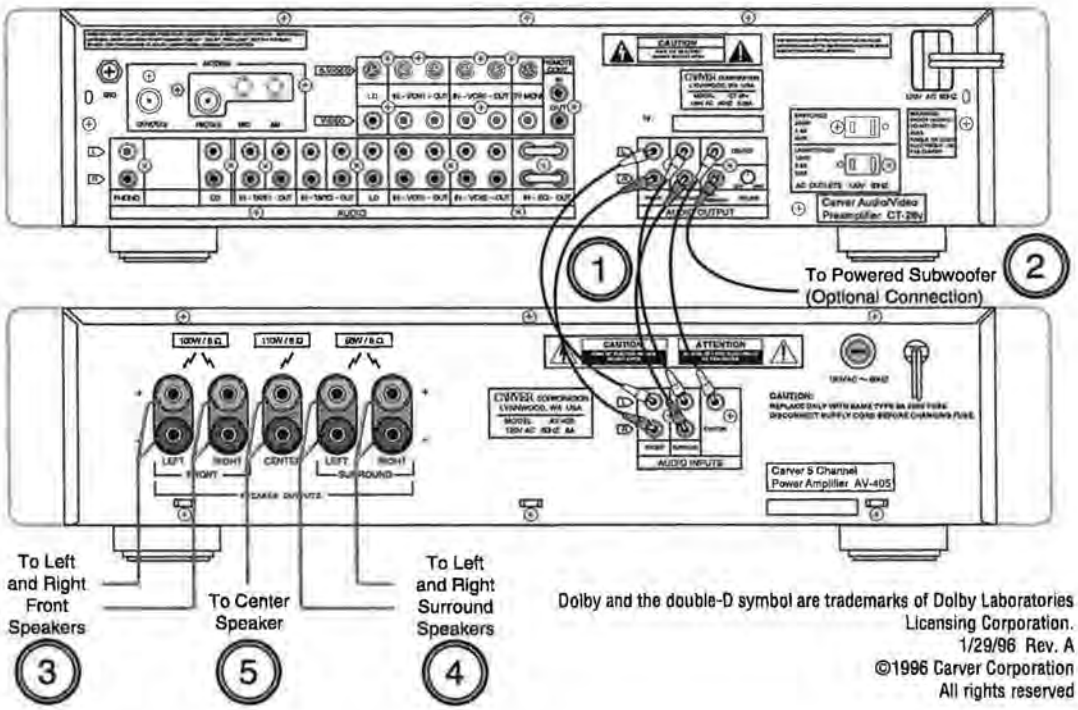
Hookup Instructions:

1. Connect the Left and Right Front, Left and Right Surround and Center AUDIO OUTPUT jacks on the CT-28v to the corresponding AUDIO INPUT jacks on the AV-405 using standard RCA-type interconnect cables.
2. Optional Connection: Connect the SUBWOOFER AUDIO OUTPUT jack to a powered subwoofer using a standard RCA type interconnect cable.
3. Connect the LEFT and RIGHT FRONT binding post speaker outputs from the AV-405 to the Left and Right Front Speakers.
4. Connect the LEFT and RIGHT SURROUND binding post speaker outputs to the Left and Right Surround Speakers.
5. Connect the CENTER binding post speaker output to the Center Speaker.

Hints:

- ❑ Allow space around the AV-405 Power Amplifier for ventilation.

  Note: The AV-405 will generate heat, the amount of which is determined by how much power is required for the application. Therefore, it is not recommended that components be s1/29/96 Rev. A



Home Theater Preamp/Tuner with 6-Channel Power Amplifer

5.5 *CT-28v Preamp/Tuner with Dolby Pro Logic™ AV-806x THX 6-Channel Power Amplifier(6 x 130 watts)*

This system provides a very powerful surround sound experience for those who enjoy window-rattling special effects. The CT-28v Preamp/Tuner has a built-in Dolby Pro Logic Surround Processor and provides line level outputs for Left and Right Front, Left and Right Surround, Center and Subwoofer. The AV-806x has six channels of equal power, and has the added capability of bridging channels into a 3 x 360 watt powerhouse.

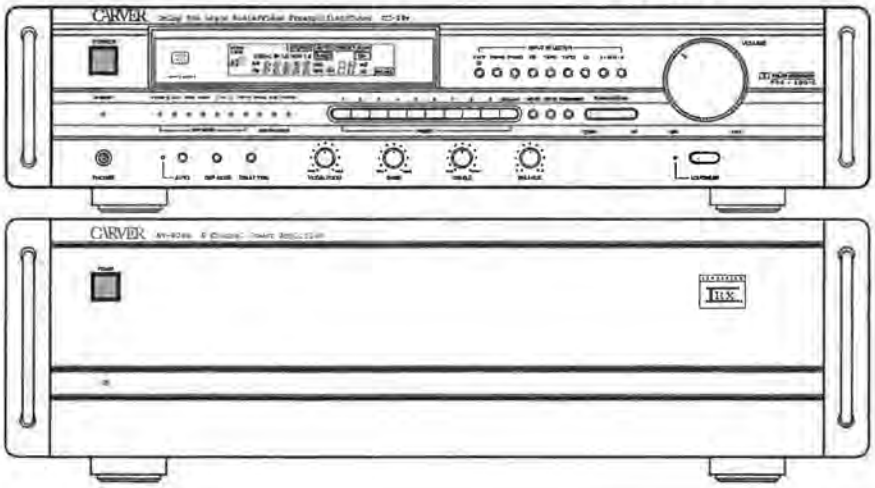
CT-28v Key Features

- ❑ Seven audio inputs, three composite video inputs and three S-Video inputs
- ❑ Five outputs for Surround Sound operation: Left and Right Front, Two Surround and one Center
- ❑ 18dB/octave Subwoofer output with independently adjustable volume control
- ❑ Advanced Dolby Pro Logic Surround decoder with adjustable digital delay and auto-input balance provides theater-like sound
- ❑ Movie, 3 Channel Logic, Hall1, Hall2 and Matrix Surround modes with DSP and adjustable delay from 0-90mS
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Preset up to 30 AM/FM stations
- ❑ Vocal Zoom™ control for enhancing vocal or dialog presence
- ❑ Full function remote control
- ❑ Two AC outlets, one switched and one unswitched

AV-806x Key Features

- ❑ 133 watts per channel into 8 ohms (x6)

  360 watts with 2 channels bridged into 8 ohms (x3)
- ❑ Configurable for three, four, five or six channel operation
- ❑ Inverted signal outputs provided on each channel for bridged operation
- ❑ Certified by Lucasfilm, Ltd. for use in Home THX Audio Systems
- ❑ DB-25 "D" connector for making input connections to a Home THX Controller or Equalizer (as per THX specifications)
- ❑ RC-5 remote control bus connects to various Carver components for remote standby control



About Home Theater Surround Sound

The heart of the Home Theater experience is the Dolby Pro Logic surround decoder. A direct descendent of Dolby Stereo used in movie theaters, Dolby Pro Logic recreates the big screen experience in your living room. When sound-tracks are encoded with Dolby Pro Logic surround sound (as indicated by this logo), the left and right channels can be decoded into four channels (Left Front, Right Front, Center and Surround) and played back over six speakers (Left Front, Right Front, Center, Left Surround, Right Surround and Subwoofer). You are surrounded with sound as you experience the drama unfolding before your eyes and ears.

Hookup Instructions:

1. Connect the Left and Right Front, Left and Right Surround, Center and Subwoofer AUDIO OUTPUT jacks on the CT-28v to the INPUT jacks on the AV-806x using standard RCA-type interconnect cables.

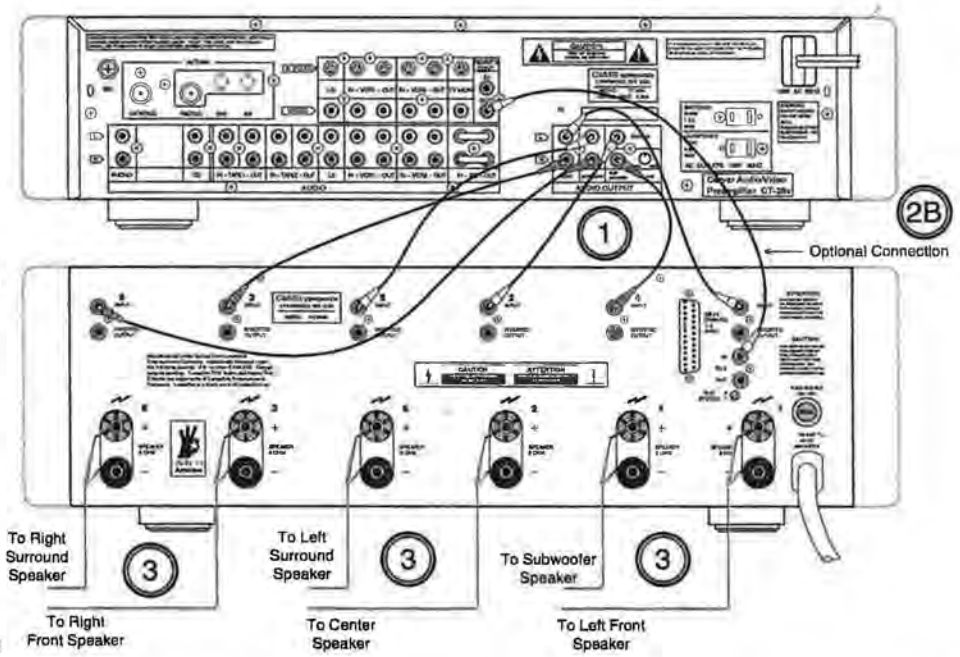
   Note: Carver recommends that the input channels on the AV-806x be assigned as shown in the diagram. This will maximize the dynamic power available when all channels are being used.
2. Optional Connections:
   A. If the subwoofer is self-powered, connect the SUBWOOFER AUDIO OUTPUT jack on the CT-28v directly to the audio input jack on the powered subwoofer using a standard RCA type interconnect cable.

   B. Connect the REMOTE CONTROL OUT jack on the CT-28v to the RC-5 IN jack on the AV-806x. This will allow the AV-806x to be switched into Standby mode via the CT-28v infrared remote control.
3. Connect the binding post speaker outputs on the AV-806x to the corresponding speakers in the Home Theater System.

Hints:

- ❑ Allow space around the AV-806x Power Amplifier for ventilation.

  Note: The AV-806x will generate heat, the amount of which is determined by how much power is required for the application. Therefore, it is not recommended that components be stacked directly on top of the AV-806x.
- ❑ Connect the AC linecords from source components to the switched and unswitched AC outlets on the back of the CT-28v Preamp/Tuner. **DO NOT** connect the AV-806x linecord to the CT-28v AC outlets.



1/29/96
Rev. A

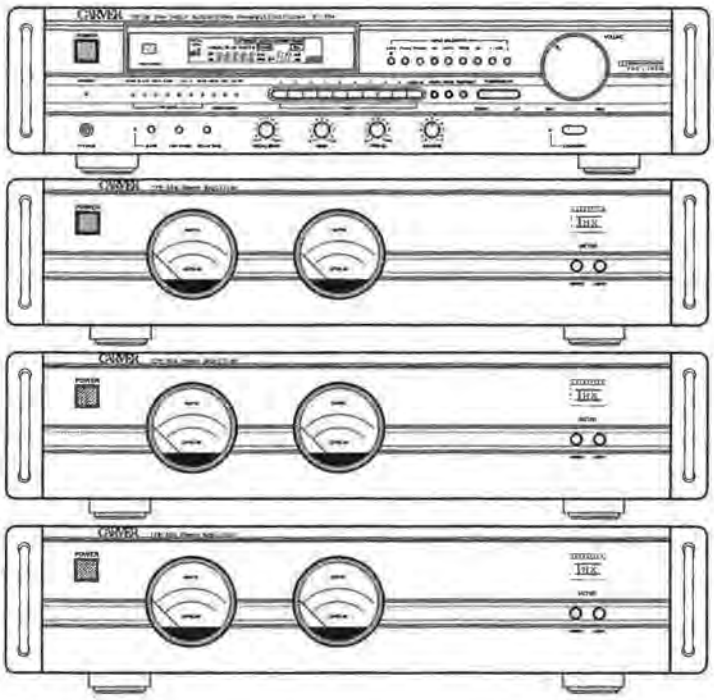
Home Theater Preamp/Tuner with 3 Stereo Power Amplifers

5.6 *CT-28v Preamp/Tuner with Dolby Pro Logic™*
TFM-35x THX Stereo Power Amplifier (2 x 250 watts)
TFM-35x THX Stereo Power Amplifier (2 x 250 watts)
TFM-35x THX Stereo Power Amplifier (2 x 250 watts)

This system demonstrates a no compromise approach to a Home Theater system, providing maximum power per channel to recreate the sounds of everything from thunderous special effects to a gentle summer breeze in the grass. The CT-28v Preamp/Tuner has a built-in Dolby Pro Logic Surround Processor and provides line level outputs for Left and Right Front, Left and Right Surround, Center and Subwoofer. The three TFM-35x power amplifiers provide six channels of incredible clarity and dynamism.

CT-28v Key Features

- ❑ Seven audio inputs, three composite video inputs and three S-Video inputs
- ❑ Five outputs for Surround Sound operation: Left and Right Front, Two Surround and one Center
- ❑ 18dB/octave Subwoofer output with independently adjustable volume control
- ❑ Advanced Dolby Pro Logic Surround decoder with adjustable digital delay and auto-input balance provides theater-like sound
- ❑ Movie, 3 Channel Logic, Hall1, Hall2 and Matrix Surround modes with DSP and adjustable delay from 0-90mS
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Preset up to 30 AM/FM stations
- ❑ Vocal Zoom™ control for enhancing vocal or dialog presence
- ❑ Full function remote control
- ❑ Two AC outlets, one switched and one unswitched



TFM-35x Key Features

- ❑ 250 watts per channel into 8 ohms
- ❑ Certified by Lucasfilm, Ltd. for use in Home THX Audio Systems
- ❑ Dual analog lighted meters with range selection switch
- ❑ Meter light ON/OFF switch

About Home Theater Surround Sound

The heart of the Home Theater experience is the Dolby Pro Logic surround decoder. A direct descendent of Dolby Stereo used in movie theaters, Dolby Pro Logic recreates the big screen experience in your living room. When sound-tracks are encoded with Dolby Pro Logic surround sound (as indicated by this logo), the left and right channels can be decoded into four channels (Left Front, Right Front, Center and Surround) and played back over six speakers (Left Front, Right Front, Center, Left Surround, Right Surround and Subwoofer). You are surrounded with sound as you experience the drama unfolding before your eyes and ears.

Hookup Instructions:

1. Connect the Left and Right Front, Left and Right Surround, Center and Subwoofer AUDIO OUTPUT jacks on the CT-28v to the LEFT and RIGHT INPUT jacks on the three TFM-35x power amplifiers. Use standard RCA-type interconnect cables for these connections.

   Optional Connection: If the subwoofer is self-powered, connect the SUBWOOFER AUDIO OUTPUT jack on the CT-28v directly to the audio input jack on the powered subwoofer using a standard RCA type interconnect cable.

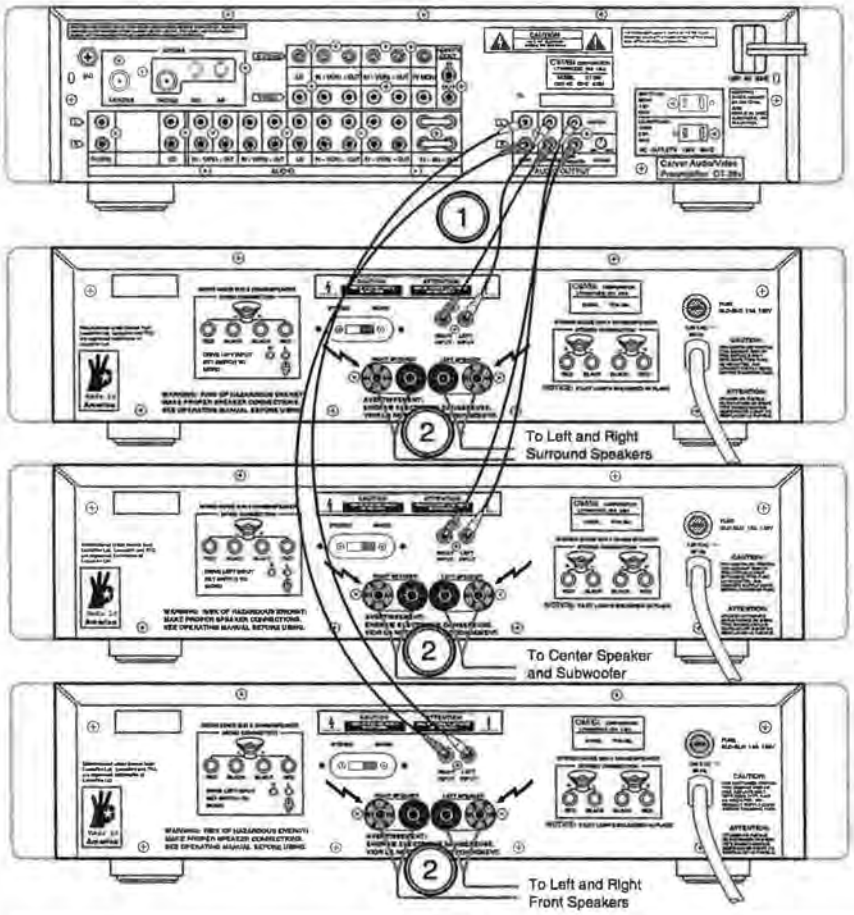
2. Connect the binding post speaker outputs on the TFM-35x power amplifiers to the corresponding speakers in the Home Theater System.

Hints:

- Allow space around the TFM-35x power amplifiers for ventilation.

  Note: The TFM-35x power amplifiers will generate heat, the amount of which is determined by how much power is required for the application. Therefore, it is not recommended that the amplifiers be stacked on top of each other, or other components be stacked directly on top of the TFM-35x amplifiers.

- Connect the AC linecords from source components to the switched and unswitched AC outlets on the back of the CT-28v Preamp/ Tuner. DO NOT connect a TFM-35x linecord to the CT-28v AC outlets.



Multiroom

5.7 *CT-23 Stereo Preamp/Tuner*
TFM-15CB Stereo Power Amplifier (2 x 100 watts)
TFM-15CB Stereo Power Amplifier (2 x 100 watts)
TFM-15CB Stereo Power Amplifier (2 x 100 watts)

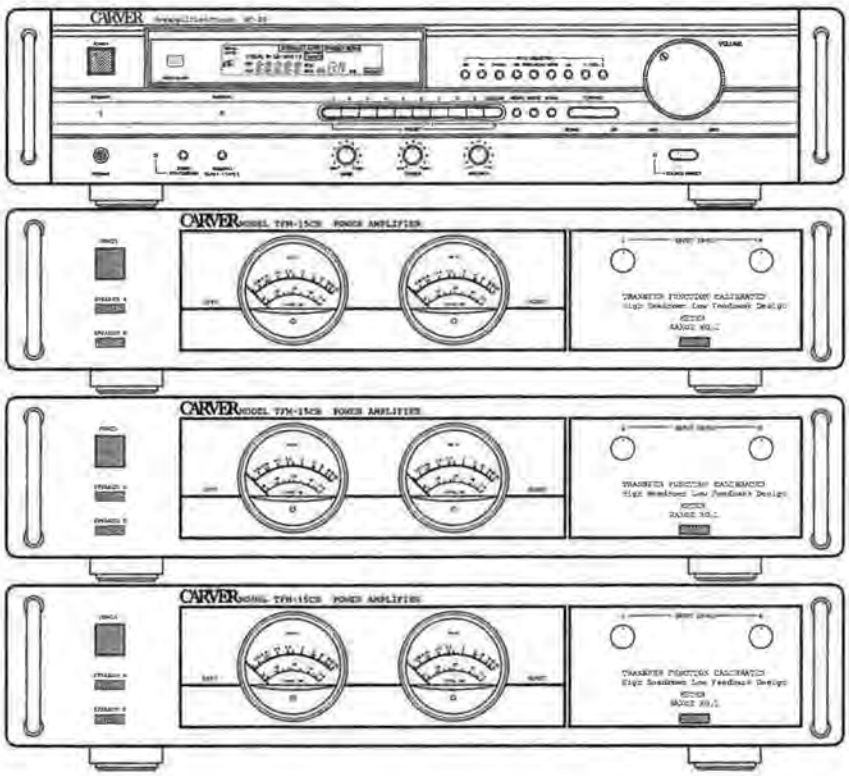
This system demonstrates how to use the Daisy-Chain feature of the TFM-15CB to distribute stereo sound throughout several different rooms in a home. The TFM-15CB includes individual level controls so the relative volume level can be set for each room.

CT-23 Key Features

- ❑ Carver's patented Sonic Holography
- ❑ Seven audio inputs and three composite video inputs
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Tape 1 to Tape 2 dubbing switch
- ❑ Preset up to 30 AM/FM stations
- ❑ Bass and Treble tone controls with Source Direct switch
- ❑ Headphone jack
- ❑ Full function remote control
- ❑ Two AC outlets, one switched and one unswitched

TFM-15CB Key Features

- ❑ 100 watts per channel into 8 ohms
- ❑ Dual analog lighted meters with range selection switch
- ❑ A/B Speaker switching
- ❑ Individual Left/Right level controls
- ❑ Left and Right line level outputs for "daisy-chaining" in multi-amp or multiroom applications



About Daisy-Chaining

Daisy-Chaining refers to the practice of connecting the same music program source to the inputs of many amplifiers, threading the signal in and out of each amplifier, yet remaining unaffected by each individual amplifier. In the audio world this is most often done in multiroom or distributed sound applications such as restaurants and lounges, large office buildings, and room-to-room home audio systems. In these systems, one amplifier is used for each zone or physical area in the building. Carver provides two unique features on the TFM-15CB power amplifier that make daisy-chaining both convenient and effective. The first is the two sets of paralleled RCA input/output jacks on each amplifier. This allows for immediate daisy-chaining of the signal without requiring splitters or "Y" cables. The second is the adjustable level controls for each of the amplifier's channels. This allows the user to tailor the volume level for each individual zone or room.

Hookup Instructions:

1. Connect the Left and Right AUDIO OUT jacks on the CT-23 to the Left and Right INPUT jacks on the first TFM-15CB power amplifier. Use standard RCA-type interconnect cables for these connections.
2. Connect the Left and Right OUTPUT jacks on the first TFM-15CB to the Left and Right INPUT jacks on the next TFM-15CB. Connect the Left and Right OUTPUT jacks on the second TFM-15CB to the Left and Right INPUT jacks on the next TFM-15CB. Continue in this fashion, chaining together the INPUTS to the OUTPUTS of the TFM-15CBs.
3. Connect the LEFT and RIGHT SPEAKER binding post outputs on the TFM-15CB power amplifiers to the corresponding speakers in each zone.

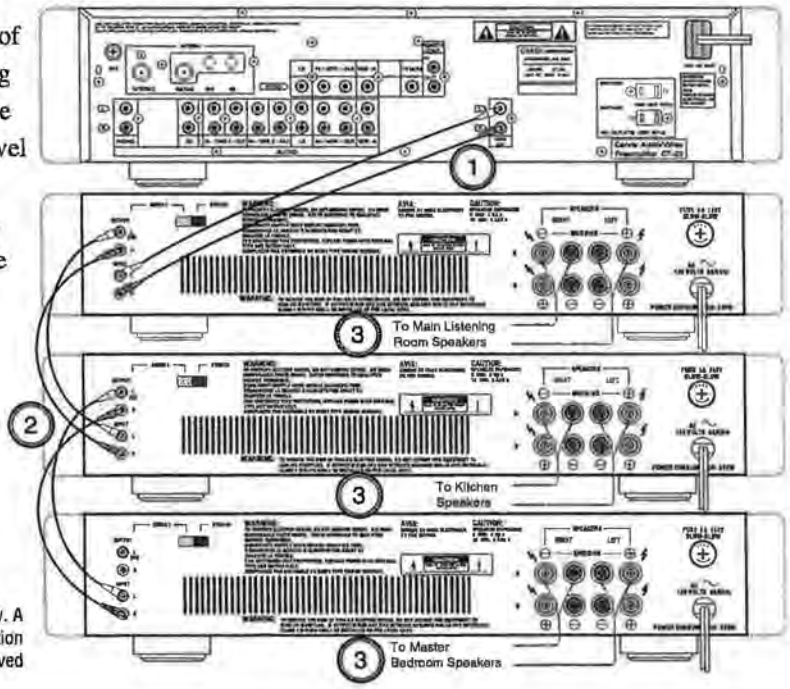
   Note: There are two sets of SPEAKER outputs – A and B. These can be switched on and off individually from the front panel of the TFM-15CB. Use 8 ohm speakers if only one set of speakers is to be used at any one time. Use 16 ohm speakers if they are both to be used at the same time.

Hints:

- ❑ Allow space around each TFM-15CB power amplifiers for ventilation.

  Note: The TFM-15CB power amplifiers will generate heat, the amount of which is determined by how much power is required for the application. Therefore, it is not recommended that the amplifiers be stacked on top of each other, or other components be stacked directly on top of the TFM-15CB amplifiers.

- ❑ Connect the AC linecords from source components to the switched and unswitched AC outlets on the back of the CT-23 Preamp/ Tuner. **DO NOT** connect a TFM-15CB linecord to the CT-23 AC outlets.



Bridged Mono

5.8 *CT-23 Stereo Preamplifier/Tuner*
TFM-35x THX Power Amplifier (1 x 700 watts)
TFM-35x THX Power Amplifier (1 x 700 watts)

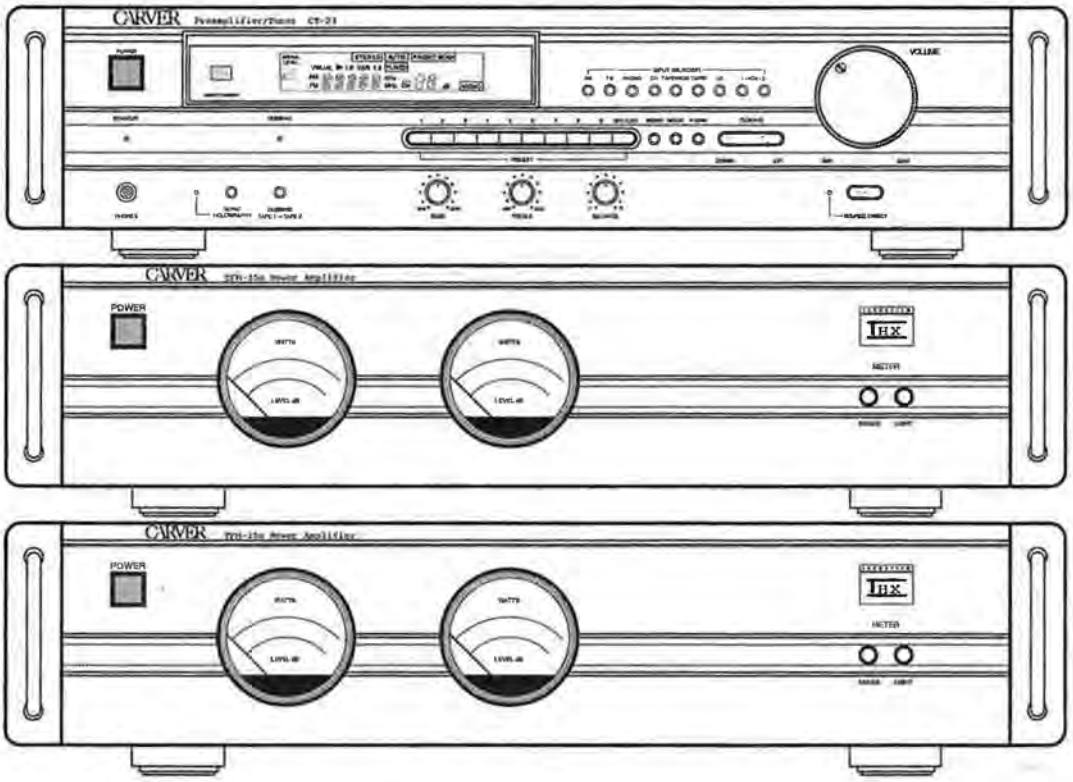
This system uses two stereo power amplifiers configured in Bridged Mono mode, to provide two channels of enormous power that can faithfully reproduce the demanding transient peaks and dynamic range of today's digital recordings.

CT-23 Key Features

- ❑ Carver's patented Sonic Holography
- ❑ Seven audio inputs and three composite video inputs
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Tape 1 to Tape 2 dubbing switch
- ❑ Bass and Treble tone controls with Source Direct switch
- ❑ Headphone jack
- ❑ Full function remote control

TFM-35x Key Features

- ❑ 700 watts into 8 ohms in bridged mono mode
- ❑ Dual analog lighted meters with range selection switch
- ❑ Meter light ON/OFF switch
- ❑ Certified by Lucasfilms, Ltd. for use in Home THX Audio Systems



About Bridged Mono:

Bridging combines two amplifier channels into one channel. In effect, this configuration provides one amplifier channel with the combined power (output voltage) of the original two channels. This is most commonly used when 1) driving inefficient loudspeakers to high volume levels, 2) driving mono loads such as subwoofers, or 3) mixing and matching amplifiers in multi-amplifier systems such as those used in home theater systems.

Hookup Instructions:

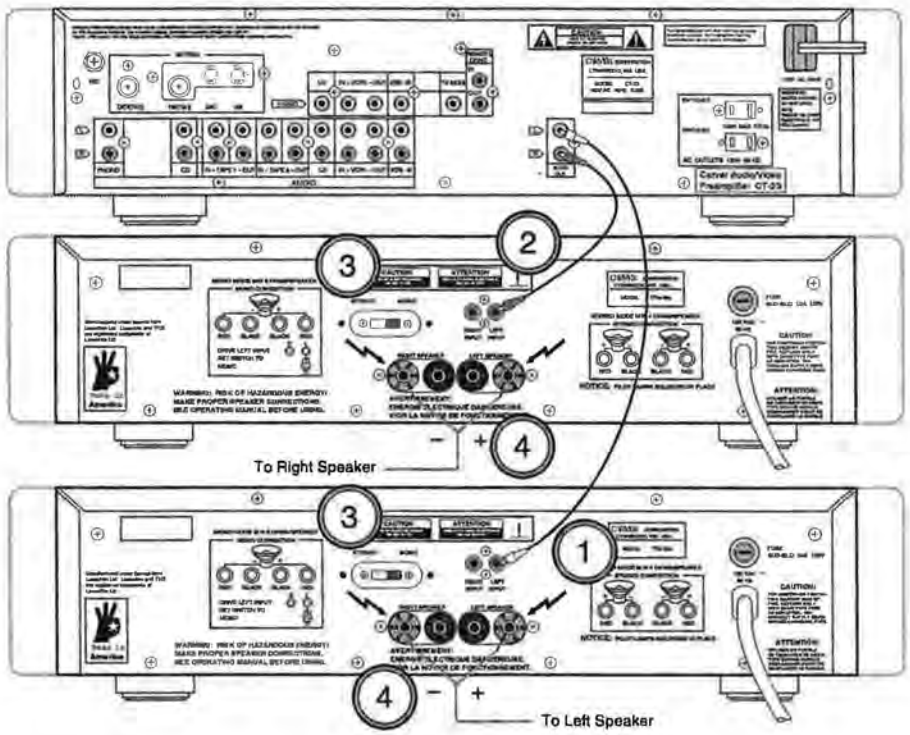
1. Connect the Left Audio Out from the CT-23 to the Left Input on the Left Channel TFM-35x.
2. Connect the Right Audio Out from the CT-23 to the Left Input on the Right Channel TFM-35x. Use the supplied RCA patch cords.

   Note: Use only the Left Input in bridged mono mode.
3. Move the Stereo/Mono Switch on the back of the TFM-35x amplifiers to the MONO position.
4. Connect the two red binding post outputs on the left channel TFM-35x to the left speaker, and connect the two red binding post outputs on the right channel TFM-35x to the right speaker. Do this by connecting the Left Red Speaker Terminal on the amplifier to the "+" or positive connection on the speaker, and the Right Red Speaker Terminal on the amplifier to the "–" or negative connection on the speaker. Use heavy gauge speaker wire as recommended in the TFM-35x Owner's Manual.

   Note: The black binding posts are not used in bridged mono mode.

Hints:

- ❑ Allow space around the TFM-35x power amplifiers for ventilation.
- ❑ Connect the AC linecords from source components to the switched and unswitched AC outlets on the back of the CT-23 preamp/tuner. **DO NOT** connect the TFM-35x linecords to the CT-23 AC outlets.



THX is a trademark of LucasArts Entertainment Company.

Biwiring

5.9 *CT-23 Stereo Preamplifier/Tuner TFM-35x THX Power Amplifier (2 x 250 watts)*

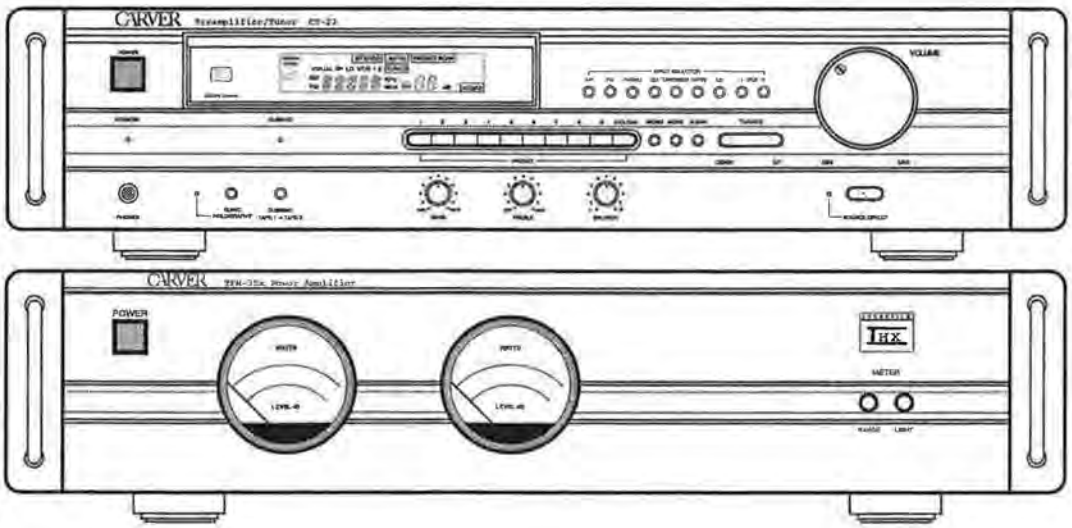
This system demonstrates a bi-wire connection using a stereo power amplifier connected to loudspeakers having a built-in crossover with separate low and high frequency inputs.

CT-23 Key Features

- ❑ Carver's patented Sonic Holography
- ❑ Seven audio inputs and three composite video inputs
- ❑ Digital frequency-synthesis AM/FM tuner
- ❑ Tape 1 to Tape 2 dubbing switch
- ❑ Bass and Treble tone controls with Source Direct switch
- ❑ Headphone jack
- ❑ Full function remote control

TFM-35x Key Features

- ❑ 250 watts per channel into 8 ohms
  350 watts per channel into 4 ohms
- ❑ Dual analog lighted meters with range selection switch
- ❑ Meter light ON/OFF switch
- ❑ Certified by Lucasfilms, Ltd.
  for use in Home THX Audio Systems



About Bi-wiring:

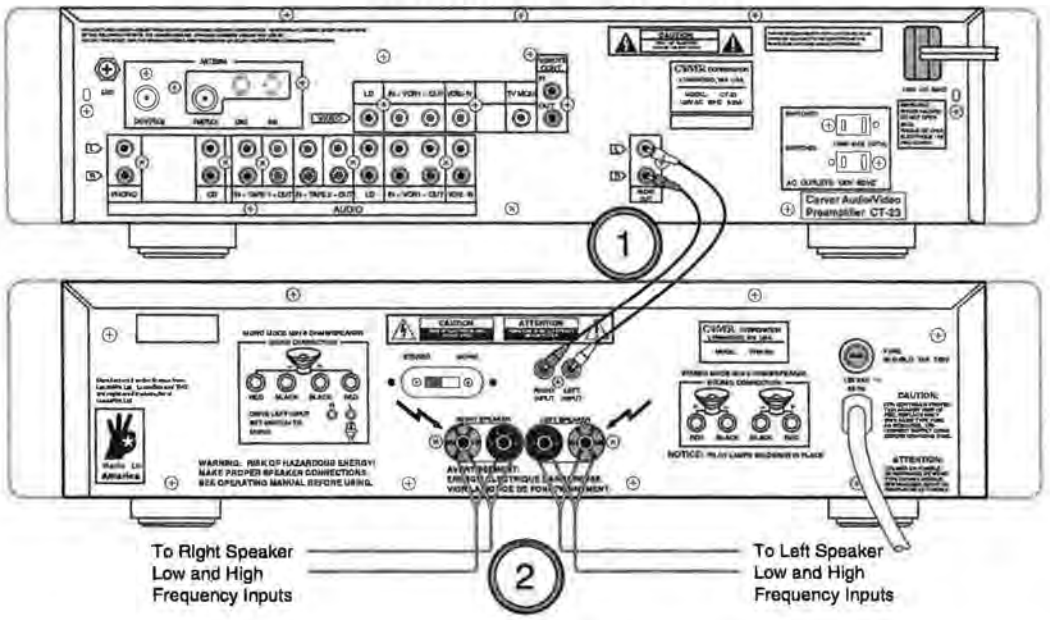
Bi-wiring involves connecting two sets of speaker cables from the amplifier's output terminals; one set to the high-frequency driver and the other set to the low-frequency driver. This configuration requires four sets of speaker cables for a two speaker system. This performs two important functions. First, having separately wired connections for each loudspeaker driver minimizes the reflected signal (engineers call this back EMF) from one driver to the other and from each driver to the amplifier. Second, and perhaps the more audible, running two sets of speaker cables has the same electrical effect as running a much larger single cable. For example running two 18 gauge cables is electrically equivalent to running a single 15 gauge cable. The result is much tighter bass control (higher damping) and a clearer, more spacious high end. In order to gain both these benefits of bi-wiring it is necessary that the loudspeaker provide two sets of binding posts, one connected to each of the loudspeaker's drivers.

Hookup Instructions:

1. Connect the Left and Right AUDIO OUT from the CT-23 to the LEFT and RIGHT INPUTS on the TFM-35x. Use the supplied RCA patch cords.
2. Connect the LEFT SPEAKER output on the TFM-35x to the low frequency input and the high frequency input on the left loudspeaker, using two pairs of speaker wires. Do the same for the RIGHT SPEAKER output and the right loudspeaker. Use heavy gauge speaker wire as recommended in the TFM-35x Owner's Manual.

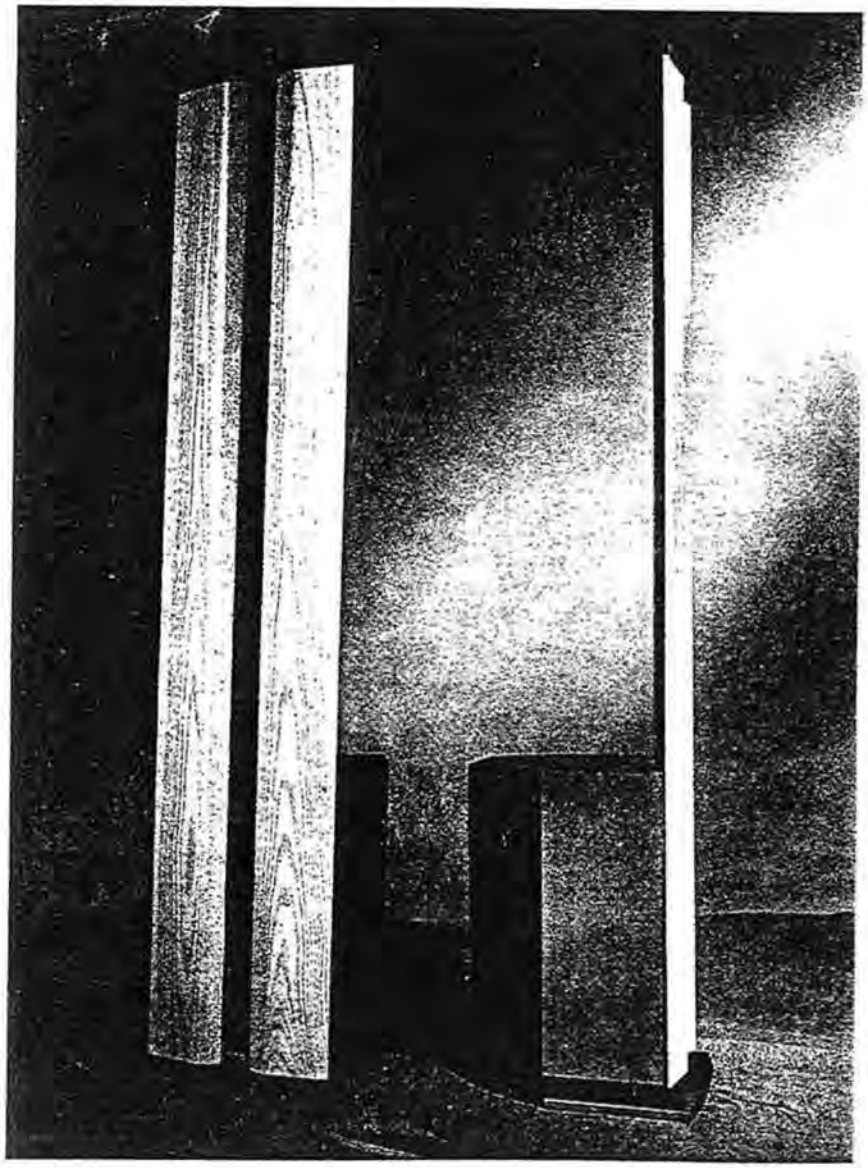
Hints:

- ❑ Allow space around the TFM-35x power amplifier for ventilation.
- ❑ Connect the AC linecords from source components to the switched and unswitched AC outlets on the back of the CT-23 preamp/tuner. **DO NOT** connect the TFM-35x linecord to the CT-23 AC outlets.



Stereo Review

TEST REPORTS



DIMENSIONS
14½ INCHES WIDE, 72½ INCHES HIGH, AND 16½ INCHES DEEP

FINISH
GOLDEN OAK OR BLACK OAK

PRICE
$1,699 A PAIR

MANUFACTURER
CARVER CORP., DEPT. SR, P.O. BOX 1237, LYNNWOOD, WA 98036

Carver AL-III Loudspeaker System

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

THE AL-III is the newest member of Carver Corporation's "Amazing" loudspeaker family. Like its predecessors, it uses a low-mass, vertically oriented ribbon dipole as the sole radiating element for most of the audio range (above 150 Hz). The previous Amazing speakers used several special cone drivers to achieve a low-bass extension rarely found in conventional speakers of any size. Despite their impressive performance, however, the size and cost of the Amazing speakers may have discouraged some potential buyers.

In the AL-III, a 48-inch ribbon is the main sound source. Framed by two wooden "wings" that give the effect of a single panel, the ribbon radiates equally to the front and rear through a slot about 2 inches wide. A thick foam-plastic strip protects the front of the ribbon, and a strip of felt covers the rear. The audio signal passes through the ribbon, which is immersed in a powerful magnetic field from a number of magnets. The resulting movement of the ribbon generates a pressure wave that radiates equally from the front and rear of the speaker in opposite phase (a dipolar pattern).

The woofer is more conventional, consisting of a 10-inch cone driver in a vented hexagonal enclosure, which is responsible for most of the system's weight. It is attached to the panel carrying the ribbon and serves as a stabilizing base, supported 1⅜ inches above a flat wooden floor plate. The woofer faces downward, radiating around the entire periphery of the base. Its vent (about 2 inches in diameter) is located on the front about a foot above the floor, behind the foam strip that protects the ribbon.

On the back of the bass enclosure are separate fuses and input connectors (multiway binding posts) for the ribbon and the woofer. The inputs are normally connected by jumpers that can be removed for biwired or biamplified operation of the system.

Also on the rear of the woofer enclosure are three level-adjustment knobs, marked High Frequency, Upper Mid-Range, and Woofer. They have a limited range—about 5 dB according to the manufacturer—and the user is encouraged to experiment with their settings. Carver says that the level control for the woofer varies its "Q" (bandwidth) and affects only frequencies below 150 Hz. The middle control, which has settings identified as Room Average Flat and Anechoic Flat, affects frequencies from 2,000 to 6,000 Hz, and

the top control trims the ribbon's output above 8,000 Hz.

To make most effective use of the AL-III's dipolar radiation pattern, the speaker should be kept several feet from any walls, although Carver states that even when it's placed against a wall, the depth of the woofer section keeps the ribbon far enough away to provide good results. Carver also recommends that for best sound the front of the room (behind the speakers) should be as acoustically "dead" as possible, while the opposite end should be relatively "live."

The AL-III's specifications include an anechoic bandwidth of 34 Hz to 20 kHz, with a usable lower limit of 24 Hz in a typical room. Nominal system impedance is 4 ohms, and sensitivity is rated as 86 dB sound-pressure level (SPL) at 1 meter with a 2.83-volt input. The recommended amplifier power is 575 watts per channel maximum (into 8 ohms), 65 watts minimum.

CARVER recommends that the AL-III be "broken in" for about 20 hours at a fairly high volume to relieve manufacturing stresses in its drivers. We followed this procedure as fully as possible, although there was no significant change in the sound as a result. The speakers were installed as recommended, except for the "live end, dead end" room treatment, which was not practical for us to implement.

The averaged room response of the two speakers was quite uniform from about 800 Hz to 20 kHz, with no more than a ±2.5-dB variation over that range. At lower frequencies the usual room interactions caused greater fluctuations, mostly within a ±5-dB envelope and extending down to our 20-Hz measurement limit.

The close-miked woofer response was strongest from 60 to 90 Hz, falling smoothly by 4 dB from 75 to 200 Hz and at a 12-dB-per-octave rate above that frequency. Below 60 Hz the output dropped off at a constant 12 dB per octave down to 20 Hz. Although the port output appeared to be quite flat from 60 to 20 Hz, it did not contribute significantly to the total bass output.

The composite response curve we constructed from the woofer and room measurements followed the room response down to 200 Hz and the close-miked woofer measurement below that point. Its average level below 800 Hz was about 3 to 5 dB higher than from 800 Hz to 17 kHz, with a fairly steep drop above 17 kHz. These measurements were confirmed by quasi-anechoic (MLS) response measurements, which showed a uniform average level within ±4 dB from 1.5 to 16 kHz and a 10-dB drop from there to 20 kHz.

Measuring the effect of the level controls on the speaker's frequency response essentially confirmed the information provided in the instruction manual. The woofer adjustment varied the output over a 4-dB range at 20 Hz but by only 1 or 2 dB between 40 and 60 Hz (the point of maximum output shifted between 65 and 75 Hz as the control was adjusted). From 70 to 200 Hz the adjustment range was 2 to 4 dB. The upper-midrange level adjustment had a range of 4 to 6 dB from 2 to 4 kHz, reducing to 2 dB from 4 to 6 kHz. The high-frequency adjustment range was 2 dB at 8 kHz and a maximum of 2.5 to 3 dB above that frequency. As stated in the manual, the audible effects of these controls were very subtle, and I found no significant differences in sound quality over their full range of settings.

The AL-III's sensitivity was 86 dB, exactly as rated. We measured woofer distortion at a drive level of 4.5 volts, corresponding to a 90-dB SPL at 1 kHz. It was very low and nearly constant at the bottom of the woofer's range, running between 1 and 3 percent from 20 to 50 Hz, falling to 0.3 percent at 100 Hz, and rising to 0.7 percent at 150 Hz.

The speaker's impedance with all the controls set to their clockwise limits (as we had them for most of our listening) was quite low, averaging about 3 ohms from 70 to 300 Hz and dipping to about 2.6 ohms at 200 Hz. It was also 3 ohms from 8 to 20 kHz. Except for brief rises to 11 or 12 ohms at 40 Hz and 3 kHz, the impedance averaged perhaps 4 ohms across the audio range.

In pulse power tests, the Carver AL-III's woofer cone bottomed at 100 Hz with a single-cycle input of 1,230 watts into its 3.1-ohm impedance at that frequency. At 1 and 10 kHz, the amplifier clipped at power levels of about 1,000 and 2,000 watts, respectively. The high-frequency tone-burst waveform was exceptionally free of distortion and ringing compared with what we have seen from other speakers we have tested.

LISTENING is the only meaningful way to judge the sound quality of a loudspeaker. From earlier experiences with ribbon speakers (most of them tweeters), I expected effortless transparency, and I was not disappointed. Whether I was a foot from the speaker or across the room, the highs were always crystal clear and unstrained. There was no sense that the sound originated from these slender towers; instead, the reflection from the wall behind them added a dimension of depth that is a hallmark of dipole speakers. But, like the larger Amazing speakers, the AL-III uses almost a *full-range* ribbon, which extends its spatial effect well beyond that of a mere tweeter. It is a very addictive quality—difficult to describe, but once experienced, never forgotten!

What about the AL-III's woofer, then? It worked well and was an audibly "invisible" partner to the ribbon driver, but it was no match for the multiple bass drivers of the larger Amazing speakers (which can shake the room walls at 20 Hz without difficulty). Subjectively, it did a solid job down to 40 Hz or so, and when lower frequencies were present they could often be heard, but at a rather low level. We also noted that the outside of the bass enclosure vibrated quite palpably when the woofer was reproducing the lowest octaves at levels well within its capabilities. For bass aficionados a good subwoofer can make a genuine improvement in the AL-III's sound, but most people will be very satisfied without taking that step.

The AL-III really shines when it comes to price and practicality. A pair of these attractive and (despite their height) unobtrusive speakers can fit into almost any room, where they will look good and sound great. Sensitive enough to be driven by almost any hi-fi amplifier worthy of the name, they can nevertheless handle the output of the most powerful amplifier with ease, and their price is certainly reasonable by today's standards. Even if the AL-III speakers are not quite as "amazing" as their predecessors, the name still fits. □

PRODUCT REVIEW

Carver Corporation's CT-27v Audio/Video Pre-amplifier Tuner

If you're building a home theater from scratch and you want to make provisions for future expansion and upgrading, a product like the Carver CT-27v Audio/Video Pre-amplifier/Tuner may be just what the doctor ordered. Think of it as an audio/video "front end."

by EDWARD J. FOSTER

Carver's CT-27v is an A/V receiver without power amps. It provides the audio and audio/video inputs (including an AM/FM-stereo tuner), switching, and signal processing for home theater. You add the power amps, signal sources, and speakers. Need more power later? Just replace the amps. Want to add an equalizer in the future? No problem, the CT-27v has provisions for one.

The CT-27v accommodates three audio/video sources — two VCRs and a laser disc player — and handles four straight audio sources: a CD player, two tape players, and a conventional moving-magnet phono cartridge. You can record on any or all of the four tape decks: two audio and two video (VCRs). And, of course, there's an output for a video monitor as well. Each video input and output is available via a composite (pin-jack) connector with S-Video hookups provided in addition for the monitor and laser disc player. That means you can view the high-quality "S" hookup, but you can tape (and watch prerecorded tapes) only via the composite (pin-jack) connection.

The CT-27v's Dolby Pro Logic decoder features automatic input balance and has fixed front-end gain as is pretty much standard these days. The Dolby system offers three center modes — Normal, Wide, and Phantom — and includes the three-chan-

excess of ±10 dB at 100 Hz and the Treble control offered nearly that much maneuvering room at 10 KHz. As mentioned previously, the VOCAL ZOOM provided an approximate ±6 dB spread at 1.8 KHz. The Loudness function boosted 50 Hz response by just over 7 dB and left the treble alone — which I think is the right way to go when implementing a loudness function. The subwoofer crossover pretty much met Carver's spec: about 18 dB/octave at 79 Hz.

As a stereo pre-amp, the CT-27v delivered a maximum gain of almost 20 dB which is pretty much standard and should be more than adequate to drive normal power amps. Output clipping level (5.8 volts or more on all outputs) is more than adequate to drive any power amp into overload so you won't find the CT-27v the limiting factor in your system. Input clipping level — always a consideration when dealing with fixed-gain Dolby decoders — is a generous 4.3 volts. I know of no CD or laser disc player that approaches this level so you needn't fear that your program source will push the CT-27v beyond its limits!

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In developing decoders, the designer is faced with a tradeoff between input clipping margin and residual noise. In my book, Carver's engineers have done an admirable job of negotiating the dilemma. Despite the generous input margin, A-weighted noise is admirably low: -95.2 dBV or better in front and better than -91 dBV in the rear. When taken with respect to the high output levels this device can achieve, front-channel dynamic range is 112.2 dB or more with Pro Logic decoding and over 114 dB in straight stereo — pretty impressive. Even in the rear channels (which are always noisier than the fronts), dynamic range is almost 107 dB.

Distortion is very low, too, both in straight stereo (where it tops out at a minuscule 0.006 percent anywhere in audio band) and with Dolby Pro Logic decoding. Through the Dolby system, front-channel distortion hits a maximum of 0.071 percent at any frequency between 40 Hz and 20 KHz in the main channels, and only 0.055 percent in center-front from 100 Hz to 16 KHz. Again, that's impressive performance! Even in the rear, distortion doesn't exceed 0.7 percent from 20 Hz to 6.3 KHz. Channel separation is equally stellar, for the most part 60 dB or better between all opposing pairs! Video response through the Carver switcher is within ±0.1 dB across the entire NTSC video region and exhibited a slight insertion gain of 0.4 dB.

FINAL

Undoubtedly, you can enter the home theater arena with a more modest cash outlay by opting for an A/V receiver rather than a Carver CT-27v Audio/Video Preamplifier/Tuner and separate power amps. Carver itself makes receivers for that purpose. But, you'd be hard pressed to beat the CT-27v's performance and flexibility when it comes to upgrading. Viewed in that light, the CT-27v's suggested retail price of $850 (actual price will vary) doesn't seem out of line at all. By the time you read this, Carver's AV-405 five-channel power amp should be on the market, too. It's expected to carry a suggested retail price of $750 and is a perfect way to round out a system that will use a powered subwoofer. The AV-405 will be rated at 100 watts per channel for the left/right front speakers (110 watts for the center) and will deliver 50 watts into each of the surrounds. ♦

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