

# COMPANIONETTE—the ultra-compact 3-way speaker system with **CONSTANT FORCE FACTOR** for the cleanest, smoothest bass ever heard in a system of its moderate size and cost!

**Constant Force Factor** — what is it, how does it guarantee superior high fidelity performance . . .

First, some general information on how a speaker operates.

The voice coil and magnetic assembly of a speaker comprise its driving system. The magnetic force provided by a speaker's magnet moves the voice coil. The voice coil is attached to and moves the speaker's diaphragm which, in turn, produces sound. This force is concentrated in the magnetic field, or air gap, of the voice coil. It is in the air gap therefore, that the action originates, with the voice coil moving back and forth in response to the current fed into it from the amplifier. How does the air gap affect performance? When the conventional woofer attempts to respond to a bass frequency requiring a large excursion of the diaphragm (to push more air), part of the voice coil is invariably pulled **out** of the air gap. This results in a reduction of the magnetic force and causes the speaker to distort some portion of the sine wave—that is, of each incoming vibration created by the amplifier.

The COMPANIONETTE however, offers features previously available only in much more expensive systems—an ultra-linear 8" woofer with an **ultra-long-throw** voice coil to match the largest conceivable diaphragm excursion . . . and a special viscous-

damped high compliance suspension to reduce undesirable resonances.

In the COMPANIONETTE, the magnetic force is **constant** because the voice coil never leaves the air gap!

The result—extreme linearity—the cleanest, smoothest bass ever heard in an enclosure of its moderate size and cost!

Comparison-shopping will conclusively prove that here is one of the finest under-\$70 bookshelf speaker systems available today! In addition to its remarkable woofer, the COMPANIONETTE offers two more specially made and integrated speakers—a new 3" speaker for life-like mid-range reproduction and unusually bright tweeter for widely dispersed, crystal-clear highs.

In appearance, its compactness and simplicity of line make it suitable for virtually any decor, any size room. Finely crafted of choice, genuine walnut, and hand-rubbed to a soft oiled finish on all four sides, it may be used on floor, shelf or table, horizontally or vertically. No matter how you use it, the COMPANIONETTE will delight you—for a **lifetime!** Hear it soon at your high fidelity dealer.

**NOTE:** Long-throw voice coil design is one of the outstanding features of University's complete line of woofers.



the long-throw voice coil makes the big difference!

### SPECIFICATIONS

**COMPONENTS:** 3 speakers — 8" ultra-linear high compliance woofer (see text for details); 3" mid-range and 3½" tweeter with adjustable level control.

**ELECTRICAL CROSSOVER:** Smooth, 6 db/octave attenuation network.

**FREQUENCY RESPONSE:** 40 to 17,000 cps.

**POWER HANDLING CAPACITY:** 20 watts IPM.

**AMPLIFIER POWER REQUIREMENTS:** 10 watts.

**IMPEDANCE:** 8 ohms.

**DIMENSIONS:** 21¼" wide, 11½" high, 8¾" deep.

**FINISH:** Oiled walnut.

## PROBLEM:

How to achieve optimum bass performance with a miniature enclosure.

## SOLUTION:

OPTIMUM

Q\*

## PROOF:

# MINI-FLEX... 3-WAY SPEAKER SYSTEM



Cabinetry by Carl Otto

## INCREASED MASS-LOADING + GREATER "AIR SPRING" COMPLIANCE = OPTIMUM OUTPUT DOWN TO 40 CPS!

By discarding the conventional, a new acoustic concept was developed. By means of this concept, the Mini-Flex was created. University's unparalleled engineering resources and pioneering in the technology of audio miniaturization has produced the **first** ultra-compact speaker system designed to fulfill its optimum performance potential — as stated in its printed specifications — without the use of "trick" amplifiers. It is a true 3-way speaker system, producing **superior bass** down to 40 cycles, exceptionally smooth mid-range and crisp, peak-free highs.

Why is the Mini-Flex unique? To appreciate the full extent of the Mini-Flex achievement, one must first consider some of the problems still inherent in other compact and ultra-compact enclosures. Due to such factors as limited size and subsequently extreme, woofer-created internal air pressures, a small enclosure can become, in effect, a stiff "acoustic air spring." As such, it will hold the woofer under tight rein, preventing it from attaining its optimum performance potential. In the compact (bookshelf speaker) field, this problem was solved some time ago — by University's exclusive RRL tuned enclosures. Now... University is **first** to eliminate these obstacles to bass performance in an **ultra-compact** enclosure!

**OPTIMUM Q** — University's 'optimum enclosure to speaker ratio' principle — is the reason. What is it? In essence, it is the most ideal "marriage" of woofer and ultra-compact enclosure yet devised. It has been achieved by developing a woofer with an extremely low free-air resonant frequency,

in a size **perfectly** proportionate to the size of the enclosure (to assure the lowest possible resonant frequency of the woofer **inside** the enclosure). It has been achieved through the special mass-loading of its moving system, and by its unusual viscous-treated "moving seal" suspension (see Specs').

The end results of OPTIMUM Q are **audible** — 40 cps bass response with an enclosure **only four-tenths of a cubic foot**... superb mid-range and highs (up to 20,000 cps) provided by two additional (and independent) speakers specially designed for the Mini-Flex. Both of these speakers are equipped with exclusive 'diffractor barriers' for ideal stereo sound dispersion...and with adjustable balance controls.

Visually, the Mini-Flex "speaks" for itself at a glance. Its unique oiled walnut 'cabinet-within-a-cabinet' styling endows it with a costly and imposing appearance truly remarkable for an enclosure of its size. Naturally, it may be used in any size room, but it is especially suitable to answer that familiar feminine complaint — "But we just don't have any space for a speaker system!" The Mini-Flex may be used **anywhere** — on wall or floor, on virtually any size shelf, on a table or even under it! But seeing (and hearing) is believing. For further (and conclusive) proof of Mini-Flex superiority, visit your local University dealer.

*\*The engineering philosophy behind OPTIMUM Q is fully detailed in a scientific paper presented to the Audio Engineering Society by Victor Brociner. For a copy of this important talk, write to University, enclosing 25¢ to cover postage and handling.*

## SPECIFICATIONS

**COMPONENTS:** Three speakers — special OPTIMUM Q 6½" woofer with a uniquely weighted (mass-loaded) voice coil to overcome the enclosure's "acoustic air spring" (see text), plus a new 3" mid-range and 3½" tweeter each with balance controls and exclusive 'diffractor barriers' for ideal stereo sound dispersion.

**SPECIAL VISCIOUS-TREATED "MOVING-SEAL" WOOFER CONE RIM SUSPENSION:**

Guarantees ultra-linear compliance for maximum, distortion-free bass, while reducing resonances difficult to control with conventional suspensions.

**FREQUENCY RESPONSE:** 40 to 20,000 cps.

**3-WAY ELECTRICAL CROSSOVER NETWORK:**

Smooth 6 db/octave slopes; nominal crossover frequencies, 1,000 and 7,000 cps.

**POWER HANDLING CAPACITY:**

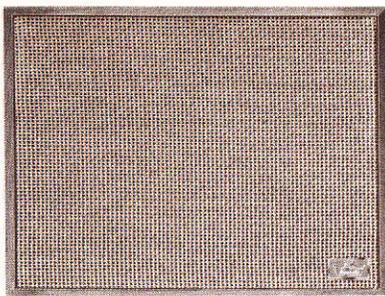
20 watts integrated program material.

**MINIMUM POWER REQUIREMENTS:** 10 watts.

**IMPEDANCE:** 8 ohms.

**DIMENSIONS:** 15" x 9¼" x 5¾" deep.

**FINISH:** Oiled walnut.



Another acoustic and styling 'first' from

# UNIVERSITY

**MINI** the 2-inch thin speaker system with the largest woofer for its size — 188 square inches!

In designing a speaker system only two inches thin, an entirely new acoustic concept was required. The MINI is the result. It is the thinnest speaker system on the market capable of wide-range high fidelity reproduction!

At the famous UNIVERSITY laboratories, it was long known that the growing demand for slimmer, more attractive systems could not be met simply by paring down conventional speakers and enclosures. There are many thin systems available today, but if you've been shopping around for awhile, their shortcomings have probably become quite obvious to you by now. Limited response and output, poor or boomy bass, harsh highs, etc. The MINI, as your own ears will testify, is **not** just another ultra-thin system. In its price range and size, the MINI is in a class unto itself.

The MINI is another UNIVERSITY solution to the problem of maximum distortion-free bass in minimum space. (It is one of three new UNIVERSITY miniature and slim speaker systems.) The MINI is only two inches thin, but its woofer diaphragm is one of the **largest** available in any speaker system — **188 square inches!** How can so large a speaker fit into a two-inch enclosure? By conventional standards, the MINI has no enclosure.

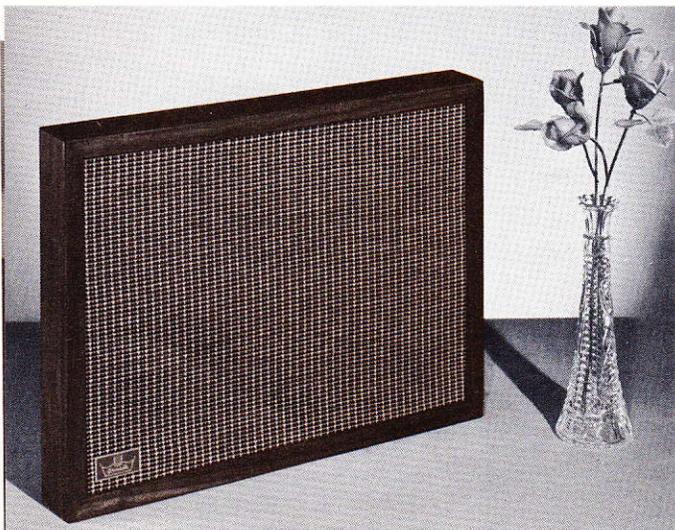
To provide brilliant, yet natural, high frequency response, the MINI has a new, superbly engineered tweeter in miniature

form. However...for the more difficult-to-reproduce bass and mid-range frequencies...UNIVERSITY **made the entire frontal area of the cabinet** function as its woofer and mid-range speakers! How? Based on an exclusive design, UNIVERSITY utilized a thin, 'piston action' sheet of veneered wood, and coupled it to a newly designed, custom-matched voice coil and magnetic assembly!

How does it sound? It is an acoustic fact that, in general, the larger the diaphragm area, the lower will be a speaker's roll-off frequency (the bass frequency at which sound output begins to fall off). The MINI, therefore, achieves bass response and output far beyond the capacity of ordinary so-called thin systems which use conventional cone speakers that, due to enclosure size limitations, must be extremely small. Without the MINI's special acoustic compensating factors, wide-range full-output performance cannot be expected from these conventional thin systems. With the MINI, however...at its bottom bass of 50 cps... you are still getting the full sound output and fidelity your amplifier is capable of producing!

In conclusion...

If you require the ultimate in compactness at a cost within the reach of any budget...plus full-bodied natural sound...then you must hear the MINI. Look for it at your nearest high fidelity dealer.



*So finely crafted and finished (in oiled walnut, with modern cane grille), it will enhance any room. So compact, it may be used any way you wish — on wall or floor, the smallest shelf conceivable, or table. You can even install the MINI under the table!*

## SPECIFICATIONS

### COMPONENTS:

Largest "woofer" in the compact field — 11 $\frac{3}{4}$ " x 16" rectangular plane diaphragm area! Separate, specially engineered tweeter for brilliant, widely dispersed highs.

### FREQUENCY RESPONSE:

50-17,000 cps.

### POWER RATING:

20 watts integrated program material.

### IMPEDANCE:

8 ohms.

### DIMENSIONS:

18" wide, 13 $\frac{3}{8}$ " high, 2" deep.

# Start planning your own system with these Progressive Speaker Expansion Charts

(PSE lets you "custom-engineer" your own system — economically transform it from a moderately priced to a deluxe system — and protect your initial investment as well!)

## CHART I

### Starting with Full Range Speaker

FULL RANGE, "General Purpose" SPEAKER	Add TWEETER when ready for 2-Way System	Add WOOFER for 3-Way System
DIFFUSICONE-8/200 DIFFUSICONE-12/200	T-202	C-15HC or C-12HC (Diffusicone becomes midrange)

DETAILS: T-202 has built-in filter and level control; added in parallel with Diff-8, no extra crossover or enclosure is required. . . . N-2B connected as 2500 cycle low pass filter may be added to midrange later, for maximum benefit from T-202. . . . Woofer could be added without crossover temporarily (tweeter, Diff-8 and woofer in parallel across 4-ohm amplifier output), but for best results, use at least one N-2A network connected for 350 cycle crossover; N-2A input to 8 ohm amplifier output.

UC-152 or UC-122 or UC-121 or UC-82	Add HF-206, or UXT-5, or 4401 whenever desired	C-15W or C-12SW (UC Model becomes midrange)
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DETAILS: HF-206, etc., requires at least an N-1 high pass filter; better still, use N-2B network connected as 5000 cycle crossover, and AP-8 level control. . . . Woofer could be added without crossover temporarily (tweeter w/high pass filter, UC-82 and woofer in parallel across 4-ohm amplifier output), but for best results, use at least one N-2A network connected for 350 cycle crossover; N-2A input to 8 ohm amplifier output.

## CHART II

### Starting with 3-Way Diffaxials

ORIGINAL 3-WAY DIFFAXIAL (a complete system with a single speaker)	FOR SUPERIOR RESULTS, ADD LARGE, HEAVY DUTY WOOFER (whenever you wish) — CONE OF DIFFAXIAL BECOMES MIDRANGE
312/200 or 6201/200 or 308/200	C-15HC (or C-12HC)
UC-153 or UC-123	C-15W (or C-12SW)

DETAILS: See sub-enclosure note re. cone speakers for midrange. . . . Use one or two N-2A networks for 350 cycle crossover from new woofer to original coaxial, which now functions as integrated mid-high range sound source. . . . retains advantage of coaxial design. . . . gives cleaner midrange sound since it no longer must handle bass at same time. . . . If existing enclosure is retained, readjust port or duct according to woofer instruction sheet.

## CHART III

### Specialized Speakers

SPECIAL SPEAKER — for use as woofer, or later midrange	ADD TWEETER OR MID-HIGH RANGE SPEAKER (for 2-way system)	FUTURE EXPANSION POSSIBILITIES
C-8HC	T-202	Larger woofer; original C-8HC becomes midrange. Add C-15HC or C-12HC woofer.
	Use C-8HC or C-8M as midrange PLUS T-202 for tweeter (Add together)	

DETAILS: T-202 has built in filter and level control — simply add in parallel with C-8HC or remainder of system. . . . No network required to limit high frequency input to C-8HC or C-8M since high frequency response of these speakers is tailored to match T-202. . . . With C-8HC as midrange, woofer could be added without crossover temporarily (T-202, C-8HC and woofer in parallel across 4-ohm amplifier output), but for best results, use at least one N-2A network connected for 350 cycle crossover; N-2A input to 8 ohm amplifier output. . . . With C-8M as midrange, at least one N-2A network, connected for 700 cycle crossover, is required initially.

WOOFER C-15HC	PLUS . . . OR PLUS . . .	C-8HC PLUS T-202 (ADD TOGETHER)	
		DIFFUSICONE-8	T-202

DETAILS: C-15HC requires both C-8HC and T-202, or Diff-8, for full range reproduction. . . . T-202 has built in filter and level control, is simply added in parallel with remainder of system. . . . Systems can be used temporarily without crossover network from C-15HC-to-Diffusicone-8 or C-8HC. For best results, use at least one N-2A network connected as per above description. . . . With Diff-8 as midrange, N-2B connected as 2500 cycle low pass filter is desirable to eliminate acoustic interference with T-202.

C-8W (Used as woofer or midrange)	Add TWEETER: HF-206, or UXT-5, or 4401	Add WOOFER: C-15W or C-12SW
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DETAILS: HF-206 etc. requires at least an N-1 high pass filter; for best results, use N-2B network connected as 5000 cycle crossover plus AP-8 L-pad level control. . . . Woofer could be added without crossover temporarily (tweeter w/high pass filter or crossover and AP-8, C-8W and woofer in parallel) across 4-ohm amplifier output). For best results, use at least one N-2A network connected as described above.

## CHART IV

### Large-Scale 3- to 4-Way High Efficiency Systems — Two Approaches

APPROACH #1	WOOFER	TWEETER OR MID-HIGH SPKR	TWEETER	LARGE WOOFER
C-12SW		T-50/H-600 (T-30/H-600)	HF-206 (UXT-5, 4401)	C-15W (original woofer becomes mid-bass speaker)
		HF-206 (UXT-5, 4401)	T-30/H-600	
		UC-82	HF-206 (UXT-5, 4401)	

DETAILS: Original Purchase: C-12SW and tweeter or mid-high speaker and network(s). . . . C-12SW has choice of mid-high frequency roll-off starting at 700, 2500 or 5000 cycles; use N-2B network connected as high pass filter with tweeter or mid-high range speaker; 700 cps with T-50, T-30 or UC-82; 5000 cps with HF-206, UXT-5, or 4401 (or use N-1 high pass filter at 5000 cps with HF-206 etc.). . . . With mid-high range speaker and tweeter both, use N-2B as above to keep lows out of mid-high range plus at least N-1 as above with tweeter; better, use at least one N-2B network connected as 5000 cycle crossover midrange-to-tweeter. . . . Always use an AP-8 level control with any high efficiency midrange or tweeter. . . . Woofer may be added without crossover temporarily (woofer and existing system connected in parallel to 4-ohm amplifier output), but for best results, use at least one N-2A network connected for 350 cycle crossover, N-2A input to 8 ohm amplifier output; C-12SW then becomes mid-bass speaker.

APPROACH #2	WOOFER	MID-HIGH SPKR	TWEETER	TREBLE RANGE OR MID-BASS SPEAKER
C-15W		T-30/Cobreflex	HF-206 or (UXT-5, 4401)	T-50/H-600 OR T-30/H-600 TREBLE SPEAKER; T-30/Cobreflex THEN BECOMES MID-BASS
		T-50/H-600 (T-30/H-600)		T-30/Cobreflex — AS MID-BASS
		UC-82		T-50/H-600 TREBLE SPEAKER; UC-82 BECOMES MID-BASS

DETAILS: Original Purchase: C-15W and mid-high speaker and network. . . . Use N-2A network connected as 350 cycle crossover with C-15W and T-30/Cobreflex or UC-82; connect N-2A as 700 cycle crossover with T-50/H-600 or T-30/H-600. . . . HF-206 etc. must have at least an N-1 as 5000 cycle high pass filter; better, use N-2B connected as 5000 cycle crossover and AP-8 level control.

IN BOTH 4-WAY SYSTEMS ABOVE — Basic purpose of multiple crossover system is reduction of inter-modulation distortion. . . . all systems above have crossover frequencies of 350, 1250, and 5000 cycles; use one or ideally a pair of networks (N-2A or N-2B as appropriate) for each crossover frequency, cascading channels, i.e.: Starting with 350 cycle crossover, feed lows to C-15W, highs to input of next crossover network(s); "lows" from this network(s) to mid-bass speaker (T-30 Cobreflex or UC-82); highs to input of final network(s); "lows" (treble) from final network to mid-high range speaker, highs to tweeter. . . . midbass, treble and tweeter each must have an AP-8 level control.

ABOUT ENCLOSURES: Any speaker that is to reproduce bass needs a suitable enclosure to do a good job in this department. How large an enclosure? With almost any speaker, bass response will be improved as enclosure volume is increased, but even with speakers of the same size, there are great differences in the enclosure volume required for comparable response. Some speakers are designed with high compliance suspensions and high-mass moving systems (heavy cones and voice coils); these require more amplifier power for a given sound output but will give extended bass response even in small bookshelf-sized enclosures. Other speakers have low-mass moving systems; they require less amplifier power, but must have larger enclosures for good bass response. (Small speakers with low-mass moving systems, and moderately extended bass response, may be used in bookshelf enclosures.)

Nominal minimum enclosure internal volumes for University cone-type speakers are as follows: C-8HC, 308 series 200, Diff-8; Series 200: 1.0 cu. ft.; 312 Series 200, UC-82, C-8W: 1.5 cu. ft.; C-12HC, 6201; Series 200: 1.8 cu. ft.; C-15HC: 2.0 cu. ft.; C-12SW, UC-121, UC-122, UC-123: 4 cu. ft.; C-15W, 315C, UC-152, UC-153: 8 cu. ft. Specific easy-to-follow information on enclosure design is packed with each speaker. For informational assistance in special situations, or for copies of application information on any particular University components, write the factory, attention customer service.

SUB-ENCLOSURES — When midrange speakers and/or tweeters are mounted in the same enclosure with the woofer, their diaphragms or cones must be protected from woofer-generated pressures inside the enclosure. With compression drivers (e.g. T-50/H-600, HF-206) and special cone-type speakers (e.g., C-8M), this is taken care of by the structure of the speaker. However, if a conventional, open-basket cone-type speaker is used as a midrange and/or high frequency speaker in an enclosure with a separate woofer, you must build an air tight, padded sub-enclosure over the back of any such speaker. The size of the sub-enclosure is not critical: make it 1/2 cu. ft. or more for 8" speakers, 3/4 cu. ft. for 12" speakers.

## The Award-Winning\* High Compliance Series 200 Premier Wide-Range Speakers



These magnificent custom-built speakers set a new standard of performance for completely integrated units. Their specially molded rigid cones are mounted between two highly compliant cloth suspensions (inner and outer) and can undergo the large, unhindered piston-like excursions necessary to reproduce lowest bass either in compact or large cabinets. Their one-piece die-cast baskets assure perfect rigidity for the entire structure and life-long adherence to original performance standards. Each is specially designed for mounting to either the front or rear of the baffleboard—thus can be mounted and removed easily without any necessity to remove any panels.

*\*For design that "possesses all the rigidity and dimensional stability needed to assure permanent centering of the speaker cone, magnetic pot assembly and other components . . ." the radically new die-cast basket of the Model 312 was unanimously awarded first prize in industrial design competition that attracted entries from 18 major industries.*

**MODEL 315-C†SERIES 200 SUPER 15" 3-WAY DIFFAXIAL SPEAKER** Large, theatre-type woofer cone features high excursion dual-spider piston and anti-break-up, low-resonance diaphragm, for rich natural bass. Multi-element Diffusicone mid-range section crosses over at 1000 cps. Treble is covered by the heavy-duty T-50 hypersonic driver and axially mounted, reciprocating flare wide-angle super tweeter horn, to provide exceptionally uniform sound distribution throughout the entire audio range. Self-contained crossover network includes "presence" and "brilliance" controls for mid-range and treble adjustment to match room acoustics. Frequency response: 25 cps to 20,000 cps. 50 watts† rating. 15½" dia., 12" deep. Shpg. wt. 34½ lbs.

**MODEL 312\*\*\* SERIES 200 12" 3-WAY SPEAKER** The only single speaker assembly capable of response from 28-40,000 cps! Acclaimed as the greatest advance in high fidelity speaker design for many years. Award-winning die-cast design, high compliance woofer. Mid-range provided by patented Diffusicone for uniform dispersion of the frequencies in the 1000 to 3000 cps range. The center-mounted Sphericon Super Tweeter (± 2 db to 22,000 cps) has its own specially constructed reflector baffle to prevent acoustic interaction between tweeter and woofer. It also provides 120° dispersion in all directions. Built-in electrical crossover network and adjustable "brilliance" control. 35 watts† rating. 13" dia., 6⅝" deep. Shpg. wt. 10¼ lbs.

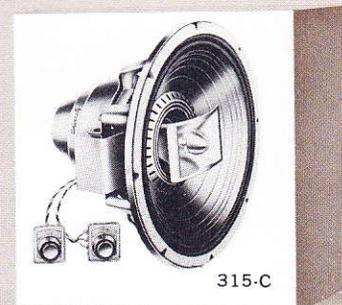
**MODEL 6201†SERIES 200 12" 2-WAY SPEAKER** New, improved version of the most popular top quality speaker ever made. Superlatively smooth and natural performance from full, deep bass to transparent highs at an extremely attractive price. True coaxial construction, with separate drivers for heavy woofer and superb compression type tweeter. Built-in 2500 cps electrical crossover network complete with adjustable "brilliance" control on 3 ft. cable. Frequency response 28-18,500 cps. 35 watts† rating. 13" dia., 6⅝" deep. Shpg. wt. 9 lbs., 8 oz.

**MODEL DIFFUSICONE-12†SERIES 200 12" FULL RANGE DIFFAXIAL SPEAKER** Rich, clear bass without boominess is provided by this low-cost, 2-way 12" Diffaxial speaker. Dual horn-loading at apex of cone extends mid-range and high frequency response. Mechanical crossover at 1000 cps offers smooth, wide-angle dispersion. Highly recommended for low-cost stereo music systems where high quality with economy is a must. Frequency response 25-15,000 cps. 35 watts† rating. 13" dia., 6⅝" deep. Shpg. wt. 8 lbs., 10 oz.

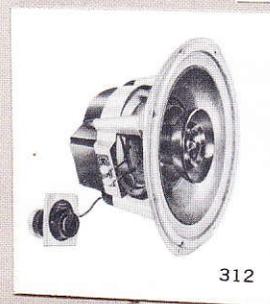
**MODEL 308†SERIES 200 8" 3-WAY DIFFAXIAL SPEAKER** Newly improved, very compact, highly efficient Diffaxial speaker, designed specifically for the smaller hi-fi installation. Perfect where space is at a premium and quality reproduction is desired. Features special-design 8" woofer with extra-large voice coil, for excellent bass response. Has multi-element Diffusicone mid-range unit, compression type tweeter and built-in 5000 cps elec-

trical crossover. True-axial construction; tweeter is projected through center of woofer. Frequency response 30-17,000 cps. 35 watts† rating. 9⅞" dia., 6⅛" deep. Shpg. wt. 5 lbs.

**MODEL DIFFUSICONE-8†SERIES 200 8" FULL RANGE DIFFAXIAL SPEAKER** Highly suitable for the economy installation where space is limited. Wide-angle dispersion is achieved by the Diffusicone element. Frequency response 30-15,000 cps. 35 watts† rating. 9⅞" dia., 4⅝" deep. Shpg. wt. 4¾ lbs.



315-C



312



6201



DIFF-12



DIFF-8



308



## Series 100 High Efficiency Wide-Range Speakers

All Series 100 speakers are highly efficient . . . achieving ample sound levels, even with a minimum of amplifier power. Their performance in all respects is second only to the Series 200, and at their extremely

modest price, represent the most outstanding values in the high fidelity field. Their attractive exteriors—matte black baskets and chrome silver dust covers—have the *look* of quality. Their impressive tonal performance has the *sound* of quality. Each model in the series is adaptable to a wide variety of cabinets. Choose the model that best suits your price and installation requirements—confident that it will more than fulfill your expectations.

**MODEL UC-153† 15" DIFFAXIAL** Medium power version of the Series 200 315-C Diffaxial speaker. Moderately priced, it's an excellent choice for any home music system, delivering performance of superb quality. Integrally constructed on a rugged frame. Its rich, sonorous bass is augmented with full-bodied mid-range by the multi-element Diffusicone, which crosses over mechanically at 1000 cps. At 5000 cps an L/C electrical crossover network directs the high and ultra-high frequencies to the famous UXT-5 super tweeter with reciprocating-flare horn, axially mounted in the center of the woofer for purest treble. Includes brilliance control. Frequency response 30 to 18,500 cps. 30 watts† rating. 15 1/8" dia., depth 10". Shpg. wt. 12 lbs.

**MODEL UC-152† 15" DIFFAXIAL** Low-cost, 2-way speaker. Diffusicone element assures wide-angle dispersion of treble frequencies. Dual horn-loading extends mid and high-frequency response evenly throughout the listening area, crossing over mechanically at 1000 cps. Rich, clear bass, without boominess, is provided by the sturdily constructed 15" woofer with specially molded cone. Frequency response 30 to 14,000 cps. 30 watts† rating. 15 1/2" dia., 7 1/8" deep. Shpg. wt. 8 1/4 lbs.

**MODEL UC-123† 12" DIFFAXIAL** Integrated 3-way speaker of unusually low cost with uniform wide-angle dispersion. Uni-sectional Diffusicone element and UXT-5 reciprocating-flare super-tweeter, mounted through the center axis of the woofer, for true, wide-angle dispersion. Mechanical crossover at 1000 cps, electrical crossover at 5000 cps. Built in brilliance control for adjustment to room

†Patented †Integrated program. All 8-16 ohms.

acoustics. Comes complete with mounting plate and knob, pre-wired to 3 ft. cable. Frequency response 40 to 18,500 cps. 30 watts† rating. 12 1/8" dia., 9 1/4" deep. Shpg. wt. 9 lbs.

**MODEL UC-122† 12" DIFFAXIAL** Low-cost 12" Diffaxial speaker employing University's uni-sectional Diffusicone, high frequency element with 1000 cps mechanical crossover. Two-way Diffaxial design extends mid-range and high-frequency response. Low-frequencies are reproduced by specially molded one piece woofer diaphragm. Has extra-large voice coil. Provides uniform, wide-angle sound dispersion by means of radial projector plus aperture diffraction for full fidelity at all listening points off speaker axis. Frequency response 40 to 13,000 cps. 30 watts† rating. 12 1/8" dia. Depth 4 3/8". Shpg. wt. 5 1/4 lbs.

**MODEL UC-121 12" EXTENDED RANGE SPEAKER** Economy-priced 12" speaker. Special shallow design for flush mounting in ceilings, walls, etc. Excellent for high fidelity use, radio-phono replacement, public address, etc. Employs duraluminum dome at cone apex. Frequency response 40 to 10,000 cps. 30 watts† rating. 12 1/8" dia. Only 4" deep. Shpg. wt. 5 1/4 lbs.

**MODEL UC-82 8" DIFFAXIAL** An excellent, low-cost wide-range 8" speaker, expressly designed for use in today's compact speaker enclosures. Perfect for use in pairs in stereo systems. Features 2-way Diffaxial design and 5000 cps mechanical crossover for extended-range, mid and high frequency reproduction. Frequency response 45 to 14,000 cps. 25 watts† rating. 8 1/8" dia. Only 4 1/4" deep. Shpg. wt. 3 1/2 lbs.

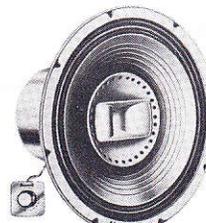
"Diffaxial" is a registered trademark.



UC-153



UC-152



UC-123



UC-122



UC-121



UC-82

# Woofers



C-12HC



C-8HC



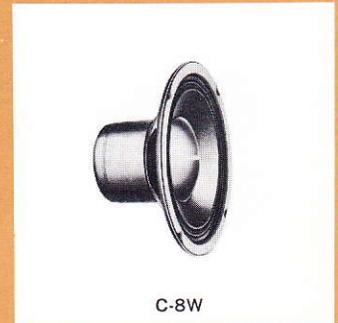
C-15HC



C-15W



C-12SW



C-8W



## HIGH COMPLIANCE WOOFERS

University's high compliance woofers offer you fabulous bass in the smallest possible cabinets. Cone resonance is incredibly low, down to 15 cps in the C-15HC. When installed in University radiation resistance loaded cabinets, their power demands are moderate as compared with fully-sealed cabinets. All employ the new Uniferron-7 magnet material. High compliance woofers are used in all University speaker systems (except the S-80) as being most likely to best serve the needs of today's stereo enthusiasts.

**Model C-15HC 15" High Compliance Woofer** Yields astounding bass depth without compromising either power handling ability or clean output. Positive transient control during

maximum excursions is ensured by specially designed twin spider suspension assembly. Over-all response to 800 cps. 4 to 20 ohms. Can be used with quality amplifier from 10 watts up-wards. 60 watts\* rating. 8 1/8" deep. Shpg. wt., 24 3/4 lbs.

**Model C-12HC 12" High Compliance Woofer** Capable of outstanding ultra linear performance in matched level systems. Can be used with quality amplifier from 15 watts upwards. Response of 20 to 3000 cps permits use in speaker systems with addition of only a tweeter. 4 to 20 ohms. 50 watts\* rating. 6 1/8" deep. Shpg. wt., 9 lbs.

**Model C-8HC 8" High Compliance Woofer** Every refinement possible has been embodied in this new woofer. Features special low resonance cone with treated cloth surround, oversize dual voice coil for stereo and a newly engineered heavy die-cast basket. Its remarkable range is 20 cps to 3,000 cps (in suitable enclosure). Any good 10 watt amplifier provides ample power. 30 watts\* rating. 8 ohms. 4 1/4" deep. Front or rear mounting. Shpg. wt., 7 1/4 lbs.

**HIGH EFFICIENCY WOOFERS** University's high efficiency woofers are recommended for many installations not calling for high compliance cabinets. For example, 1) when you are matching a previous high efficiency system and do not wish to "pad it down" to match the new one. 2) When you have adequate space for larger cabinets, or are planning a wall or closet mounting. 3) When you

wish to keep amplifier power requirements to a minimum, or to keep well within the lowest distortion range of your amplifiers. 4) When you prefer the particular sound quality of horn-type or other large cabinets.

**Model C-15W 15" DVC Woofer** Maximum efficiency is maintained by a special dual voice coil with exceptional axial depth and excursion... positive transient control being ensured at all times by the exclusive twin spider arrangement and 6 lbs. of Alnico 5 Gold Dot magnet. Response from below 25 to 1500 cps. 50 watts\* rating. 4-20 ohms. 10 1/2" deep. Shpg. wt., 26 3/4 lbs.

**Model C-12SW 12" Adjustable Response DVC Woofer** Built-in facilities enable high-end adjustment of

response to 700, 2500, or 5000 cps, suiting requirements of most tweeters. Crossover points can be changed to achieve best tonal balance. Used with N-1 adjustable high-pass filter in 2-way system, forms a complete L/C network. 1 1/2 lb. supersensitive all-Alnico 5 Gold Dot magnet. Response from 30 to 6000 cps. 30 watts\* rating. 8 ohms. 6 1/8" deep. Shpg. wt., 7 1/4 lbs.

**Model C-8W 8" Woofer** Ideal for assembling a compact, high quality speaker system, or as mid-range in low-cost 3-way system. Crosses over up to 5000 cps. All-Alnico 5 Gold Dot magnet. Frequency response down to 50 cps is achieved with proper baffling. 25 watts\* rating. 8 ohms. 4 1/4" deep. Shpg. wt., 3 lbs.

*Instructions for installation in suitable cabinets included with all woofers.*

*\*Integrated program.*

## The exclusive, patented DUAL VOICE COIL

... a unique contribution to low-cost, space-saving high fidelity stereo Built into every University woofer (except the C-8W) are two electrically independent voice coils, each of which connects directly to your stereo amplifier, one coil to each channel, to reproduce the combined bass of both. This eliminates the need for a second woofer, a second woofer cabinet and a special stereo network, otherwise necessary to prevent the two amplifiers paralleling.

The acoustic principle for this has been well established. Bass frequencies below approximately 150 cps are non-directional and therefore do not contribute to the stereo effect. But for full reproduction of the bass range

the low frequencies from both channels must still be utilized. This is ingeniously accomplished by just one dual voice coil woofer.

The stereo directional frequencies—above 150 cps—can then be fed to smaller, less expensive speakers in minimum-sized cabinets which can be placed in optimum listening positions.

A striking application of this entire principle is found in the "Trimensional" TMS-2 single cabinet stereo system described on page 8. The amazing compactness and modest cost of the TMS-2 is made possible by the ingenious use of the dual voice coil feature of the C-12HC woofer.

# Mid-Range and Tweeters

# Networks



HF-206†



UXT-5†



4401



C-8 M

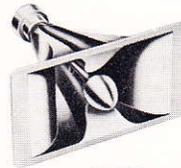


T203



T202

SPHERICON®



H-600



COBREFLEX®†



T-30



T-50



N-1



N-3



N-2A



N-2B



A-1



AP-8



**Model HF-206 Hypersonic Tweeter** High frequency beyond audibility. Improved die-cast aluminum wide-angle horn with University's exclusive, patented "reciprocating-flare" design principle provides uniform 120° horizontal and 50° vertical dispersion. Super-efficient driver also housed in spun aluminum casing. Low end cut-off, 3500 cps. 25 to 50 watts\* power rating, depending on crossover frequency. N-1 or N-2B network for 5000 cps crossover recommended. 8 ohms. 6" x 3-5/16" x 6-9/16". Shpg. wt., 3 1/2 lbs.

**Model UXT-5 Super Tweeter** Compact super tweeter assembly for crossover at 5000 cps up. Genuine compression driver has super-sensitive all-Alnico 5 magnet, coupled to "reciprocating-flare" wide-angle horn for uniform 120° x 50° dispersion and high conversion efficiency. N-1 or N-2B L/C network recommended. Response: 4500 to 17,500 cps. 25 to 50 watts\* rating. 8 ohms. 4 1/4" x 2 1/2" x 4". Shpg. wt., 1 3/4 lbs.

**Model 4401 Tweeter** High conversion efficiency achieved by compression loaded driver mechanism with light weight voice coil assembly. Hermetically sealed construction. Sturdy one-piece die-cast "reciprocating-flare" horn. Response from 2,000 to 15,000 cps. 8 ohms. 25 watts\* power rating. N-1 or N-2B lviding network recommended. 6" x 2 3/4" x 6-5/16". Shpg. wt. 2 1/4 lbs.

**Model C-8 M Mid-Range** Identical to mid-range used in famed Medallion XII system. Response of 500-5,000 cps deliberately restricted to vital mid-range frequencies by means of

viscous-treated surround and center. Fully enclosed basket eliminates need for additional sub-enclosure. Power rating: 50 watts.\* Depth 4 1/4". Shpg. wt., 3 lbs.

**New 'Sphericon'® Super Tweeter** Offers the most phenomenal high frequency response ever achieved . . . from 3,000 cps to 40,000 cps (± 2 db to 22,000 cps) . . . with amazing clarity, transparency and sweetness. The entirely new concept of this radiator tweeter, with its special domed phenolic diaphragm and spherical diffractor, results in a virtually linear response—with true musical quality—far superior to even the most expensive of tweeters. Matches perfectly to any system, especially high compliance, without sacrificing bass efficiency. Built-in network and adjustable brilliance control. Dispersion 120° in all directions. 30 watts\* rating. Impedance 8 ohms nominal (use with any 4-16 ohm speaker). **Model T203** In handsome case for exterior use on top of main system or on adjoining shelf. 6 3/4" x 5 1/4" x 2 3/4" d. Shpg. wt. 2 3/4 lbs., 6 oz. **Model T202** For internal mounting. 4 3/8" dia., 4" d. Shpg. wt. 2 1/2 lbs.

**Model H-600 Mid-Range and High Frequency Horn** The H-600 is the finest in 600 cps cut-off wide-angle horns for both professional and home applications. All-new die-cast design combines famous patented "reciprocating-flare" principle with hemispherical deflection for exceptionally uniform sound distribution throughout the full response range. Dispersion: 125° x 55°. T-30 or T-50 driver and N-2A network recommended. Takes any driver with standard 1 3/8"-18 throat. 7 3/4" x 8 3/4" x 4 3/4". Shpg. wt. 1 3/4 lbs.

**Cobreflex Horn** Unsurpassed as a mid-range horn in multi-speaker systems, or as top end of 2-way systems. T-30 driver recommended. 27" exponentially-flared air column permits crossover as low as 350 cps. Exclusive twin-flare design for uniform wide-angle 120° x 60° dispersion. Two identical one-piece extra-heavy die-castings of aluminum. 1 3/8"-18 throat. 10 1/4" x 18 1/2" x 9 1/4". Shpg. wt., 10 1/4 lbs.

**Model T-30 Mid-Range and High Frequency Driver** For mid-range in multi-speaker systems, or tweeter in 2-way systems. H-600 or Cobreflex horn and N-2A network recommended for 350 cps crossover. Response to 15,000 cps. 8 ohms, 1 3/8"-18 throat. 3 1/2" dia., 3 3/4" d. Shpg. wt., 2 1/4 lbs.

**Model T-50 Hypersonic High Frequency Driver** Heavy duty super-efficient driver for use with the H-600 horn. Recommended for 700 cps crossover. Response to beyond audibility. Recommended for large theatres and deluxe home systems. Use with N-2A network. 8 ohms, 1 3/8"-18 throat. 4 1/4" diameter, 4 1/8" deep. Shpg. wt., 5 1/4 lbs.

**Model N-1 Adjustable High Pass Filter** Built-in "brilliance" control for dividing program between woofer and tweeter in 2-way systems. Crossover and impedance combinations: 2500, 5000, 10,000 cps at 8 ohms; 1250, 2500, 5000 cps at 16 ohms; 5000, 10,000 cps at 4 ohms. Can be used with N-2A network in 3-way system. Fits panels up to 3/4" thick, 3 5/8" x 3 1/4" x 3". Shpg. wt., 2 lbs.

**Model N-3 "Acoustic Baton"®** An adjustable L/C network for 3-way systems. Connections for either 350 or 700 cps crossover between mid-

range and woofer. Tweeter crossover is 5000 cps. Built-in "presence" and "brilliance" controls. Adjustable for vertical or horizontal mounting. Fits panels up to 3/4" thick. 8 ohms. 7" x 5" x 3". Shpg. wt., 5 1/4 lbs.

**Models N-2A and N-2B Adjustable L/C Dividing Networks** These networks permit any combination of speakers to be used in a great variety of voice coil impedances and crossover points. Use either network singly as 6 db/octave 2-way network, as 12 db/octave low or high-pass filter, or in pairs as 12 db/octave network. N-2A and N-2B can also be used in combination for 3-way speaker systems. 3 5/8" x 3 1/4" x 3". Shpg. wt., 2 1/2 lbs. **N-2A Crossover:** 350 or 700 cps at 8 or 16 ohms; 700 cps at 4 ohms. **N-2B Crossover:** 1250, 2500 or 5000 cps at 8 ohms; 2500 or 5000 cps at 16 ohms; 2500 cps at 4 ohms.

**Model A-1 Stereo Adapter Network** Provides means of using a single woofer for both stereo channels, while retaining electrical separation of the mid-range and high frequencies to preserve stereo effect. Use with any speaker system not having a dual voice coil woofer. Phasing switch included to accommodate varying recording techniques. Shpg. wt., 6 lbs.

**Model AP-8 Balance Control** Effective attenuator pad to regulate speakers of different efficiencies and for balancing sound according to room acoustics and personal taste. Ideal for use with N-2A and N-2B networks. Escutcheon is marked on two sides; "presence" for use in mid-range circuits, "brilliance" for use with tweeters. Suits 8-16 ohms systems. Fits panels up to 3/4" thick. Shpg. wt., 7 oz.

\*Integrated program. †Patented



## “Enjoy University high quality sound everywhere!”



... outdoors, on the water, even underwater ... University's many exclusive special purpose speakers let you hear voice and music wherever you go.

### At patio or pool

Music/Aire speakers offer you impressive wide-range high fidelity sound through your indoor music system. Simply connect one (or two for stereo) to your amplifier, or any phonograph, radio, or TV set. And if it rains, don't give it a thought. Music/Aire speakers are completely weatherproof and may be left outdoors indefinitely. Model MLC is ideally suited for moderate-size areas, while Model CLC, with its extended bass response, is *the* outdoor speaker for the connoisseur. Both are genuine dual range systems.

### In your swimming pool, at home or at the club

Enjoy the identical MM-2UW speakers now universally used for water ballets, underwater swimming instructions and for synchronized swimming (an Olympic event). They're easy to install, completely waterproof, and can be left submerged indefinitely.

### On your boat

MM-2 speakers provide clear, noise-cutting sound even under the most trying conditions encountered on the high seas. Originally developed for naval use, the MM-2's easily withstand momentary submersion without any effect on their exceptional performance capabilities. Model IB-A, the world's most widely used

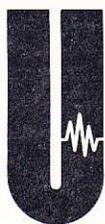
medium power speaker, is the perfect deck speaker ... with its special “talk-back” feature so valuable in two-way communication.

### For camping, sports, or a wide variety of marine uses

Portable Powpages® give you complete, self-powered soundcasting systems at your fingertips for instantaneous communication. Just press a button and talk ... release, and the power is off, conserving battery life. There's nothing faster, nothing more convenient.

*For complete descriptive literature on these and the many other special purpose speakers made by University, write to Desk X-6, University Loudspeakers, Oklahoma City, Oklahoma.*

*The products of University are subject to constant improvement, whenever possible. As a result, University reserves the right to change any circuit, part or specification, without notice and obligation.*

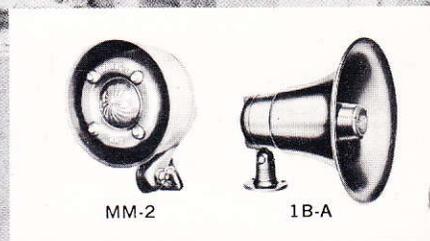


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University products described herein covered by registered or non-registered trademarks: Acoustic Baton, Cobreflex, Diffaxial, Diffusicone, Select-A-Style, Medallion XII, Sphericon, SYL-O-ETTE, Classic Mark II, Companion II, Classic Dual-12, Companionette, Mini, Mini-Flex, Senior II, DVC Woofer, MLC, CLC, MM-2, IB-A, MM-2FUW, PowrPage.

Products described herein are covered by one or more of the following patents and/or others applied for: D-163,616; D-188,541; D-188,542; 2,494,134; 2,545,961; 2,641,329; 2,690,231; 2,746,558; 2,832,844; 2,832,845; 2,852,089; 2,857,012; 2,896,901; 2,904,632; 2,957,054; 2,981,359; 3,028,927.



\*Patent pending

DESIGN AND PRODUCTION BY J. CHAPMAN