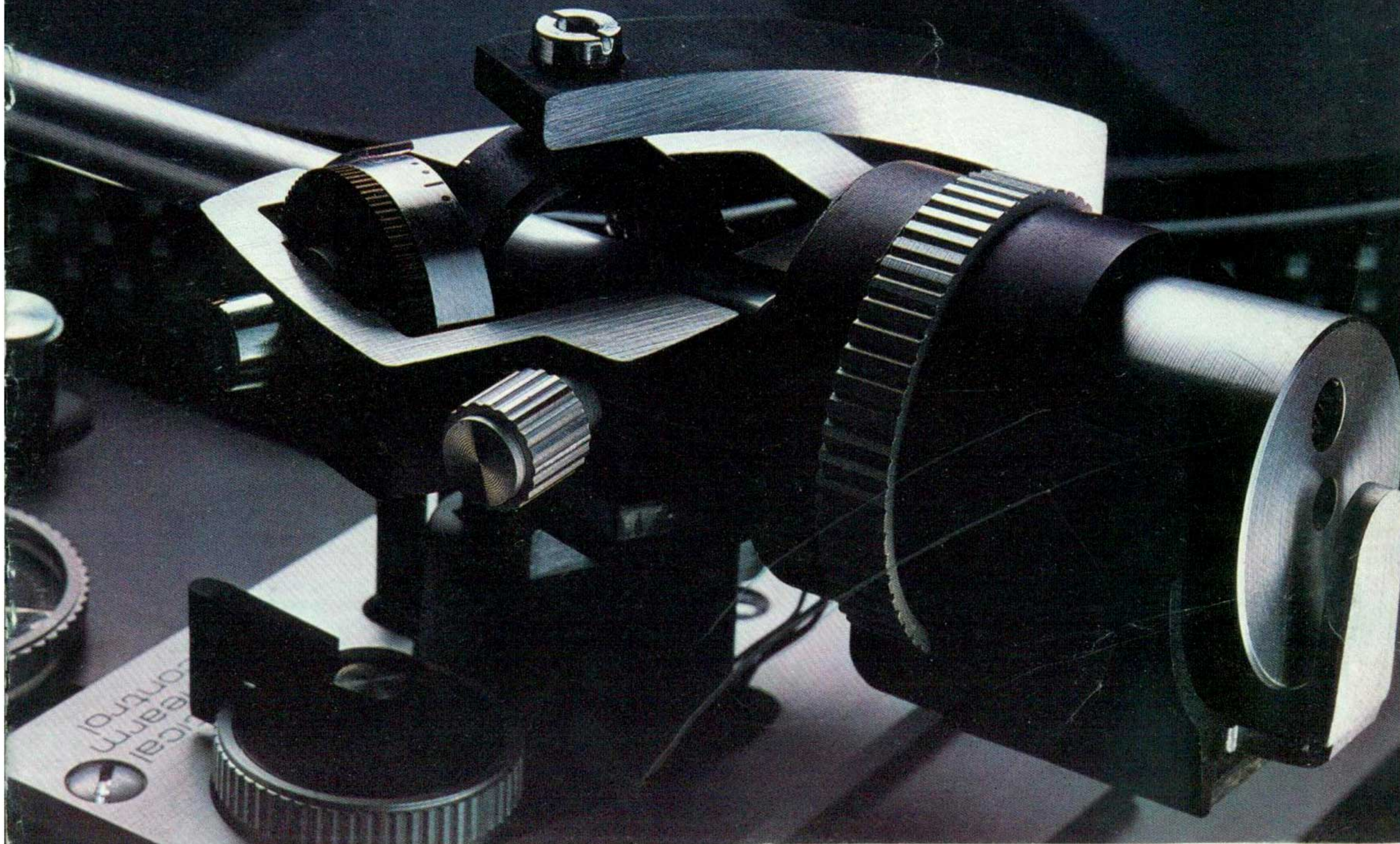


**The new Dual turntables.**  
**For the life of your records.**



# Records: the finest program source for music at home.

Today as always, records are the best source of music for home listening. For many reasons. Their dynamic range and frequency response. The almost limitless choice of program material. Ease of handling. The instant access to any portion of the music.

All this, plus the fact that many music lovers have been building record libraries for more than half their lives, makes records the most precious program source in many homes. If you add up your own total investment in records, you may find that they are actually the most expensive "component" of your system.

However, records should be handled with great care if they are to continue sounding good each time they're played. This means the equipment they're played on—especially the turntable—should be of the highest quality. Because the turntable can make a big difference in the way your records sound. And how long they last.

Throughout play, there's a running conflict between the diamond stylus and the soft vinyl groove. The ever-changing groove contours force the stylus to change directions—up, down and sideways—as rapidly as forty thousand times a second. Any contour the stylus can't follow, it will simply lop off. And with it go some of the high notes.

So for the record we'd like you to know about Dual turntables—and Dual tonearms in particular. As you will see, every Dual turntable—from the least expensive to the most expensive—embodies the same basic design philosophy and manufacturing quality.

## The world's best-designed tonearm.

Every Dual tonearm is mounted in a four-point gyroscopic gimbal, a design widely acknowledged as the finest suspension system available. The tonearm pivots exactly where the vertical and horizontal axes intersect, and remains perfectly balanced in all planes of movement. The bearing friction is extraordinarily low—vertical friction less than eight milligrams, even in our lowest-priced model.

The straight-line, tubular design provides maximum rigidity with minimum mass. (A curved tonearm may look sexy, but it adds mass, decreases rigidity and may cause lateral imbalance—hardly consistent with good engineering principles.)

Tonearm tracking settings are made in the identical manner on every Dual. The vernier-adjustable counterbalance lets you establish zero balance with micrometer-like precision, so the tracking force can be set easily and with complete accuracy.

A tempered, flat-wound spring applies tracking force directly at the vertical pivot, and this force remains perpendicular to the record even if the turntable is not absolutely level.

By contrast, tonearms which apply tracking force by shifting the counterweight forward are actually unbalanced during play and prone to mis-tracking. For example, on warped records the stylus tends to dig in on the uphill side of the warp and to lose contact on the way down.

Anti-skating is applied around the horizontal pivot so that it acts as a direct counterforce to the skating force. (Skating is a force originating in the

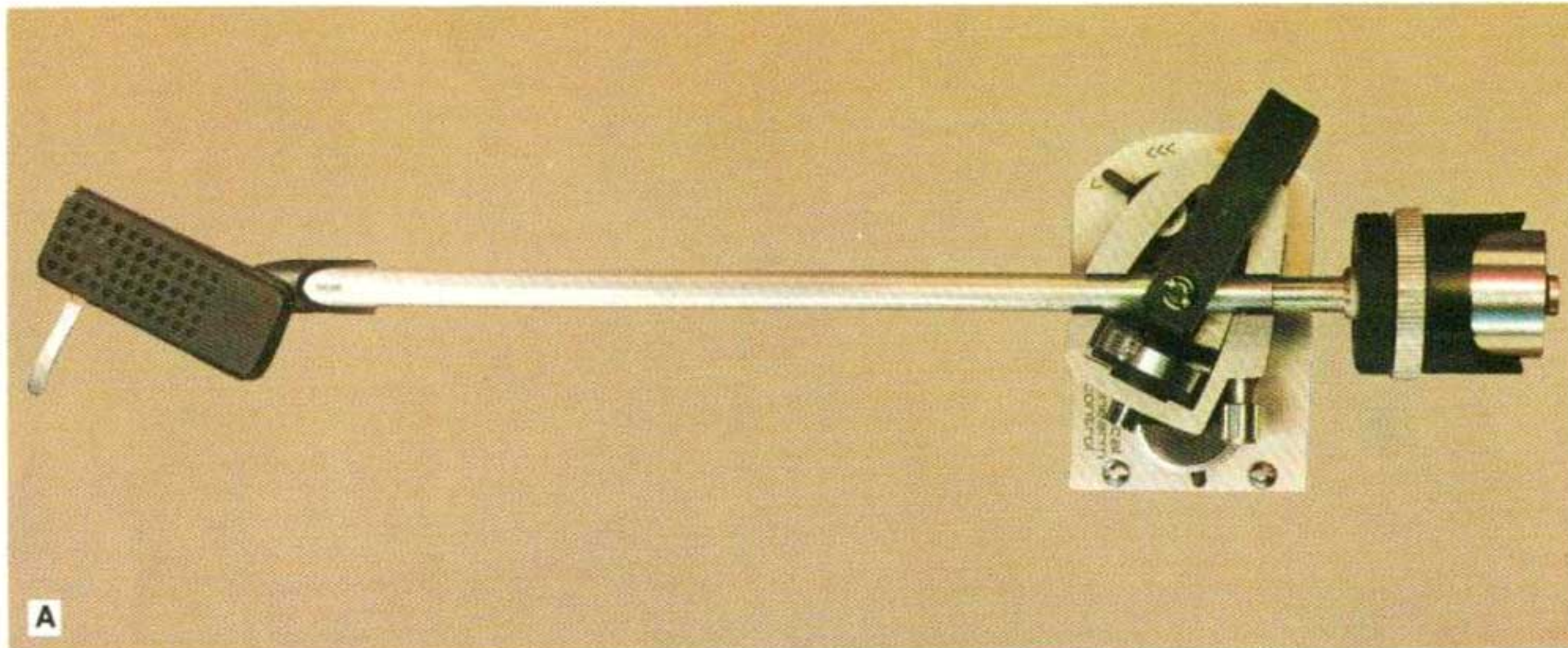
geometry of every pivoted tonearm that causes the stylus to apply more pressure on the inner wall of the groove than on the outer wall.) Dual's anti-skating system provides separate calibrations for all stylus types, and adjusts automatically for the varying degrees of skating force encountered by the tonearm as it moves across the record.

The end result: a dynamically-balanced tonearm system that establishes and maintains the correct cartridge-to-groove relationship. The stylus traces the record groove freely, precisely, and with the minimum tracking force advisable for its tip mass and compliance. In short: flawless tracking for better sound reproduction and longer record life.

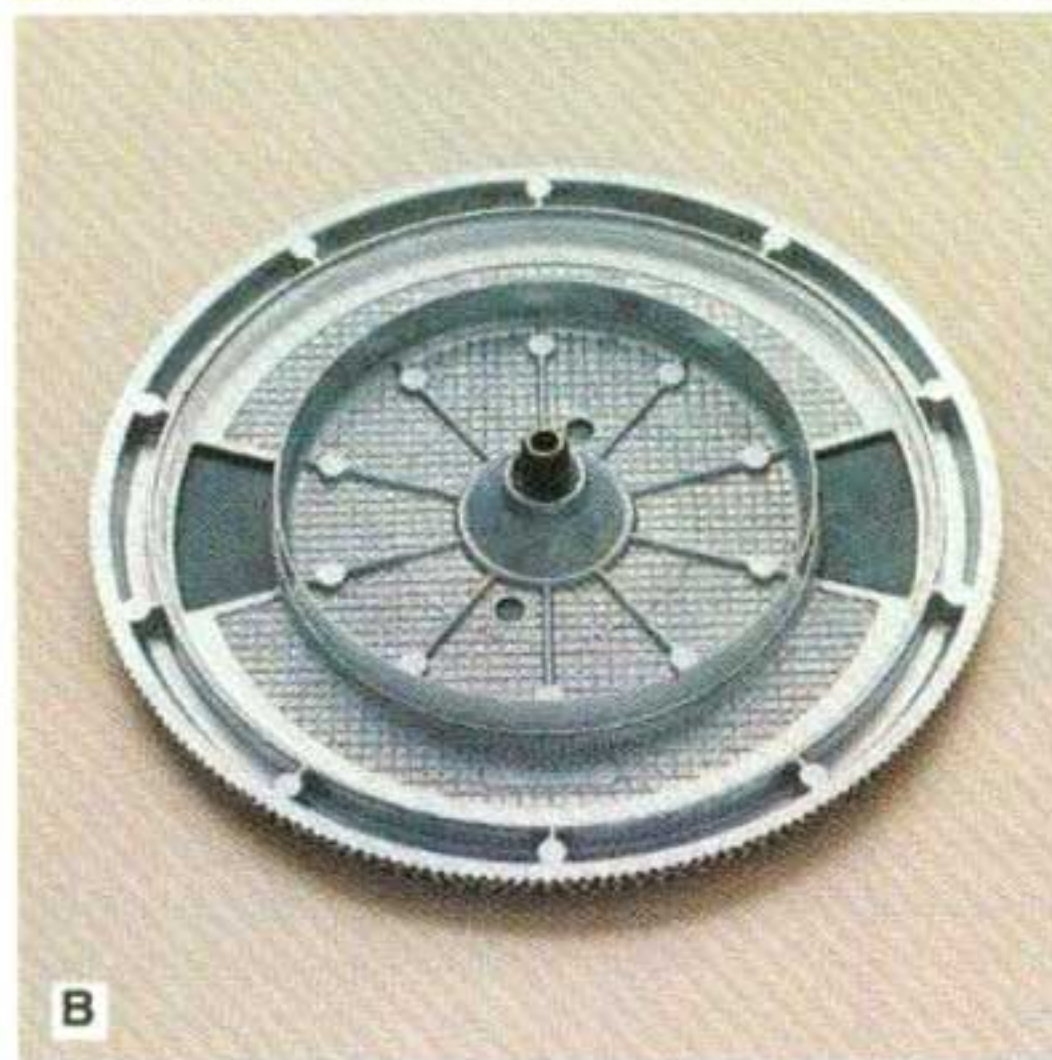
## Perspective on drive systems

The importance of the turntable drive system should be neither minimized nor exaggerated. Its function is simply to rotate the platter at precisely the required speed—and with a minimum of vibration. As Julian Hirsch of *Stereo Review* put it: "It would make little difference if the platter were powered by well-disciplined hamsters on a treadmill. It is the end result that counts." The reliability of hamsters being somewhat uncertain, the most widely accepted systems today are direct and belt, each having its own special characteristics.

The rotating shaft of the low-speed direct-drive motor is connected directly to the platter. Such a motor must have sufficient torque, a speed-regulating system and freedom from vibration. A true high performance direct-drive motor is expensive to make, especially if it is to perform reliably and maintain its specifications over the years



**A**



**B**



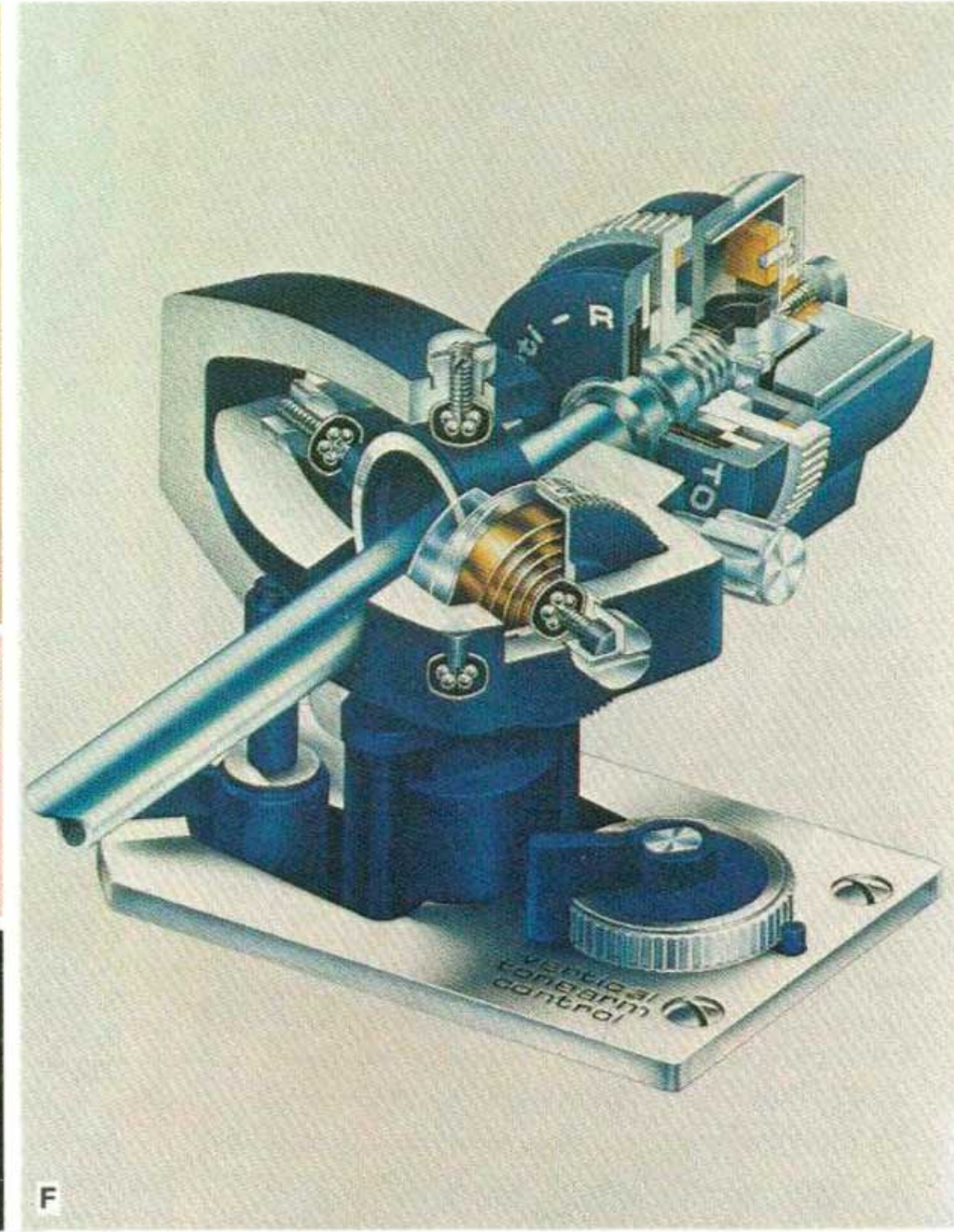
**C**



**D**



**E**



**F**

of its anticipated operating life. For these reasons, Dual chooses to limit its direct-drive systems to the higher-priced models.

Belt-drive has long been established as a reliable speed reduction system that can provide fine performance at a reasonable price. The belt linking the platter and the motor filters out the vibrations inherent in any motor. Nevertheless, to achieve and maintain top performance and reliability, a belt-drive system must also have quality components such as a high-torque motor, a precision-ground belt, and a drive linkage that does not tend to shorten belt life.

**A** Straight-line tubular shape of all Dual tonearms provides maximum rigidity with low mass. Offset angle of tonearm head achieves lowest possible horizontal tracking error. Curved tonearms with the same effective length require more mass.

**B** Underside of die-cast, machine-balanced platter. Another example of care in manufacturing that doesn't usually meet the eye.

**C** Inner ring of Dual gimbal. Each pivot point is first hardened, then honed, a costly process which produces microscopically smooth surfaces. Each pivot point is matched to a ball-bearing race only 0.157 inch

in diameter. Vertical bearing friction is less than 7 milligrams.

**D** Tempered, flat-wound spring applies tracking force around vertical pivot. Tonearm mass remains balanced in all planes. Tracking force remains perpendicular to record even if turntable is not level.

**E** Anti-skating control of all Dual turntables has separate calibrations for all stylus types.

**F** All Dual tonearms are mounted in this four-point gyroscopic gimbal. Tonearm mass is centered and pivots precisely where the vertical and horizontal axes intersect.

## Nearly eight decades of precision manufacturing

The highest standards of craftsmanship have been a way of life for nearly eighty years with the Dual people of the Black Forest. Today, the third generation of the founding family heads the company, with the same dedication to care and precision that has made Dual internationally respected.

Nowhere is this more evident than in the assembly and test lines. Every fifth assembly step is immediately followed by a quality-control check. One entire quality control department is dedicated to quality assurance for the motors alone. Fully assembled Duals then undergo three more quality-control check procedures. One is for mechanical operation; another for electrical and acoustical performance. Then, just before shipment, a separate group of quality control auditors randomly select one out of ten finished and packed models and inspect the *quality* of the *quality control*.

This is why you can select even the lowest-priced Dual and be confident of getting the finest playback performance and reliability. Every Dual turntable carries a two-year limited warranty.



## Resonance... a brief explanation of the problems it causes in record playback... and the Dual solution.

Resonance refers to a specific frequency at which any mechanical system that combines mass and elasticity will vibrate. A familiar "mechanical system" is the tuning fork. When two forks tuned to the same frequency are held near each other and one is struck the other will immediately resonate. And if one fork is already in motion, that motion will increase if the other fork is struck again.

This principle has a major impact on record playback. If resonance didn't exist, the stylus would move only in response to the changing contours of the groove. But the stylus is affected by three resonating mechanical systems: 1) the stylus tip itself and its shank, 2) the stylus tip and the vinyl, and 3) the combined resonance of the tonearm/cartridge system.

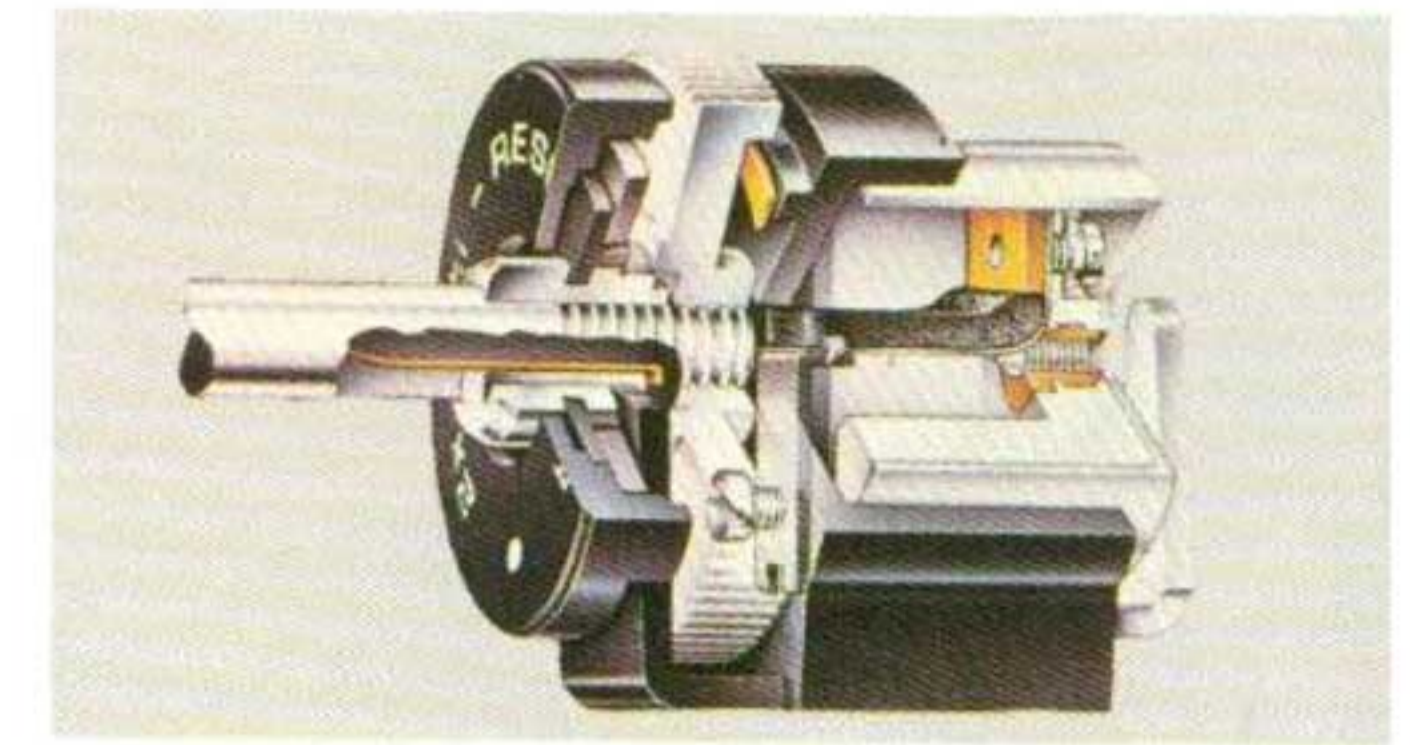
These resonant frequencies are in the subsonic range and thus inaudible in themselves. But they can have very audible effects, especially with warped records. They can cause the tonearm to vibrate and even to momentarily leave the groove. All of which results in low frequency distortion, often described by listeners as muddy bass.

Resonance cannot be eliminated, but its amplitude can be diminished by a tonearm that is properly designed and damped. This brings us to Dual's solution to the problem.

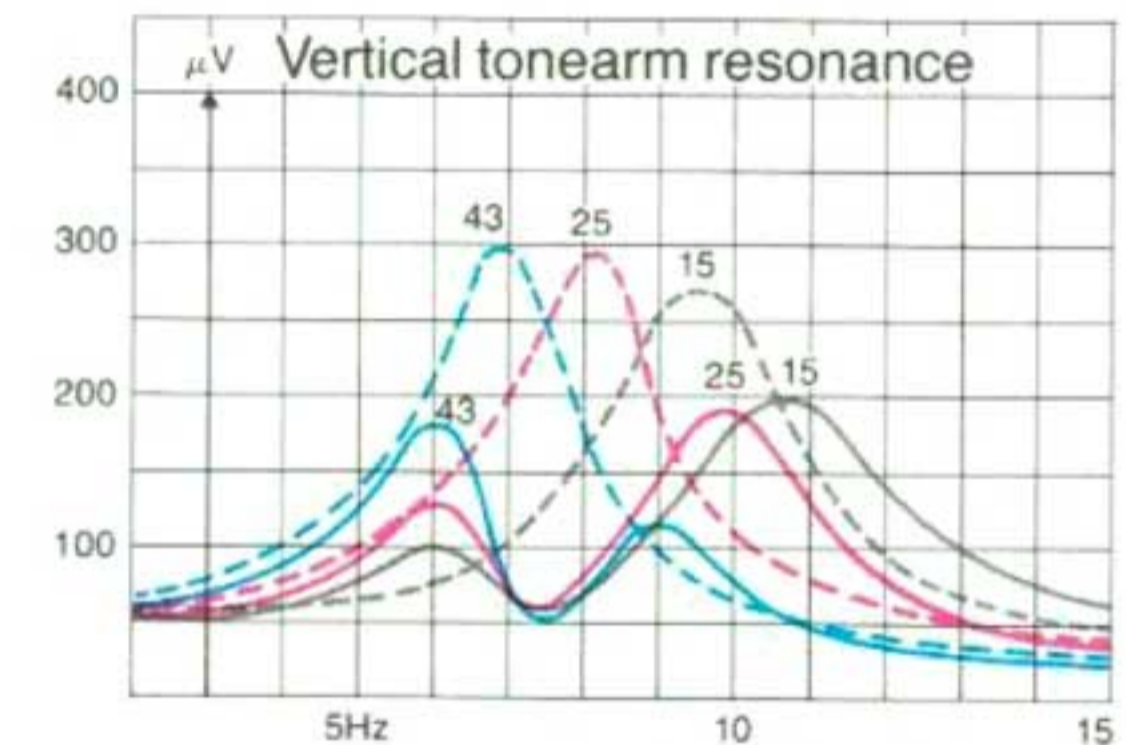
All Dual tonearms have elastically coupled counterbalances for effective damping of arm/cartridge resonances. The tonearms in all Dual direct-drive models and the 1246 belt-drive model go a significant step further. Their counterbalances contain two mechanical anti-resonance filters; one tuned to chassis resonance, the other to the tonearm/cartridge resonance range.

The benefits of the anti-resonance filters can be seen very clearly in the graphs. More important, they can be appreciated for the tightness they contribute to the deep bass.

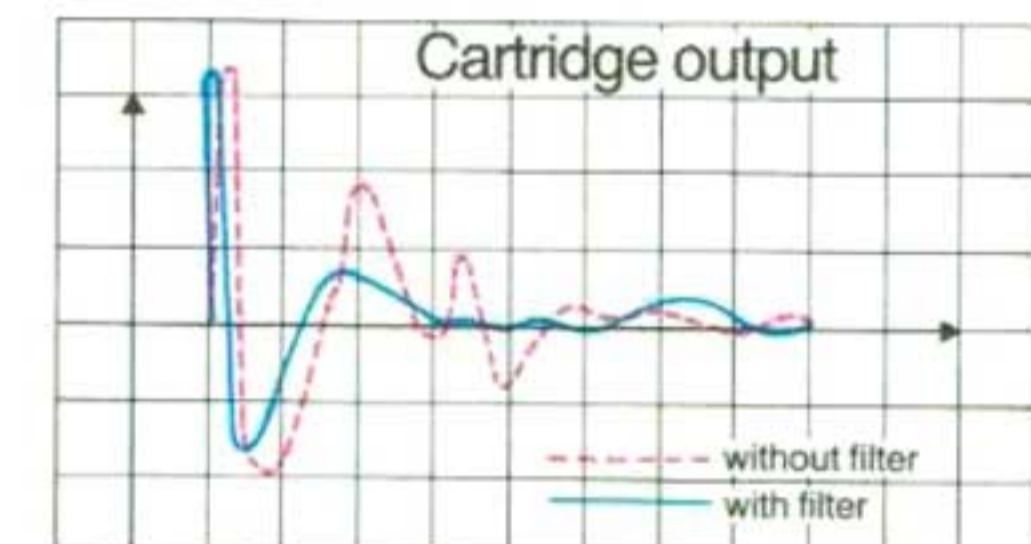
These filters are also effective in coping with the problems of low-frequency acoustic feedback and external shock and vibration.



Cutaway view of the anti-resonance counterbalance which houses two mechanical filters. One filter is tuned to attenuate resonances of cartridges with compliances ranging from 15 to  $50 \times 10^{-6}$  cm/dyne. The other filter is tuned to the resonant frequency of the chassis.



Solid lines show effectiveness of filtered counterbalance in reducing resonant amplitude of three cartridges, each weighing 4.5 grams and with compliances of 15, 25 and  $43 \times 10^{-6}$  cm/dyne. Resonant peaks are both lowered and spread, with greatest attenuation at 7.5 Hz. Broken lines show resonant amplitude with non-filtered counterbalance. 50 micrometer excitation amplitude was used in tests.



Influence of anti-resonance filters is clearly shown when tonearm is dropped on grooveless record from height of 4 mm. Solid line shows damping with filtered counterbalance, broken line with non-filtered counterbalance.

SINGLE PLAY  
DIRECT DRIVE  
FULLY AUTOMATIC / **CS721**



The CS721 represents everything that Dual's engineers have learned about turntables and may reveal what others have not.

Consider the matter of resonance, as described on the opposite page. Dual not only recognized this problem years ago, but has long provided an elegant solution with its development of anti-resonance filters.

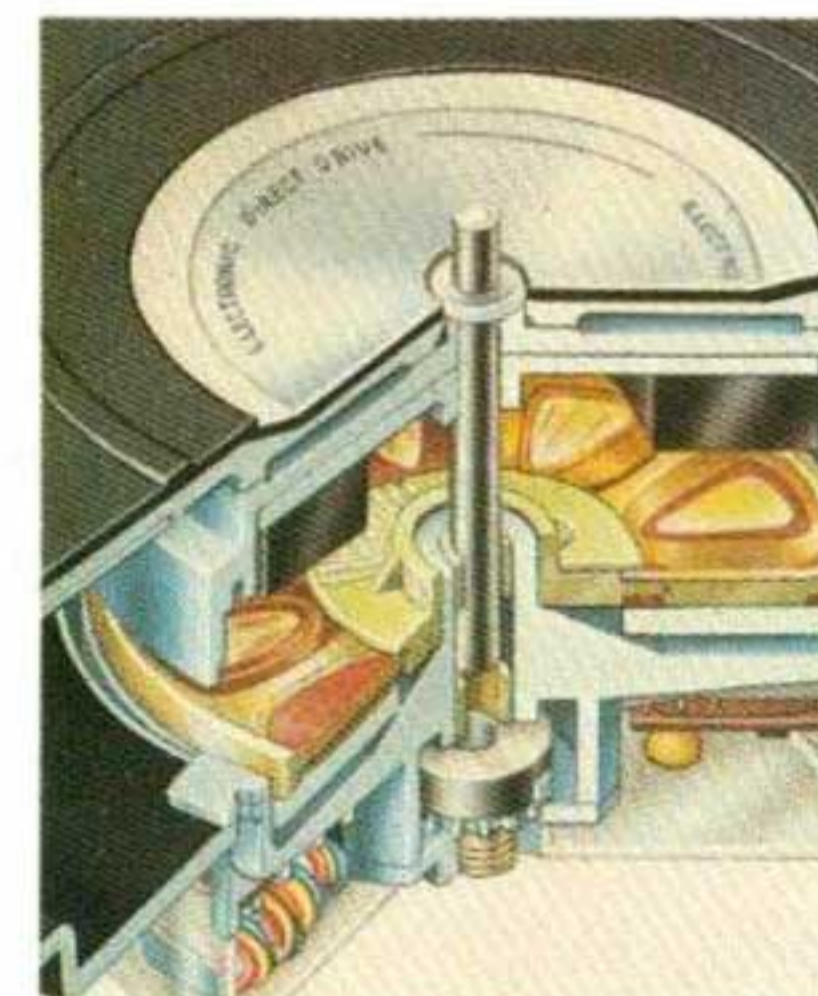
Another important refinement featured in the CS721 is Vertical Tonearm Control. This allows the tonearm to parallel the record with cartridges of any depth, without the use of spacers. Accurate vertical tracking is assured and the tonearm's effective mass is kept at a minimum.

Vertical Tonearm Control is just one of six adjustments you can make to assure perfect interface between stylus and record. Stylus overhang is adjustable for optimum horizontal tracking angle. The vernier-adjustable counterbalance lets you zero balance the

tonearm with micrometer-like precision. Stylus force is applied at the vertical pivot by a tempered, flat-wound spring. As a result, tracking force is maintained equally on each groove wall, even if the turntable is not level. Anti-skating is applied around the horizontal pivot so that it acts as a direct counterforce to the skating force. Even the cue-control system has two adjustments: for height and descent speed.

All this—plus the four-point gyroscopic gimbal suspension—establishes the CS721's tonearm as the finest of *all* tonearms.

The CS721 direct-drive system is also today's most advanced. The motor's unique field-coil design eliminates "cogging," the constant pulsing that takes place because of the gap between the magnetic poles. Dual's solution: two overlapping coil layers, each with eight coreless bifilar-wound coils, that produce a gapless rotating magnetic field.



The direct-drive motor developed by Dual for the CS721 is all-electronic, brushless DC, with Hall-effect feedback control and regulated power supply.



Two overlapping coil layers, each with eight coils achieve a gapless rotating magnetic field that eliminates the successive magnetic pulses ("cogging") typical of other direct-drive motor designs.

The CS721 also offers the total convenience of fully automatic start and stop and continuous repeat; electronic 8% pitch control; illuminated strobe; cueing control damped in both directions; dynamically-balanced platter.

Only by comparing the CS721 to the most expensive turntables on the market can you begin to appreciate its true value.

### Technical data

Operation		Cartridge wts.	4-8 g
Auto start/stop	yes	Min. tracking force	0.25 g
Man. start/stop	yes	Motor/drive system	
Tonearm design		Motor type	DC electronic
Effective length	8 3/4"	Drive system	Direct
Horiz. friction	0.015 g	Specifications	
Vert. friction	0.007 g	Rumble (wtd. DIN B)	> 72 dB
Adjustable ht.	8 mm	Wow/flutter (WRMS)	< 0.03%

SINGLE PLAY  
DIRECT DRIVE

# CS604/CS621



If you prefer a direct-drive system and you don't require the unparalleled performance that only the CS721 can offer, we believe you will find either the CS604 or CS621 your best choice. Each is a fine example of what Dual engineering and reliability is all about.

First, a word about the drive system and its newly developed high-torque DC electronic motor. The speed monitoring system employs a highly sensitive CMOS regulator circuit and integral frequency generator. This provides 120 speed-accuracy checks per revolution. The end result: wow/flutter and rumble specifications well below the limits of audibility.

Descriptions of other turntables usually concentrate on the drive system; the tonearm is treated more or less as an afterthought. But Dual's story,

as you will see throughout this brochure, is quite different. The tonearm is crucial in determining how records sound and how long they last. This is why we're very serious about tonearm design and performance. And why you will see so much attention placed on the tonearm of every Dual turntable.

Let's consider the tonearm shared by the CS604 and CS621. The straight-line tubular design provides maximum rigidity with minimum mass. And it is centered within the four-point gyroscopic gimbal so that its mass pivots at the intersection of the lateral and horizontal axes. This maintains the tonearm's dynamic balance throughout play, even if the turntable is not level.

The counterbalance houses the specially-tuned anti-resonance filters that absorb parasitic resonances originating in the tonearm/cartridge sys-

tem and chassis. This exclusive Dual feature will make a very audible difference in your system's deep bass. It will be cleaner and tighter.

The vernier-adjustable counterbalance lets you zero-balance the tonearm with great accuracy. A tempered, flat-wound spring applies tracking force directly at the vertical pivot, and this force remains perpendicular to the record even if the turntable is not level. Anti-skating is applied around the horizontal pivot so that it acts as a direct counterforce to the skating force. It is calibrated for conical, elliptical and CD-4 styli, and it adjusts automatically to the varying skating forces encountered by the tonearm as it moves across the record.

The CS604 and CS621 share other features as well. The cue-control is damped in both directions to prevent bounce. The tonearm lifts and lowers at

the same smooth rate no matter how slowly or rapidly the cue-control level is moved. Pitch control is varied electronically over an 8 percent range. And the illuminated strobe lets you see at all times whether speed has been set slow, fast, or at exactly 33 $\frac{1}{3}$  or 45 rpm. At the end of play, shut-off is automatic and complete. The tonearm lifts from the record, returns to its resting post and the motor shuts off.

Both models are complete with low-profile contemporary bases and spring-loaded dust covers that remain open in any position.

### CS604 Semi-automatic

Our lowest-priced direct-drive model. Although there are some less expensive direct-drive turntables, you won't find any with the CS604's precision engineering or dynamically-balanced gimbal-mounted tonearm.

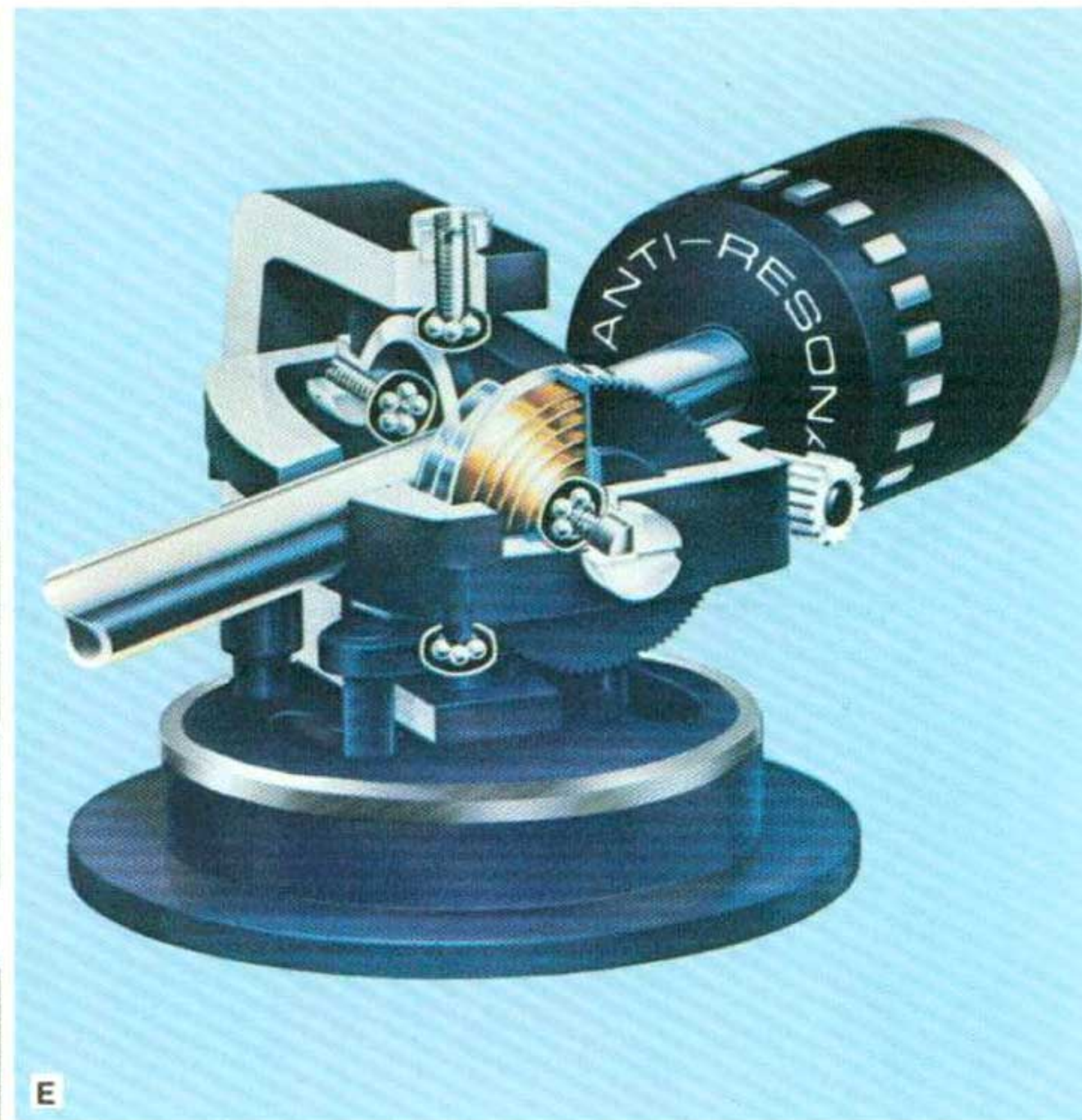
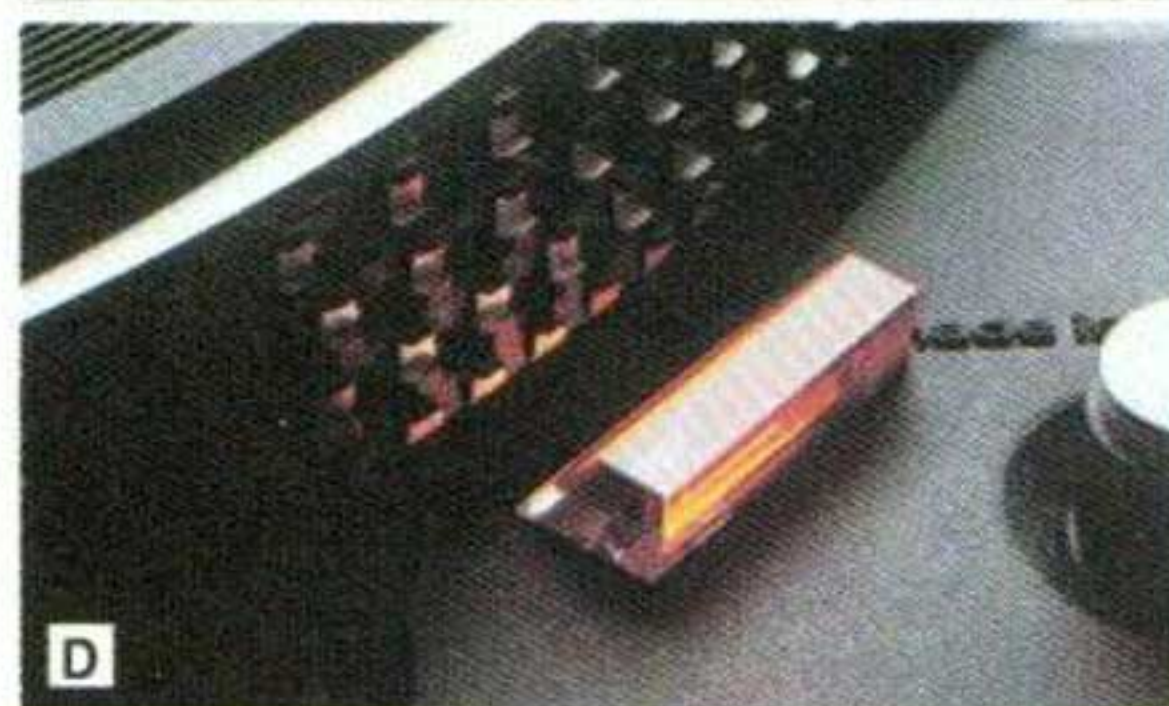
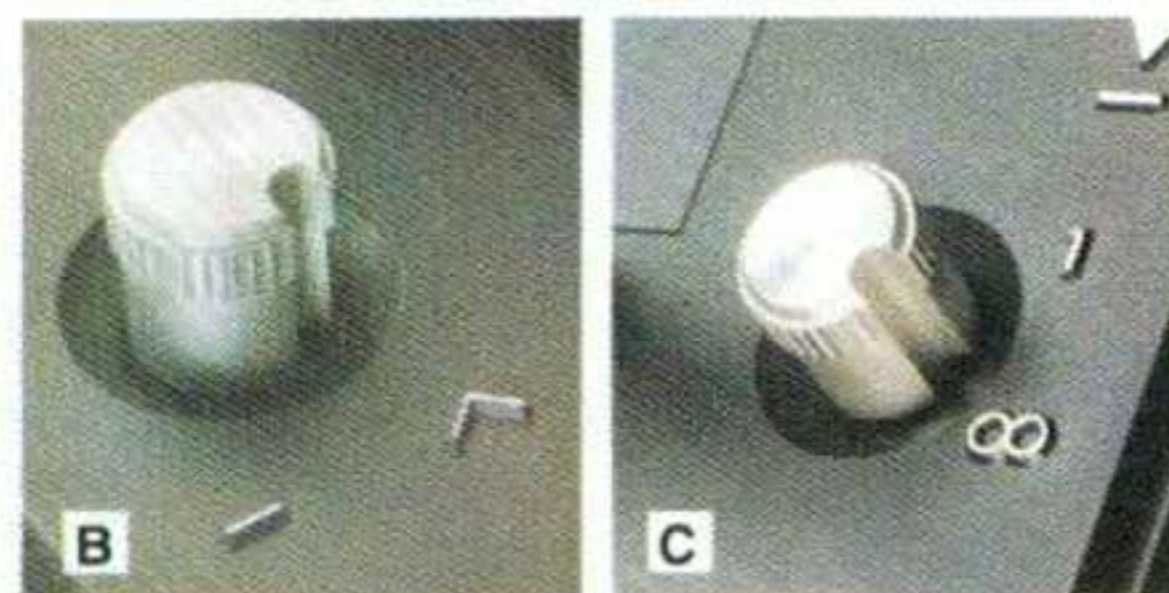
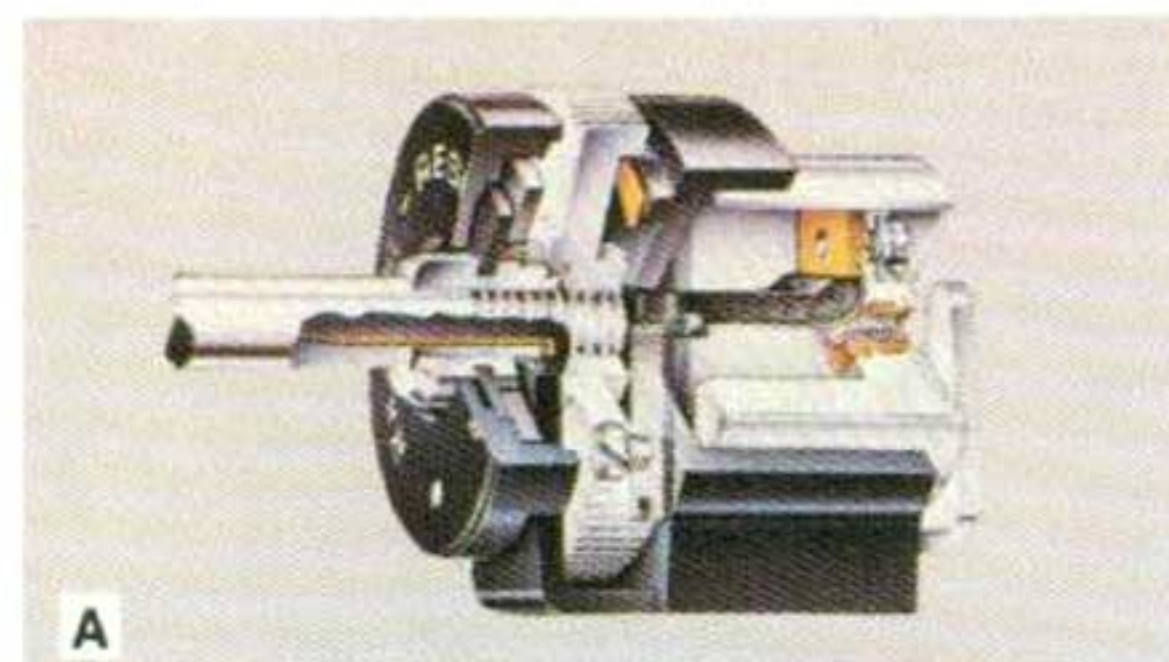
The innovative thinking of Dual engineers is typified by a unique feature of the CS604. Unlike other semi-automatic turntables, the CS604 makes it easy—even "automatic"—to locate the lead-in groove of either 12-inch or 7-inch records.

When you lift the tonearm and move it toward the record, you will feel a detent that indicates the stylus is located precisely over the 12-inch record's lead-in groove. Move the tonearm further in and you will feel a second detent for the 7-inch record. If at any time you'd rather not feel the detent you can simply switch it out.

Here's another feature you'll appreciate because it adds an important measure of safety to the stylus and record. When you've located the lead-in groove—with or without sensor—you can let go of the tonearm. It will remain safely in place until you release it with the cue-control.

### CS621 Fully automatic

The CS621 offers all the precision of the CS604 plus two additional touches of automation. To begin play you need only press the start switch. The tonearm will lift, move to the record and descend for play. If you would like the record to replay automatically, simply set the continuous repeat switch. Play will then be repeated until you stop it.



**A** Cutaway view of the anti-resonance counterbalance which houses two mechanical filters. One filter is tuned to attenuate resonances of cartridges and compliances ranging from 15 to 50 x 10<sup>-6</sup> cm/dyne. The other is tuned to the resonant frequency of the chassis.

**B** Lead-in groove-sensor detent lets you feel when stylus is positioned over 12" and 7" lead-in grooves. No hunting, no guessing. And the tonearm remains safely suspended over the record until you lower it with the cue control. (604)

**C** Continuous-repeat switch allows any record to be replayed automatically as many times as desired. (621)

**D** Illuminated strobe provides constant visual check on speed.

**E** All Dual tonearms are mounted in this four-point gyroscopic gimbal. Tonearm mass is centered and pivots precisely where the vertical and horizontal axes intersect.

Operation	CS604	CS621
Auto start/stop	stop only	yes
Man. start/stop	yes	

#### Tonearm design

Effective length	8 $\frac{3}{4}$ "
Horiz. friction	0.015 g
Vert. friction	0.007 g
Cartridge wt. range	4-8 g
Min. tracking force	0.25 g
Anti-resonance filters	yes

#### Motor/drive system

Motor type	DC electronic
Drive System	Direct

#### Specifications

Rumble (wtd. DIN B)	> 70 dB
Wow/flutter (WRMS)	< 0.03%

SINGLE PLAY  
VARIO-BELT DRIVE

# CS504/CS521



These two single-play, belt-drive turntables are excellent examples of Dual quality and value. Although moderately priced, each provides performance that will satisfy the most demanding requirements. Each also typifies Dual's rugged construction that assures many years of trouble-free operation. And each has the many design features so important for flawless record reproduction.

The gimballed tonearm is dynamically balanced and pivots at the exact point where the horizontal and vertical axes meet.

Between pivot and tonearm head, the straight-line tubular design provides maximum rigidity with low mass. The vernier-adjustable counterbalance lets you zero-balance the tonearm with utmost accuracy, so that tracking force can then be set precisely.

Tracking force is applied by a flat-wound spring coiled around the vertical pivot, and this force is maintained equally on each groove wall whether or not the turntable is level.

By contrast, tonearms which apply tracking force by shifting the counterweight forward are actually unbalanced during play and prone to mistracking. For example, on warped records the stylus tends to dig in on the uphill side of the warp and to lose contact on the way down.

The extremely low bearing-friction of all Dual tonearms contributes to their ability to maintain tracking stability under the most adverse conditions such as severe record warp. Vertical bearing friction in the CS504 and CS521 tonearms, for example, is less than 7 milligrams. This means that even the most sensitive high-performance

cartridge can easily operate at its own optimum tracking force.

These two turntables also feature Dual's unique, patented Vario-belt drive system with high-torque synchronous motor, Vario-pulley and precision-ground belt.

Speeds can be changed even while the platter is rotating, and the belt is never twisted or distorted. Speeds are adjusted by expansion and contraction of the Vario-pulley.

Every element of this drive system is designed and engineered to assure a high degree of speed accuracy and the virtual absence of drive-system vibration, the primary source of rumble.

For example, the rotor of every motor is dynamically balanced in all planes of motion. Each Vario-pulley is individually machined and examined with



precision instruments to ensure perfect balance and concentricity. The drive belt is precision-ground to close tolerances in order to eliminate weak spots that shorten belt life.

The materials selected for these turntables, the close tolerances in the fabricating of each part, the craftsmanship employed in every manufacturing process and the constant quality control checks during assembly—all contribute to the many trouble-free years you can expect to enjoy these fine turntables.

They are complete with low-profile contemporary bases and spring-loaded dust covers that remain open in any position.

### CS504 Semi-automatic

Here is Dual precision engineering in our lowest-priced single-play turntable.

The operation of the CS504 tonearm has been carefully thought out to assure exceptional protection to the stylus and records.

To begin play, you can confidently lift the tonearm from its resting post, move it to the record and then release it. The tonearm won't drop to the record, but will remain suspended safely over it until you flick the cue-control lever.

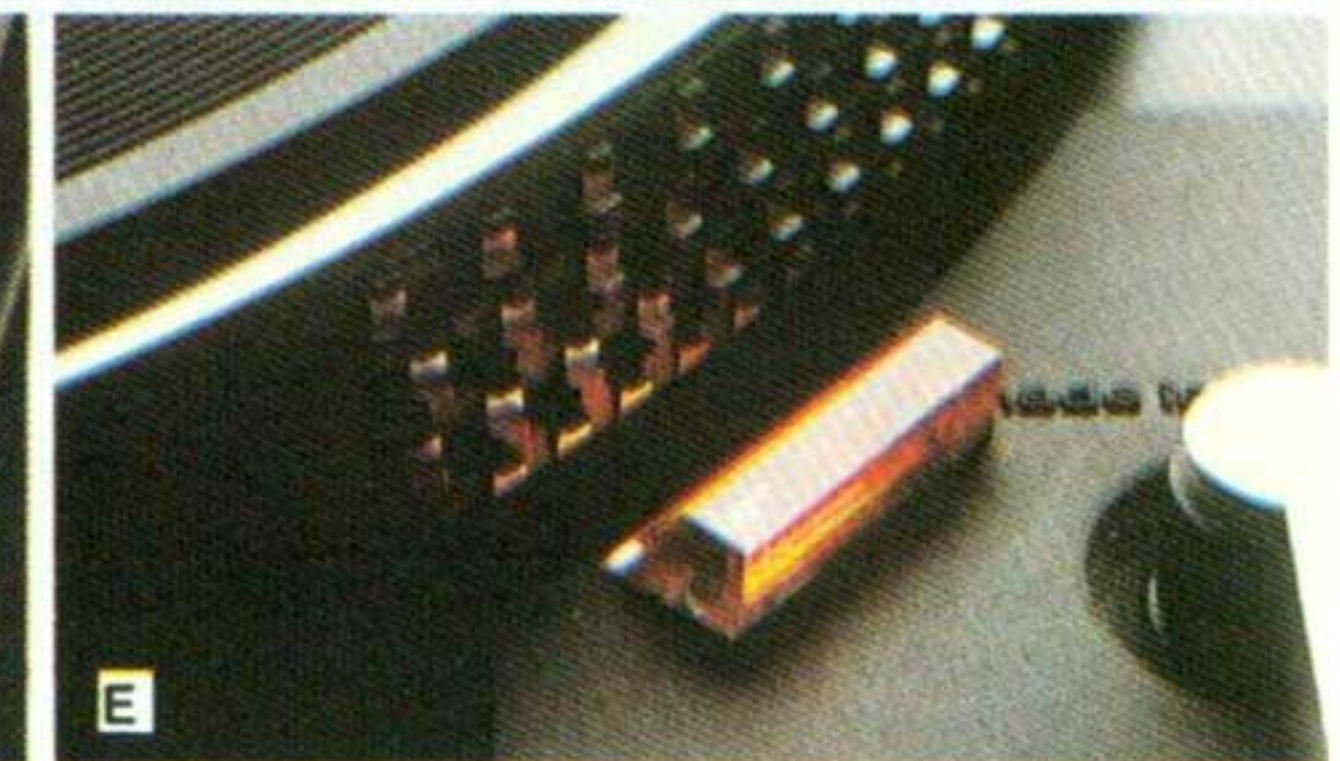
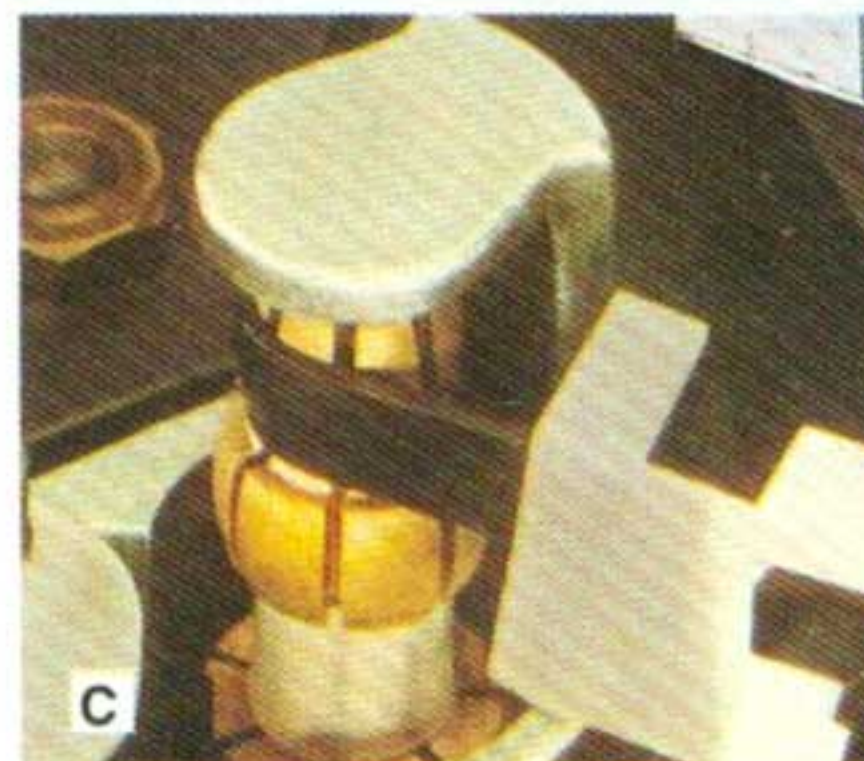
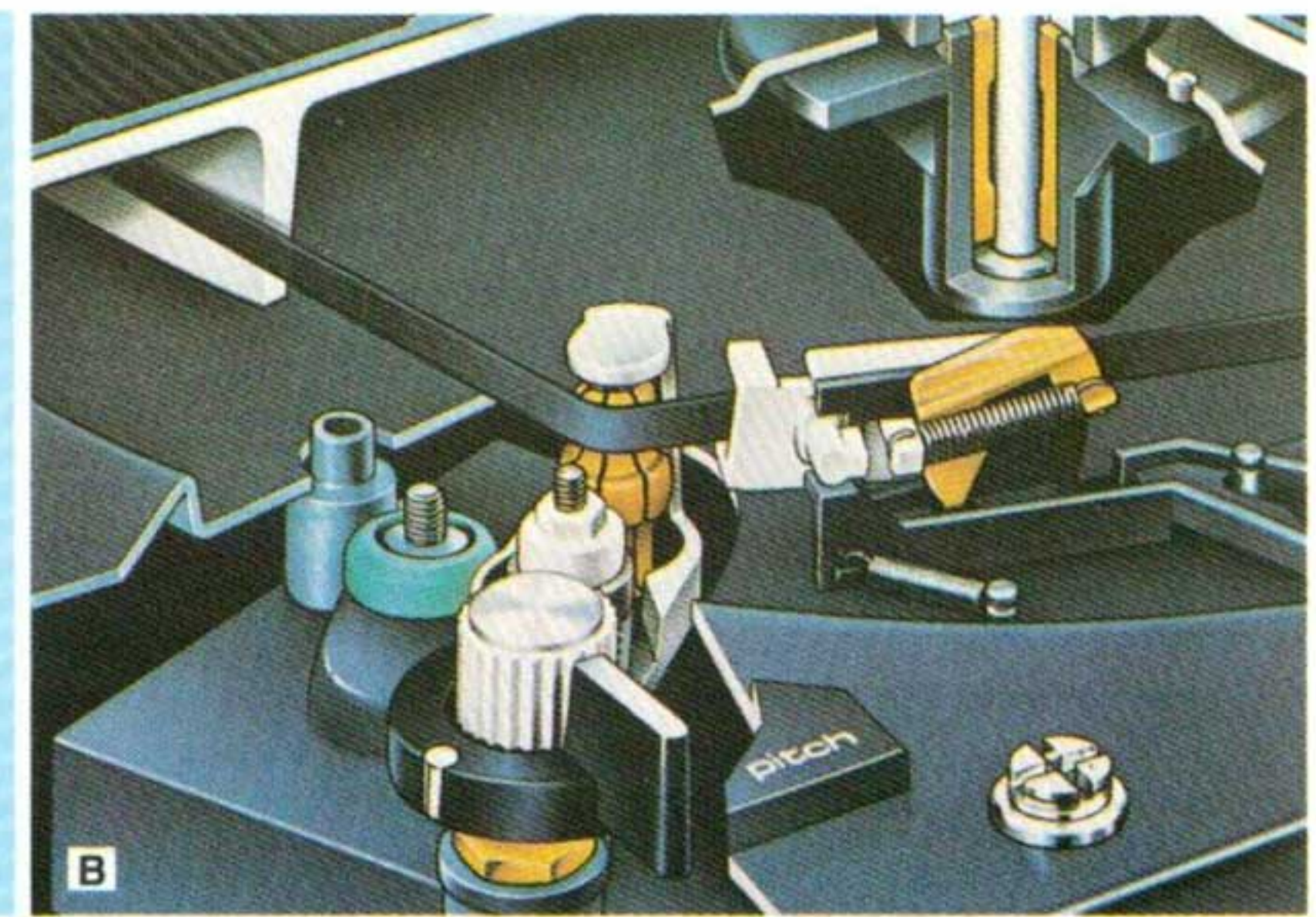
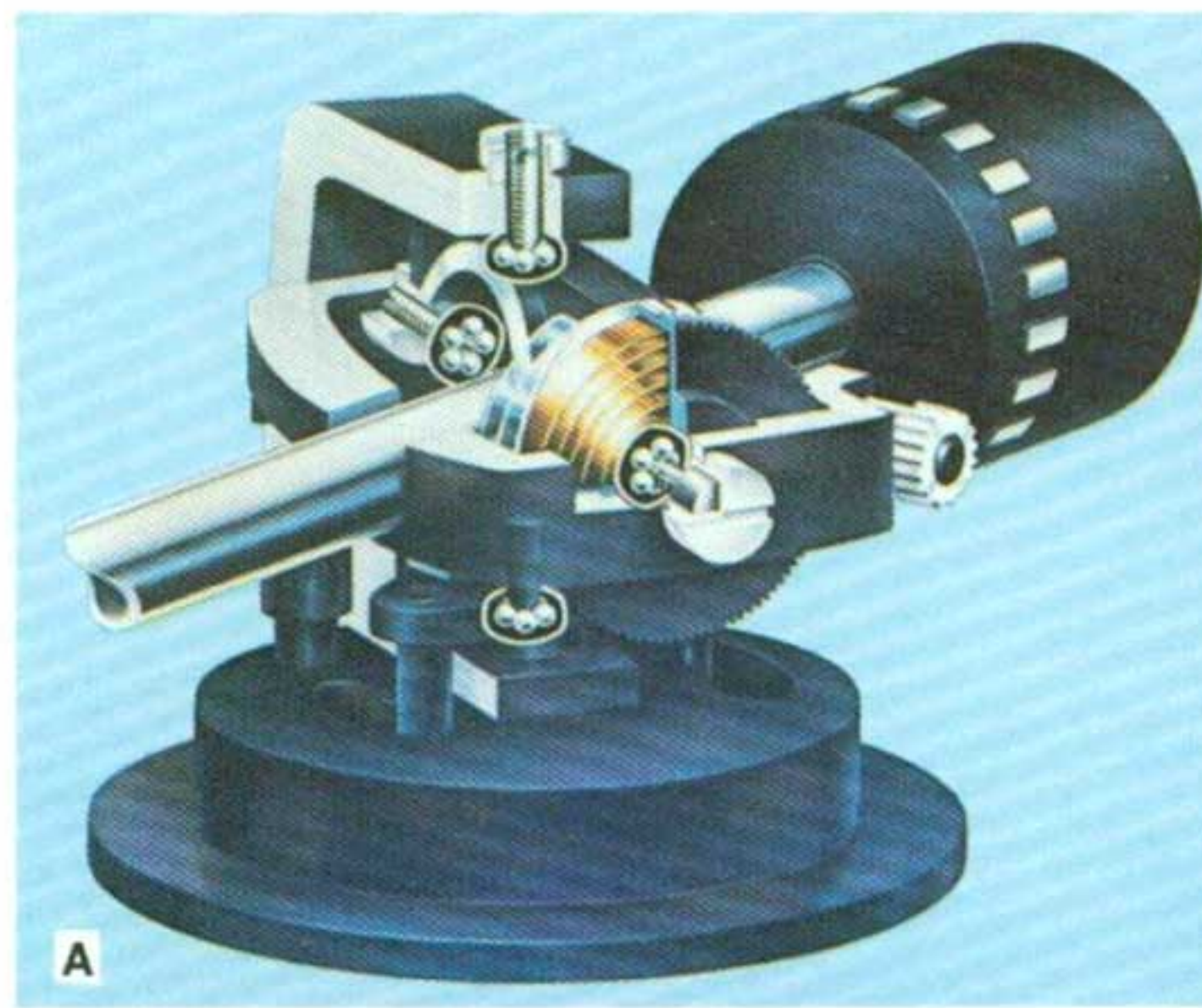
And you don't have to remember to set the cue-control in the up position—that's done for you at the end of each play when the tonearm returns to its resting post and the motor shuts off. Automatically.

### CS521 Fully-automatic

If you prefer the total convenience of fully-automatic start, the CS521 will be your choice of the two models. It also offers the added convenience of continuous repeat at any time by merely presetting the switch provided.

Another feature of the CS521 is its illuminated strobe which provides a constant visual check on speed accuracy.

Both models offer a full measure of Dual's quality, reliability, performance and value.



**A** All Dual tonearms are mounted in this four-point gyroscopic gimbal. Tonearm mass is centered and pivots precisely where the vertical and horizontal axes intersect.

**B** Every element of the Vario-belt drive system accounts for accuracy and durability. Speeds are adjusted by simple expansion and contraction of Vario-pulley. Belt is precision-ground to eliminate weak spots that can shorten life.

**C** Vario-pulley is individually machined from phosphor-bronze for perfect concentricity and balance.

**D** Continuous-repeat switch allows any record to be replayed automatically as many times as desired. (521)

**E** Illuminated strobe provides constant visual check on speed. (521)

Operation	CS504	CS521
Auto start/stop	stop only	yes
Man. start/stop	yes	

#### Tonearm design

Effective length	8¾"
Horiz. friction	0.015 g
Vert. friction	0.007 g
Cartridge wt. range	4-8 g
Min. tracking force	0.25 g

#### Motor/drive system

Motor type	Hi-torque 8-pole synchronous
Drive system	Vario-belt

#### Specifications

Rumble (wtd. DIN B)	>68 dB
Wow/flutter (WRMS)	<0.04%

MULTIPLE-PLAY  
VARIO-BELT DRIVE  
FULLY AUTOMATIC

# CS1237/CS1242/CS1246



## **Involvement or convenience: it's simply a matter of choice.**

Perhaps the first decision you will make about your next turntable is how much automation you would like and whether it should be single-play or multiple-play.

Whatever your choice, there need be no compromise in quality and performance. For years the most serious music lovers, including audio editors and record reviewers, have enjoyed the convenience of multiple-play whenever the mood or occasion was at hand. Professionals like them are well aware that the way records are changed on a Dual assures no loss whatever in record performance or longevity.

For example, records stacked on Dual's multiple-play spindle are, in effect, given "single-

play" treatment. Before the bottom record is released to the platter, it is gently lowered away from those in the stack above. This is Dual's famous "elevator-action" system. And since all records are made with raised edges and centers, the recorded surfaces never touch.

Dual's patented single-play spindle is designed to function as an integral part of the platter so that it rotates with the record. This contributes importantly to the low wow and flutter specifications of these Dual turntables.

Another touch of Dual precision is adjustable vertical tracking angle. This enables you to set the vertical tracking angle at its optimum position for single-play and multiple-play.

Throughout play, the tonearm is completely disengaged from the automatic cycling mechanism. It

can be lifted from the record or placed on it at any time, with or without the cue-control.

In short, your only question really is how much uninterrupted music you wish to hear at any given time.

Like all Dual turntables, these models are complete with low-profile contemporary bases and spring-loaded dust covers that remain open in any position.

## **CS1237**

This is our lowest-priced turntable, yet we confidently invite you to compare it with anyone else's highest-priced turntable.

You're not likely to find a tonearm that seriously matches the CS1237's with its four-point gyroscopic gimbal suspension and all the other design

features it shares with other Dual tonearms.

You might, in fact, compare the CS1237 tonearm with one of the more exotic separates. You'll find they cost as much as the entire CS1237.

Among the CS1237's many features are the following: The cueing system is damped in both directions to prevent bounce. Pitch-control is variable over a 6 percent range. The strobe platter is die-cast aluminum and machine-balanced. Vertical-bearing friction is astonishingly low—less than 8 milligrams. It can track as low as 0.25 gram—which means it will allow any cartridge to operate at its own optimum tracking force.

And if you compare the CS1237 with the higher-priced Dual turntables you'll find they have additional refinements, but no difference in design integrity or manufacturing quality.

The specifications, performance and reliability of this extraordinary turntable make it the best value that Dual has ever offered.

## CS1242

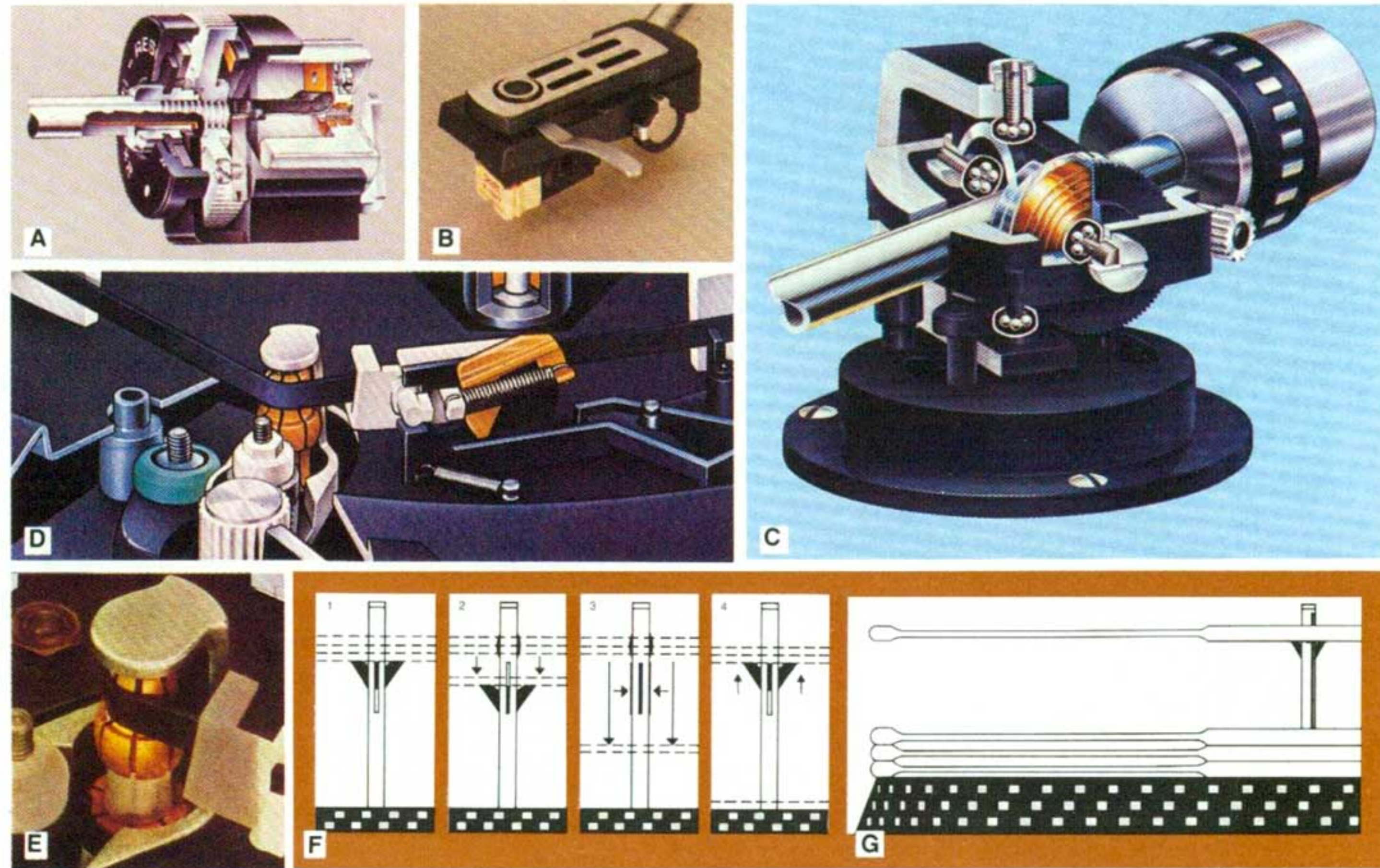
This is a larger version of the CS1237. Its tonearm is 1/2" longer, which brings horizontal tracking to its optimum. The platter is 12 inches in diameter, contributing another measure of flywheel action which smooths out even the most minute fluctuations in motor speed. It is a no-compromise, high-performance multiple-play turntable at a very affordable price.

## CS1246

Our finest multiple-play model has all the refinements of the CS1237 and CS1242—and more. The CS1246 features Dual's exclusive anti-resonance filters which damp parasitic resonances of the tonearm/cartridge system.

For a touch of added convenience, it has a continuous-repeat switch that makes it possible to replay any record as many times as desired—automatically. The illuminated strobe provides a constant visual check on platter speed.

All this, plus its extraordinary specifications, makes the CS1246 the best multiple-play turntable available.



**A** Anti-resonance filters are a feature of the CS1246.

**B** Stylus angle can be set for perfect vertical tracking in single-play and multiple-play.

**C** All Dual tonearms are mounted in this four-point gyroscopic gimbal. Tonearm mass is centered and pivots precisely where the vertical and horizontal axes intersect.

**D** Every element of the Vario-belt drive system accounts for accuracy and durability. Speeds are adjusted by simple expansion and contraction of the Vario-pulley. Belt is precision ground to eliminate weak spots that can shorten life.

**E** Vario-pulley is individually machined from phosphor-bronze for perfect concentricity and balance.

**F** Dual's exclusive elevator-action spindle. 1) Records are supported entirely by platform. 2) Bottom record is lowered away from stack above. 3) Platform retracts, gently releasing record to platter. 4) Platform rises to engage stack.

**G** Record-groove surfaces never touch when stacked. Raised edges and centers leave air cushion between grooved areas.

Operation	CS1237	CS1242	CS1246
Auto start stop		yes	
Man start stop		yes	

### Tonearm design

Effective length	8 1/4"	8 3/4"
Horiz. friction	0.016 g	0.015 g
Vert. friction	0.008 g	0.007 g
Adjust. vert. tracking		yes
Cartridge wt. range		4-8 g
Min. tracking force		0.25 g
Anti-resonance filters	no	yes

### Motor/drive system

Motor type	Hi-torque, 8-pole synchronous
Drive system	Vario-belt

### Specifications

Rumble (wtd. DIN B)	>68 dB
Wow/flutter (WRMS)	<0.04%

## Quick comparison of features and specifications

	Single-Play/Multiple-Play Turntables			Single-Play Turntables				
Operation	CS1237	CS1242	CS1246	CS504	CS521	CS604	CS621	CS721
Manual start & stop	all models (604 also has lead-in groove sensor)							
Automatic start & stop		yes		stop only	yes	stop only	yes	yes
Rotating single-play spindle		yes		not applicable				
Multi-play (6 records)		yes		not applicable				
Damped cue-control	all models							
Pitch-control range (%)	6			8				
<b>Tonearm design</b>								
Vernier-adjust counterbalance	all models							
Four-point gimbal	all models							
Effective length (inches)	8 $\frac{1}{4}$				8 $\frac{3}{4}$			
Horiz. friction (grams)	0.016				0.015			
Vert. friction (grams)	0.008				0.007			
Adjustable vertical tracking	yes			no				8mm
Cartridge wt. range (grams)	4-8							
Min. tracking force (grams)	0.25							
Low cap. tonearm leads	yes							
Anti-skating system	calibrated for all stylus types							
Anti-resonance filters	no		yes	no		yes		
<b>Motor and drive system</b>								
Motor type	high torque, 8 pole synchronous					DC electronic		
Drive system	Vario-belt drive					direct		
Strobe platter (machine-balanced)	10 $\frac{5}{8}$ "				12"			
<b>Specifications</b>								
Rumble (wtd. DIN B)	>68 dB			>70 dB		>72 dB		
Wow/flutter (WRMS)	< 0.04%			< 0.03%				
<b>Dimensions: bases &amp; covers</b>								
Chassis (inches)	13 x 10.75	14.75 x 12						
Base (inches)	16 $\frac{1}{2}$ x14 $\frac{1}{2}$ x3 $\frac{1}{2}$							
Height with cover (inches)	7 $\frac{1}{4}$			5 $\frac{13}{16}$				

All turntables factory-mounted on base, cover included, all in single carton. Two year limited warranty.



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