

MODEL FOURTEEN



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ALTEC
LANSING

Separating Mythology from Fact

At Altec Lansing we've been building quality loudspeaker systems for over forty years. And during that time we've introduced quite a number of new speaker design techniques to the audio industry. Design techniques that often defied the conventional wisdom of the day yet worked so well that many became industry standards.

Today Altec Lansing is still building unconventional speakers. Speakers that challenge the folklore and myths of the current audio establishment. But no matter how unconventional our designs may seem, each is based on intense research and investigation into the optimum design parameters for home speaker systems.

Case in point: The new Altec Lansing Model 14.

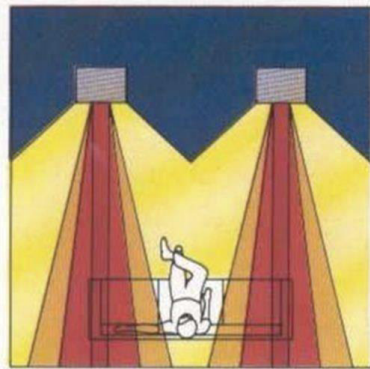
Put very simply, the Model 14 is a totally unique, one-of-a-kind speaker that we believe has a higher level of performance than anything now on the market. Performance that was only achievable with the development of a whole new family of speaker components. In fact, the 14 is so impressive that we think it's going to turn a lot of today's advertising claims into tomorrow's audio myths.

Myth #1. The wider a speaker's dispersion pattern is, the better it will sound.

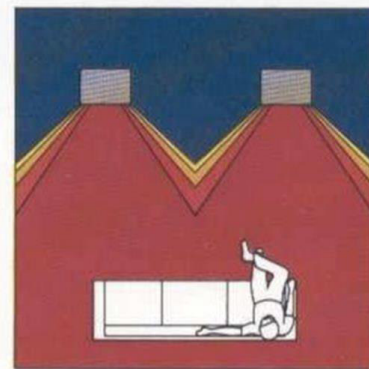
If you've been reading the speaker ads in your favorite audio magazine lately, you may have noticed that nearly everyone is claiming a wide, even dispersion pattern for their speakers. What they usually don't tell you is that this pattern is only true at certain frequencies.

You see, the truth is that in all traditional speaker designs, whether they are horns, cones, domes or whatever, the dispersion pattern is closely related to the frequency that the speaker is reproducing. As the frequency rises, the dispersion narrows or "beams." It's possible then for a speaker to indeed have a very wide dispersion at low frequencies but a very narrow dispersion at higher frequencies.

And since beaming occurs at different frequencies in different types and sizes of drivers, the more components a



Beaming of conventional speaker. Dispersion angle varies from wide to narrow as frequency rises.



Model 14's constant directivity MANTARAY™ keeps dispersion angle constant for all frequencies.

system utilizes, the more complex the problem. In a typical three-way system, for instance, the low-frequencies are reproduced by the bass driver or woofer. As the frequency rises, the woofer starts to narrow its dispersion pattern until, at crossover frequency, the pattern is very tight. Above the

crossover frequency the midrange driver is being used at its lower limits so the dispersion pattern once again widens. This gradual narrowing and widening of dispersion also occurs at the mid-range/high-frequency crossover point. The result of this inconsistent dispersion is a speaker whose stereo image is poorly defined and appears to wander.

At Altec Lansing, we've been investigating this problem of beaming for several years. The result of this investigation is a family of radically different looking and sounding horns that we call MANTARAYS™. And while it would be impossible to explain here why the MANTARAY design works,



we can explain what it does.

Essentially the new horn design produces sound in a continuous wedge of energy without regard to changes in frequency. Beaming is virtually eliminated. Because of this, the stereo image keeps its strength and clearly-defined shape whether you sit in the traditional equidistant listening position or off to the side. The "listening sweet spot" therefore is much larger than with conventional speaker designs.

And that's not the only benefit you get with the MANTARAY.

During the development of the new horn we also discovered that it would be possible to precisely control the placement of this wedge of sound energy within the listening area. By maintaining an energy wedge that is shaped 90° horizontally and an asymmetrical 30° in the upper vertical and 10° in the lower vertical, the MANTARAY allows the listening area to be engulfed in sound but keeps reflected sound to a minimum. And since the MANTARAY delivers so little of its sound energy to walls and rugs, it doesn't require the careful in-room positioning that reflecting-type speakers need. As an added advantage, this low degree of environmental sensitivity also means that the Model 14 is much more likely to sound as good in your home as it does in your dealer's showroom.

What all this means to you is that for the first time you can hear the full sound spectrum no matter where you sit in the listening area. Without sound coloration due to room reflections and with the most solid, three-dimensional stereo image you've probably ever heard. So while other manufacturers make vague promises about their speaker's dispersion, our new MANTARAY lets us tell you exactly what you'll hear—every note on every record with the biggest listening "sweet spot" ever. And that's a fact.

But while the MANTARAY is a remarkable achievement, it's only part of the 14's total performance package.

Myth #2. You can't get full range response from a two-way speaker.



Circumferential phase plug.



Tangerine radial phase plug.

Over the years a number of different types of high-frequency drivers have been used in speaker systems. Almost all, however, were found to be unable to reproduce the upper limits of the frequency spectrum. Because of this many manufacturers decided to add a third, specialized driver or super tweeter to their systems. Of course this added to the complexity of the speakers and it also usually resulted in tradeoffs in other aspects of the system's performance.

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We decided to take a different approach. Rather than adding more components, we chose to improve the performance of what was already the most efficient high-frequency device available—the compression driver. And with the design of our radial phase plug, that's just what we did.

In the past, compression drivers had all been equipped with circumferential phase plugs. These older devices forced their high-frequency energy through two equidistant circular slots. But because of the design of these plugs, some of the higher frequencies were lost. Our radial phase plug, which we've nicknamed the Tangerine, utilizes a unique radial slot design which allows a free flow of high-frequency energy and results in an honest frequency response to beyond 20 kHz.

And since many people like the flexibility afforded by the midrange and high-frequency adjustments found on most three-way systems, we've even designed a unique dual-band equalizer that allows separate adjustment of mids and highs. The result—the best qualities of both two-way and three-way systems in one design.

Myth #3. The best (and only) speaker protection devices are fuses and circuit breakers.

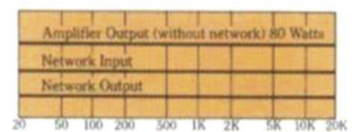
In the past few years it's become popular to install in-line fuses or circuit breakers to protect speakers from damaging power levels. But due to the very nature of music, these devices really offer little, if any, protection. If you install a low value fuse for maximum protection, it will probably be tripped during musical peaks. Install a high value fuse to allow for these transients and the speaker can be damaged by continuous high power levels. And if your speaker has a built-in circuit breaker, you're stuck with whatever standard value the manufacturer has selected.



The most sophisticated speaker protection device ever designed.

Obviously there had to be a better way.

There was. We call it Automatic Power Control.

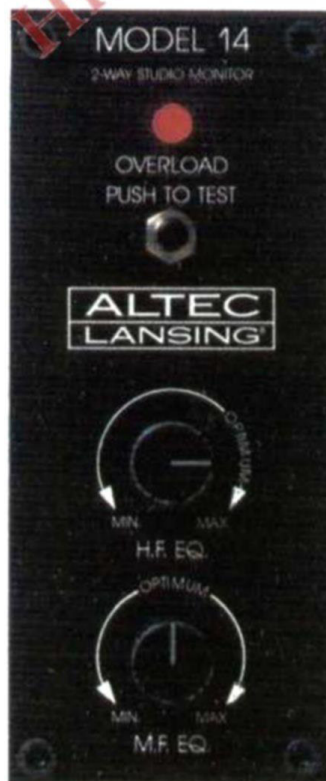


Frequency response of Automatic Power Control circuit.

This Automatic Power Control circuit literally keeps track of the power (fuses and circuit breakers are only sensitive to current) delivered to the system and corrects overloads automatically. Whenever input power exceeds safe limits, a warning light goes on and the power is automatically reduced. And unlike a fuse or circuit breaker that shuts the speaker off when activated, speaker operation is uninterrupted, even when the protection is energized. Also because the system is "average responding" instead of "peak responding," it allows for musical peaks but still protects the speaker against damaging levels of power.

But the circuit's sophistication goes far beyond simple power protection.

It is more sensitive to "clipped" ampli-



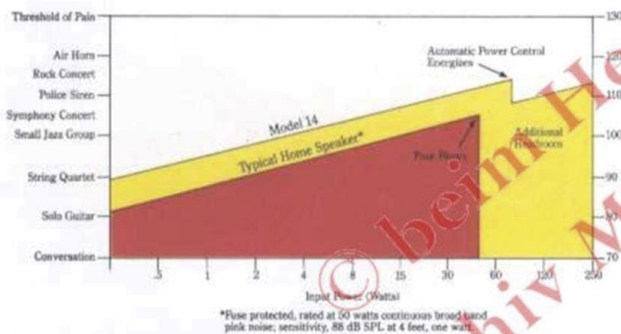
fier signals than to clean signals so it knows the difference between true musical peaks and an overdriven amplifier. Also the circuit adds absolutely no distortion nor does it in any way limit system frequency response. Finally, all operating power is derived from the driving signal itself (virtually no power compared to the total driving signal) so AC power or batteries are never needed.

Automatic Power Control. Quite simply the best speaker protection device to date — and it's only available from Altec Lansing.

Myth #4. You can't combine high efficiency with high power capacity.

If you like your music at moderate listening levels, you may not think that you need a speaker that can handle high power. The truth, though, is that even at low levels, musical peaks can place incredible demands on a speaker. And if a speaker's power capacity can't meet these demands, audible distortion will begin.

In order to meet these requirements, many manufacturers design their speakers to handle high power but only at the expense of efficiency. Unfortunately, these low-efficiency



speakers tend to eliminate the major advantage of their power handling because it takes so much power to just obtain a moderate listening level.

Additionally, when these speakers are fed the high power levels they need to operate, their dynamic range (the variation between the loudest and the softest levels of music) becomes compressed. The result is a vague, distant "inside-the-box" sound that lacks a feeling of musical realism.

At Altec Lansing, we've always been known for speakers that combine high efficiency with high power handling capacity. In the case of the Model 14 we've taken this design philosophy to the extreme.

The Model 14 is one of the most efficient speakers that we've ever produced. Because of this efficiency, the 14 can deliver high listening levels with very low input power. But the 14 also has the highest power handling capacity of any high fidelity speaker we currently make. And since it takes so little power to drive the 14, the extra power capacity or headroom is available to handle musical peaks effortlessly.

Myth #5. High-performance speakers have to be super expensive.

By now you may have come to the conclusion that any speaker with the performance and features of the 14 would have to cost a small fortune. It doesn't. In fact when you consider the additional features like a real-walnut-veneer finish (even on the back), an optimally-tuned, vented enclosure and Altec Lansing's full five-year warranty, we think you'll agree that the Model 14 just may be the best speaker value on the market.

SPECIFICATIONS	MODEL 14
SPEAKER COMPONENTS —	
LOW FREQUENCY:	12" Bass driver
HIGH FREQUENCY:	Radial phase plug* Compression driver mounted to MANTARAY™ constant directivity horn**
NOMINAL IMPEDANCE:	8 ohms
CROSSOVER FREQUENCY:	1500 Hz
ENCLOSURE TYPE:	Vented
SENSITIVITY:	95 dB SPL ⁽¹⁾
Measured at 4 feet, 1 watt input, using pink noise which has been limited to a bandwidth of 500 Hz to 3 kHz.	
FREQUENCY RESPONSE:	35 Hz to 20 kHz
DYNAMIC RANGE:	44 dB minimum crest factor above 70 dB SPL at 4 feet
DISPERSION:	90° at -6 dB Horizontal 40° at -6 dB Vertical, tilted to 30° up, 10° down
Measured with pink noise limited to a bandwidth of 800 Hz to 8 kHz at a distance of 4 feet.	
LONG TERM BROAD BAND MAXIMUM POWER:	75 watts unprotected, 200 watts with Automatic Power Control (included)**
Measured with a source of pink noise limited to the frequency response bandwidth of the system, over an extended time period.	
OPERATIONAL POWER RANGE:	10 watts to 350 watts
Recommended for use with amplifiers between these levels.	
LONG TERM MAXIMUM ACOUSTIC OUTPUT:	114 dB SPL
Measured at a distance of 4 feet with a source of pink noise limited to the frequency response bandwidth of the system.	
FINISH:	Hand-rubbed, oiled walnut
GRILLE:	Acoustically-transparent black knit fabric mounted to removable frames
DIMENSIONS:	30"H x 21"W x 16½"D (with grille)
SHIPPING WEIGHT:	95 lbs (43.1 Kg)
NET WEIGHT:	77 lbs (34.9 Kg)

(1) Measured with shelving controls set at optimum.

*Reg. U.S. Patent No. 4,050,541; Foreign patents pending.

**U.S. and foreign patents pending.



Altec Lansing International
1515 South Manchester Avenue
Anaheim, California 92803



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