Dynavector

Dynavector Systems U.S.A.

Moving Coil Cartridge Test Reports and Reviews

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These are the most current reviews of the latest generation of Dynavector Moving Coil Cartridges. Nothing has been edited out or added and all reviews appear in their original format. For further information, we invite you to write to Dynavector Systems USA, 30708 Lakefront Drive, Agoura, CA 91301 • (213)991-5010.

May 1980 AUDIO Vol. 64, No. 5

Behind the scenes

Bert Whyte

Cartridge and Arm Wrestling

There are those who will tell you that the analog disc and the phonograph cartridge and arm are in the twilight of their long history, that there is little technological progress that can be made or is worth bothering about before this music reproduction system sinks into oblivion. It has been said many times before. But when stereo tape threatened their existence, we learned how to put two channels of sound in the grooves. The quadraphonic sound era started with tape, but even with that, we figured out how to put four channels of sound in the groove. This time, maybe digital audio will indeed knock the tough old analog disc out of the ring. Perhaps it is inevitable, but there are some pretty sharp marketing people who think the ultimate demise is still a long way off and that further refinements can be made in the existing technology.

For all his genial exterior, Dave Fletcher of Sumiko, importer of the Supex moving-coil cartridges and other assorted phono gear, is a very savvy and canny guy. He's figuring that his segment of the high-end phono market is still very much interested in upgrading the quality of its phono reproduction, hence his marketing handmade Koetsu moving-coil cartridges, at $1,000 each. Similarly, he is introducing what will be known as The Arm, a high-technology design using superprecision bearings expected to sell for a cool $1,100! You don't think audiophiles will pay these prices? With inflation whittling the dollar's value down to 48¢, it's possible.

In the same rarefied area, Dynavector has recently introduced what they call their DV-Karat and DV-Karat Diamond moving-coil cartridges. There is much new technology here, including the fact that the *cantilever* on the DV-Karat is made from solid synthetic ruby, while the DV-Karat Diamond, rather incredibly, has a *solid diamond* cantilever. Moreover, the cantilevers are very short, only 2.5 mm rather than the usual 6 or 7 mm. I had the pleasure of meeting Dr. Tominari, President of Dynavector and inventor of these cartridges. He was Prof. of Mechanical Engineering at Tokyo University, speaks fluent English, and we had some interesting discussions about these radical cartridges. In order to mount the diamond stylus in the cantilever, a special new type of laser "drilled" the very tiny hole. The cantilevers themselves are specially ground and polished from blocks of ruby, sapphire, or diamond. The coils are very tiny and wound with silver wire, while the magnet is of the new samarium cobalt rare-earth type. Unlike most moving-coil cartridges, these have relatively high compliance and are meant to be used in low-mass arms. Tracking force is also low, 1.5 grams optimum. Dr. Tominari pointed out that because the cantilever is so short and Karat Diamond is composed of the hardest material known, wave propagation is very fast.

I have been using the diamond cantilever cartridge recently, mounted in the Technics EPA-500 arm. The total weight of the Diamond Karat is but 5.3 grams and, mounted in this Technics arm tube specifically designed for the compliance range up to 15 x 10^{-6} cm/dyn (which just happens to correspond with the cartridge compliance), arm/cartridge resonance interaction is minimal. As you might expect, tracking is superb. The sound is exemplary in every aspect and is the best I have heard from a moving-coil cartridge. The greatest point of superiority, most probably due to the short diamond cantilever and the fast wave propagation pointed out by Dr. Tominari, is the blazing fast transient response. Playing a direct-to-disc recording like the M & K release of Ed Graham's **Hot Stix** is a revelation. With cartridges like this and other ongoing developments, there is bound to be life in the old discs yet!

the absolute sound™

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The Dynavector Karats: Ruby and Diamond

And now we come to the cartridges at the state-of-the-art. The first of the two designs that we shall consider are the Dynavector Karats, distinguishable from each other by the materials used for their stylus cantilevers—one cartridge has a cantilever fashioned out of ruby ($275); the other, a cantilever fashioned of diamond ($1,000). The cantilevers on both cartridges are extremely short, only 2.5 millimeters in length. The justification for the design will come as no surprise to cartridge *aficionados*, who will be familiar with the theoretical arguments in favor of a cantilever of exceedingly rigid structure and of extremely short length, namely, that such could lead to more accurate transduction of the minute waveforms engraved in the vinyl. Further, the Dynavectors—according to their designer, Dr. Noboro Tominari—require no damping because of the new cantilever design and, hence, there is no damping in the two cartridges. Damping systems do tend to stiffen and/or deteriorate with age; further, damping plays havoc with a cartridge's low-frequency resonances and, in the opinion of some experts, compromises the cartridge's ability to retrieve extremely minute signals. [Dynavector's thinking here is not all that dissimilar from Decca-London's and from Joe Grado's in the design of the Signature series.] DJM's arm/cartridge resonance assessments, interestingly, show us that the Dynavectors do *not* oscillate wildly at the resonant frequency (as did the Signature III, which almost left the grooves of the Ortofon test record), but since the cartridges behave, at resonance, in average fashion neither being the worse or the best in regard to oscillation at the low resonant point.

The reason for this rather lengthy introduction is that the Dynavector Karat/Ruby not only retrieves more detail from records than any cartridge in this test, but does so in dramatic, decisive and unmistakeable fashion. (The cartridge must be carefully installed, particularly with regard to VTA, which we found to be ideal at a spot about two millimeters below the manufacturer's recommended position.) The problem we reviewers face in describing what the Ruby does so convincingly is similar to the problem of the boy who cried wolf: We have, over the years, too often praised equipment for letting us hear hitherto unheard nuances on our discs. In the case of the Dynavector Ruby, however, the more complex the recorded material, the more revealing the cartridge. In the M&K direct-to-disc recording of the Roger Wagner Chorale, *Encore*—a disc we have heard hundreds of times—it is now possible to hear rowdyisms from the audience, someone muttering (apparently a member of the recording team), the recording team talking between selections, and a host of strange noises from the stage (things dropped, and the like). It is as if the cartridge penetrates down into the mire of unresolved detail in this live recording and illuminates several levels of barely audible sounds that had been lost in the jumble.

With this great resolving, even illuminating, capacity, there is an attendant exactitude of imaging specificity that can become quite spooky. On the *Encore* disc, for example, the Chorale (before) sounded somewhat disembodied, as choruses generally do in disc reproduction. No more. When one hears a voice emerge from a specific location, it is now clear that there is a person attached to that voice. The voices not only stay put but they have that elusive quality that, for want of a better word, I'd call "body," i.e., as if the voice is being reproduced in three-dimensional space with height, width and depth. It is far, far easier to follow the line of an individual choirster throughout any musical selection than it has been with any other cartridge. The effect is much closer to that of having the group standing in the room behind the speakers.

Before we proceed, I should note that these virtues were evident only with Dynavector's own transformer—an all silver wire model—the DV/6A.

And we should note that the virtues of the Dynavector Ruby were not evident in the Dynavector Diamond, despite its far higher cost. The Diamond was, surprisingly, not sonically superior to the Ruby either, but rather complementary, that is, it did some things well which the Ruby did not do, and vice versa. The Dynavector transformer did occasion some loss of definition at both frequency extremes, but these were not adjudged serious failings.

From Crystal Clear's *Sonic Fireworks* to the EMI recording of Saint-Saens' *Carnival of the Animals* (EMI ASD 299), the Ruby demonstrated an ability to place an image in a near-perfect three-dimensional field (nearly ideal in regard to both height and width) and keep it solidly located. Orchestral inner voices, so often unheard before, were rendered beautifully—the effect was rather like being able to hear deeper into the recording. Both the midbass and highs were harmonically accurate. Only the Mark Levinson cartridge reproduced as well the nuances of acoustic guitars and the banjo on *The Weavers at Carnegie Hall*, and no cartridge excelled the Ruby in the reproduction of the human voice. The cartridge's perspective is just about ideal and it fails to demonstrate an overall "character" of its own.

But, for all of the Ruby's virtues—and those virtues do place it in the vanguard—there is something about it that I consider troubling. Something is not quite "right," although it is far from easy to specify just *what* has gone wrong. For one thing, it doesn't have the wide range of dynamic contrasts the Koetsu makes manifest. (Its output is extremely low.) And for all its ability to retrieve low-level detail from the grunge, it is surprisingly weak in the category of recreating hall ambience (Vide, the Weavers and Carnegie Hall). There is a slightly recessive quality in the frequency range at which specific auditorium ambiences are most easily identified (approximately 4 to 8 kHz). This recessive quality softens and glamourizes some very bright discs (the JVC *Audio Symphony*, for instance) and, to a large extent, interferes with the music's harmonic structure. The cartridge does not sound right tonally in the way that the Mark Levinson cartridge always does. This peculiar upper midrange to lower high frequency anomaly does not sound so much like a dip in frequency response as it sounds like a "phase" problem (although the cartridge itself is not out-of-phase). I cannot explain the next contradiction either, but here it is: Certain vocal sibilants are somewhat "smeared," thus interfering with one's perception of intelligibility (Vide, the "Danny Boy" cut on *Encore*, a test if there ever was one of a cartridge's ability to resolve and maintain accurate voice harmonics). One could only suggest that despite the Ruby's unprecedented ability to retrieve material from the disc, it also interferes with the harmonic accuracy of what it is retrieving.

Now these criticisms are, admittedly, highly refined and akin to nitpicking, since the Ruby would not be less than a "good" cartridge even without its remarkable strengths. But it is, nevertheless, somewhat frustrating to get a cartridge with even greater information-retrieval characteristics than the Prestige, without its harmonic accuracy. Since the Ruby tracks very well, even at 1.5 grams—well below the maximum allowable tracking force—I could see it as the cartridge of choice for those record manufacturers and producers who want to know what they have on the grooves. Listeners who value imaging exactness and hearing all there is to hear on the record—even with unequal resolution of all the frequencies—will be astounded. So will serious students of cartridges. I think it a certainty that the staff will have some comments on the Ruby in an upcoming issue. And, perhaps, so will I.

JULY, 1980 Audio

Evaluation Equipment and Records

The following equipment and specific records listed below, as well as many discs listed in past reports, were utilized in the listening evaluation of the Dynavector DV-Karat Diamond phono cartridge: Technics SP-10 MkII turntable, Technics EPA-100 tonearm, Nikko Beta 1 preamplifier, Crown IC-150A preamplifier, Audionics of Oregon Space and Image Composer, Audire DM-700 power amplifier, Audio Innovations LED 2C Dynamic Power Display, and a pair of stacked Duntech DL-15B speakers in each channel. Each pair of speakers was connected to the Audire DM-700 power amplifier with Monster Cable. The turntable was equipped with the Hiraoka Disk-SE22 turntable mat.

The following records were among those used to aurally assess the performance of the Dynavector DV-Karat Diamond phono cartridge:

Stereo

The Manhattan Transfer-Live— Mobile Fidelity Sound Lab MFSL 1-022.

The Crusaders, *Chain Reaction*—Mobile Fidelity Sound Lab MFSL 1-010.

Mahler: *Symphony No. 4,* Karajan, Berliner Philharmoniker — Deutsche Grammophone 2531 205.

Virtuose Kammermusik, Wolfgang Schulz, Querflote—Telefunken 6.42364AP.

Bach: *Die Dreifaltigkeitsorgel zu Ottoburen,* Ton Koopman (organist)—Telefunken 6.35375DX.

Indianapolis Symphony Orchestra, *Fifty Colorful Years*— RCA DPL2-0432.

Parnassus Ensemble— Accent Acc 7806.

Kabi Laretei (piano), *Close-Ups, The Film Music of Ingmar Bergman* — Proprious Prop 7829.

Mozart: *Requiem,* The Stockholm St. Jacob Choir, Stefan Skold—Proprius Prop 7815.

Pavarotti, *O Sole Mio, Favorite Neapolitan Songs* — London OS 26560.

Mendelssohn: *Symphonien Nos. 4 & 5,* Bernstein, Israel Philharmonic Orchestra—Deutsche Grammophon 2531 097.

Handel: *Organ Concertos,* George Malcolm (organ)—Argo ZRG 888.

Direct to Disc

Space Organ, Jonas Nordwall (organ)—Crystal Clear Records CCS 6003.

Laurindo Almeida, *New Directions*— Crystal Clear Records CCS 8007.

Trackin,' Lew Tabackin Quartet—RCA (Japan) RDC-3.

Vivaldi: *Concerto in E, Op. 8, No. 1 "Spring"/The Beatles Medley,* M. Hayakawa, Vivaldi Ensemble, Tokyo—RCA (Japan) RDC-2.

Montgomery and Lytle, *Ragtime Piano for Four Hands*— Sonic Arts Laboratory Series No. 6.

Woofers, Tweeters and All That Jazz (Binaural) — Sonic Arts Lab. Series No. 7.

Beethoven: *Piano Sonata No. 23 in F Minor, Op. 57 "Appassionata,"* I. Kamiya, pianist, playing the Bosendorfer Imperial piano — RCA (Japan) RDC-4.

Vivaldi: *Four Seasons,* M. Hayakawa, Vivaldi Ensemble, Tokyo — RCA (Japan) RDCE-501-2.

New Baby, Randi and Quest — Sheffield Lab. 12.

Introducing Bosendorfer (Imperial) and Kimball (Professional): The State of the Art in Recording Pianos — Kimball Piano & Organ Co., Jasper, IN 47546.

Pulse Code Modulation (PCM) Digital to Analog

Ravel: *Daphnis et Chloe,* Mata, Dallas Symphony Orchestra and Chorus — RCA ARC1-3458.

Stravinsky: *The Firebird: Suite (1919); Symphony in Three Movements,* Mata, Dallas Symphony Orchestra—RCA ARC1-3459.

Digital Spectacular, Stanley Black—His Piano and Orchestra—London LDP 30001.

Mozart: *Symphony No. 38 in D Major ("Prague") and Symphony No. 36 in C Major ("Linz"),* Suitner, NHK Symphony Orchestra—Denon OX-7156-ND.

Famous Classical Music on Screen—Denon OX-7146-ND.

Beloved Screen Music— Denon SX-7008.

Screen Music for Lovers— Denon SX-7007.

Schubert: *Sonata in A Minor for Arpeggione and Piano; Vieuxtemp: Sonata in B-flat Major for Viola and Piano*— Denon OX-7154-ND.

Proprius and Accent records are distributed by Audio Source, 1185 Chess Dr., Suite G. Foster City, Cal. 94404.

Sonic Arts Corp. and RCA (Japan) direct-to-disc records are distributed by Audio-Technica U.S., 33 Shiawassee Ave., Fairlawn, Ohio 44313.

Denon records are distributed by American Audioport, 1407 North Providence Rd., Columbia, Mo. 65201.

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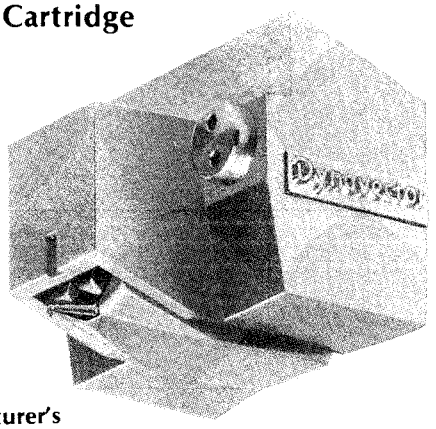
Dynavector DV/Karat Diamond Moving-Coil Phono Cartridge



Manufacturer's Specifications
Output Voltage: 0.2 mV at 1 kHz, 5 cm/S.
Frequency Response: 20 to 70,000 Hz.
Separation: 20 dB at 1 kHz.
Channel Balance: 1 dB at 1 kHz.
Stylus: Line Contact (0.1 x 0.1 mm), naked diamond.
Cantilever: 0.4 x 0.4 x 2.5 mm oblique-cut, solid diamond.
Compliance: 15 x 10^{-6} cm/dyne.
Impedance: D.c. resistance, 30 ohms; inductance, 80 μH.
Tracking Force: 1.5 (+1.0, -0.3) grams.
Vertical Tracking Angle: 20 degrees.
Weight: 5.3 grams.
Price: $1,000.00.

DV-6A Silver Wire Transformer

Input Impedance: 3 to 40 ohms.
Output Impedance: 9,000 ohms.
Load Resistance: 30 to 47 kilohms.
Step-Up Ratio: 1:13.
Frequency Response: 10 to 70,000 Hz, +0, -1 dB.
Crosstalk: Lower than 75 dB.
Maximum Input: 300 mV (50 Hz).
Distortion: Less than 0.01 percent at 5 mV input.
Switchable Connections: Balanced or unbalanced, pass or 3 to 40 ohm input.
Dimensions: 2¼ in. (5.2 cm) W x 7⅝ in. (19.1 cm) D x 3 in. (7.5 cm) H.
Price: $550.00

For those who will not simply pass out at the thought of a phono cartridge costing a cool $1,000.00 and still needing an outlay of at least another $200.00 before it will interface with a standard phono input, the following report will be of interest. It is of the Dynavector DV/Karat Diamond cartridge.

The outward appearance of this cartridge is of unusual design. The gold-color body shell is made from fiberglass — reinforced polyster which has a metallic-like hardness and low mass. The main body dimensions are 19 mm wide by 10 long, with the stylus assembly being 15 mm long by 8 wide. The overall height is 15 mm, and the mounting centers are the standard 12.5 mm. To mount the cartridge, the mounting screws are inserted through the top of the headshell directly into the threaded mounting holes in the cartridge body. This mounting process makes it easier to mount the cartridge than if the usual screws *and* nuts are required. The front of the cartridge has an indexing slot for locating the stylus during cueing.

The unique and expensive feature of the DV-Karat Diamond phono cartridge is its cantilever, which is made entirely from a natural octahedron diamond to a size of 0.4 x0.4x2.5 mm. This 2.5 mm long cantilever has its 0.1 square mm stylus mounting hole precision cut by a YAG laser beam machining process. The line-contact shaped 0.1 square mm nude diamond stylus is carefully mounted in the cantilever for the uniue stylus-cantilever assembly. The armature for the moving coil is 1 mm square and 0.5 mm thick, upon which are wound 40 turns per channel of 11 micron thick silver wire whose purity is 99.99 percent. The magnets are made from very strong but lightweight rare earth magnetic material.

Just about every cartridge, from moving magnet to moving coil, is designed for as flat a frequency response as possible between 20 Hz and 20 kHz or better. However, no two cartridges sound alike nor does their reproduction of a square wave look alike. These differences are probably caused by the differences in damping material, cantilever material and design, and stylus shape — all within the physical rather than electrical parameters of the cartridge. In recent years there have been many stylus and cantilever designs, but still no change of major importance since the introduction of the Shibata stylus. Currently, Dynavector design engineers have taken another look at the cantilever design, particularly at the wave propagation along the cantilever. To improve the wave propagation problem, the Dynavector engineers have reduced the length of the cantilever to an unprecedented 2.5 mm instead of the usual 5 to 7 mm length and made it entirely from a solid natural diamond. Dynavector claims that the very short cantilever markedly reduces the dispersion of the propagation wave form of the musical signal along the cantilever, leading to a more realistic sound from the modulated grooves of a record. Further, because of the very small size of the cantilever, the resonant frequency is claimed to be higher than 50 kHz. Wth this design, the usual rubber damping is not necessary, thus ambient temperature has no deleterious effect upon the damping material used. Rubber material is used only for the suspension of the cantilever to overcome its tendency toward upward movement while playing a record -- this use is not a damping action.

The Dynavector DV-Karat Diamond is packed in a gold-colored box which contains a frequency response curve plotted for the individual cartridge as well as the usual mounting hardware.

Measurements

As is our practice, measurements were made on both channels, but only the left channel is reported. During the test period, the ambient temperature was 71 degrees F. (21.67 degrees C) and the relative humidity was 59 percent, ±2 percent. The DV-Karat Diamond cartridge was mounted in a Technics headshell and used with the Technics EPA-100 tonearm mounted on a Technics SP-10 Mk II turntable. Voltage step-up was made using the DV-6A silver wire, 3 to 40 ohm impedance transformer. Since this transformer was specifically designed for the DV-Karat Diamond cartridge, all measurements and listening tests were made using the DV-6A silver wire transformer. The transformer's frequency response measured -1 dB at 20 Hz, flat from 40 Hz to 20 kHz, -1 dB at 30 kHz, and -3 dB at 50 kHz. The gain of the DV-6A transformer measured 22 dB.

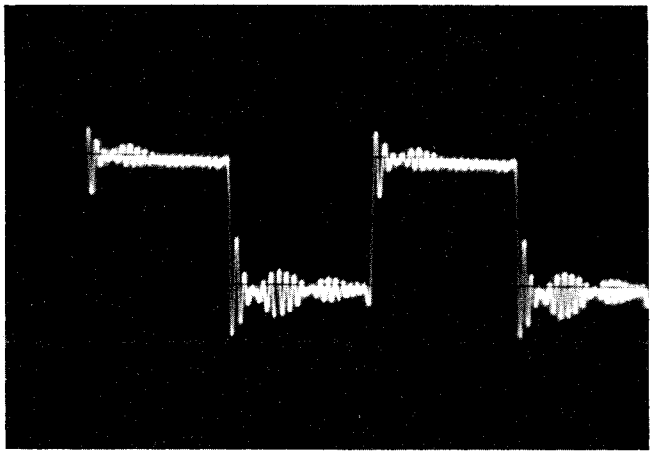


Fig. 1—Response to 1-kHz square wave.

All measurements of the cartridge were made at the recommended vertical tracking force of 1.5 grams. The optimum anti-skating force for this cartridge was found to be 1.8 grams. The cartridge was oriented in the headshell and tonearm for correct lateral alignment with the Dennesen Geometric Soundtracktor, which automatically sets the appropriate overhang for any pivoted tonearm effective length.

Frequency response, using the Columbia STR-170 test record, is -2.25 dB at 40 Hz and then ±0 dB from 60 Hz to 20 kHz (truly ruler flat). This is one of the flattest frequency response measurements we have ever encountered. Frequency response was checked out to 50 kHz, using the JVC TRS-1005 test record, and found to be ±0 dB from 1 kHz to 18.5 kHz, +0.5 dB at 20 kHz, +1.6 dB at 30 kHz, then flattening out at +1.8 dB for 40 kHz and 50 kHz. This is a truly remarkable frequency response. Separation is 21.5 dB at 1 kHz, 21.75 dB at 10 kHz, 17.25 dB at 15 kHz, 14.25 dB at 20 kHz, 14.75 dB at 30 kHz, 14.5 dB at 40 kHz, and 13 dB at 50 kHz. This amount of separation is more than adequate for a well-defined stereo effect on playback.

The response to a 1-kHz square wave shows some overshoot followed by ringing that decayed rapidly. This type of square wave appearance is not uncommon with a moving-coil cartridge that has an extended high-frequency response to 50 kHz. The stylus resonance is around 41 kHz. The cartridge-arm low-frequency resonance was at 10 Hz laterally with an amplitude of about +0.7 dB and about 13 Hz vertically, using the Technics EPA-100 tonearm. Because of the low-frequency resonance, it is suggested that this cartridge be used only in tonearms of medium to low mass.

The following test records were used in making the reported measurements: Shure TTR-103, TTR-109, TTR-110, and TTR-115; Columbia STR-170, STR-100, and STR-112; Deutsches Hi-Fi No. 2; Nippon Columbia Audio Technical Record (PCM) XG-7002, and the Ortofon Direct-Cut Pickup Test Record 0001.

Wt., 5.25 g; tracking force, 1.5 g; opt. anti-skating force, 1.8 g; output, 77 μV/cm/S, with DV-6A transformer, 0.90 mV/cm/S; IM distortion: (4:1) +9 dB lateral, 200/4000 Hz, 2.2 percent, +6 dB vertical, 200/4000 Hz, 4.3 percent; crosstalk (using Shure TTR-109), 26 dB; channel balance, better than 0.1 dB; trackability: high freq. (10.8 kHz pulsed), 30 cm/S, mid-freq. (1000 + 1500 Hz, lat. cut), 25 cm/S, low freq. (400 + 4000 Hz, lat. cut), 24 cm/S; Deutsches Hi-Fi No. 2 300-Hz test band was tracked cleanly to 86 μm (0.0086 cm), lateral at 16.20 cm/S at +9.60 dB and 43 μm (0.0043 cm), vertical at 8.12 cm/S at 3.64 dB. The latter measurements are excellent inasmuch as there are very few cartridges that can track the higher 300-Hz bands on the test record.

The DV-Karat Diamond cartridge with its DV-6A silver wire transformer was able to breeze through the Shure Obstacle Course—Era III test record. The Shure Obstacle Course—Era IV caused no problem except for band 5 of the harp test, where just a hint of possible mistracking was heard. This cartridge performed exceptionally well, particularly so since only an occasional cartridge can reproduce all the levels of the various bands on these two test records.

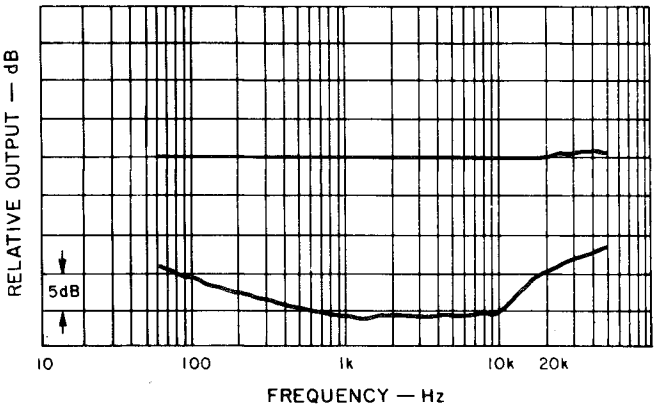


Fig. 2—Response of left channel and separation.

Listening and Use Tests

As usual, we performed our listening evaluation both before and after measurement. The very first record we played with the DV-Karat Diamond cartridge and the DV-6A transformer combination impressed us with its extraordinary sonic clarity, bass response, transient response, and transparency of sound. Sonically, the cartridge was found to be wholly neutral, adding no coloration nor audible distortion to the reproduced sound. For what it's worth, the DV-Karat Diamond cartridge encountered no difficulty in reproducing the cannon shots on the Telarc 10041 Tchaikovsky: *"1812" Overture, Op. 49* recording and the 19.2-Hz organ pedal in the Franck: *Pastorale in E Major* as recorded on the Hammond Castle Pipe Organ by Decibel Records DB 1000 (Box 631, Lexington, Mass. 02173). Without a doubt, this cartridge will cleanly reproduce any recorded sound.

After a period of prolonged listening, we are of the opinion that musically it is one of the most rewarding phono cartridges we have thus far encountered. For those who do extensive listening it can be particularly recommended for its non-fatiguing characteristics. *B. V. Pisha*

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Dynavector Karat Diamond

Comments

If push came to shove, we'd pick the Karat Diamond over the Koetsu. The musical portrayal is more balanced and consistent from top to bottom, in quantity and quality of each frequency region. There's more sense of the cartridge simply disappearing, rather than a super-fi cartridge making the music as with the Koetsu.

In particular, some of the contrasts in the Dynavector's favor are as follows. The Karat Diamond is naturally much more extended and flatter in tonal balance (though the Koetsu's excess brightness can easily be compensated). In our subjective judgement, the Karat Diamond errs very slightly on the side of being hard in quality, while the Koetsu errs much more, on the side of being soft in the treble regions. Thus the Dynavector is closer to being accurate. More important, the Karat Diamond's slightly hard quality and its excellent directness are seamless and consistent throughout the frequency range, while the Koetsu changes character — from direct to indirect, clean to rough, and neutral hardness to soft — as it goes from its midranges to its treble regions.

The Dynavector's major strength is its speed and smoothness. The step test curve, showing the intrinsic transduction response capability of the cartridge, is smoother and flatter out to 100 kc than most other good MC cartridges are to 20 kc, not to mention MM cartridges; we've never seen anything close to this curve from any other cartridge. This extreme smoothness (you should ignore the small squiggles above 17 kc), free of the peaks and valleys we see in other cartridges, suggests that the solid diamond cantilever featured in this cartridge is not at all a gimmick, but a crucial factor in achieving the accurate stage 2 mechanical transmission that's so essential to the good performance of any cartridge.

Diamond is not only hard, but also stiff. The extraordinarily smooth and extended intrinsic transduction curve leads us to suspect that the diamond cantilever is acting in a single transverse transmission mode throughout the audible region. Other cartridges' cantilevers have crossovers within the audible spectrum as they begin to flex and then behave as shock wave transmission lines (see the JVC review below), so different frequency regions of the music can sound incongruous and incoherent with one another, and we measure peaks and valleys in intrinsic transduction response. We attribute the Karat Diamond's audibly remarkable seamless coherence to its probable single transmission mode without crossover.

The Karat Diamond is also by far the fastest cartridge we've ever measured. In fact, it's the first cartridge whose high frequency reproduction capability exceeds the 256 kc sampling resolution of our digital FFT analyzer (obviously it would make a mockery of the 50 kc sampling resolution of today's digital audio recorders). We get inconsistent results with our step test, depending on where the digital sampler intercepts the Karat Diamond's amazingly fast and steep rise in reproducing the mechanical step input. So we (lacking a time averaging capability in our FFT box) could not obtain a noise-reducing average of 4 steps as we did with other cartridges (the squiggles you see above 17 kc in the step *IAR* curve are merely noise in the measuring setup). We picked the step *IAR* curve that showed the least signs of sin x/x impulse fattening from digital sampling indeterminacy, and printed that, but the Karat Diamond's intrinsic

response may be yet smoother and flatter than you see here. And of course we don't know how far and flat beyond 100 kc it goes.

Is this extraordinary speed of the Karat Diamond actually audible on music? Yes, very definitely (otherwise it would be an empty measurement that we wouldn't value or emphasize). Well, actually, it isn't audible. And that's a central point we want to get across.

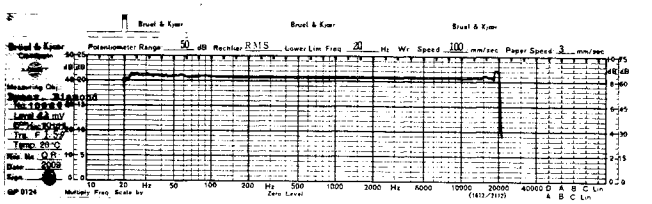
When we aurally evaluate electronics, a sure sign of truly high speed is that quick transients (musical or record ticks) are over with so fast that they scarcely have time to register on the ear/brain, and so they actually sound diminished in loudness and impact. If our ear/brain has time to first notice that there is a transient, then turn its attention to the transient, and then focus on what the transient sounds like — that's a sure sign that the device(s) in the audio chain is too slow. It is too slow even if it is overly bright, and sizzles at you with excess 'transient information', or rings and so hits you over the head with the 'impact' of each overhanging 'transient' (cf. the Decca and EMT cartridges). These bright sledgehammer overhangs may impress some audiophiles as sounding quick, but not us. Instead, we look for the sensation of "Whoosh! What was that? Where did it go?" that you might experience if (say) a rifle bullet were to whiz past you.

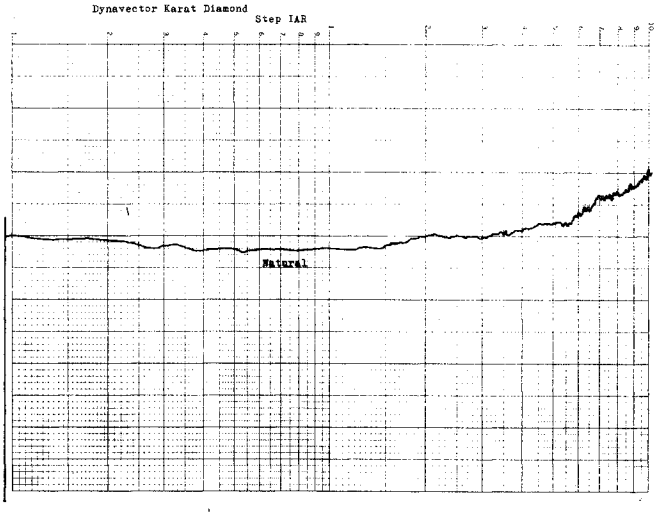
If an audio device is truly fast we hear only the music's speed, and not the device's. The device itself disappears, instead of manufacturing 'transient impact'. Only a device that quickly ascends a transient to its full height, does not overhang, ring, or smear the transient's energy over time, and then quickly descends — only such a device can disappear and let music's extraordinarily fast and delicate subtleties speak for themselves. Only such a device lets music's treble regions sound live, for it is the musical instrument alone that is making the transients, not the audio device as well.

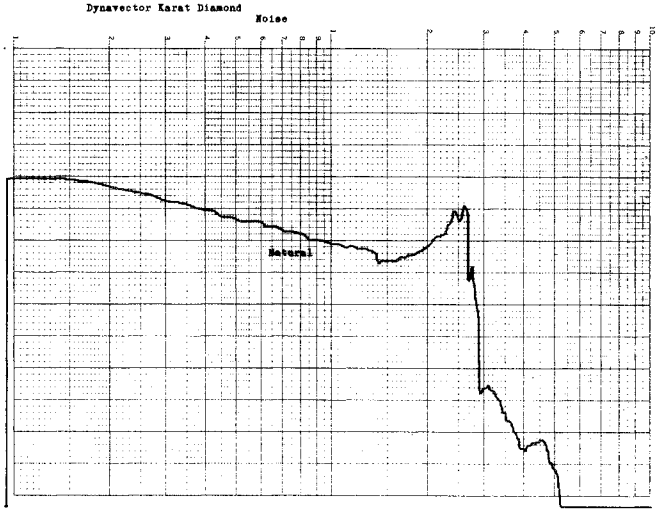
In electronics, we easily hear the musical benefits of such speed on a very few devices that, coincidentally, have megahertz bandwidths, such as the Electrocompaniet power amp. And so we of course can easily hear the benefits on transducers with their more limited bandwidths and worse energy storage mechanisms. There are dramatic differences in the treble reproduction capabilities of the cartridges in this survey. Only a very few, such as the Denon 103 and FR7, begin to disappear and let the music's speed and subtlety speak for itself. And the Karat Diamond is the prince of the lot.

The Karat Diamond doesn't have any of the cheap 'hi-fi' tricks that some listeners mistake for good treble capability. It doesn't have the usual MC rising treble regions (above 7 kc), it isn't too bright, doesn't zap or sizzle, and it doesn't overhang. It's so truly fast

Mfr's SSR







that it can be smooth and yet simply be there for all treble detail. Or rather not be there, as the music's details speak for themselves. That's what we mean by the Karat Diamond's speed being so good as to be inaudible.

There's another measured piece of evidence that supports the speed and coherence we hear in the Karat Diamond. The step response, seen in the time domain, is remarkable and unlike that of any other cartridge. First there's an extraordinarily steep, high, and narrow needle spike. We tentatively attribute this to the initial shock wave travelling very quickly and coherently through the very hard diamond. The

coherence of even this shock wave is relevant to music, for it means that all frequencies of even this very quick and sudden transient shock arrive at (and are transduced by) the generator at the same time, to comprise the closest thing to a true mathematical delta function (which contains all frequencies in one instant) that we've yet seen from any transducer. This simultaneity of all frequencies means no time smearing of the signal, as does the Dynavector's instant descent and lack of hangover and ringing after this needle spike. The needle spike (shock wave) is completely over so quickly that it's probably mostly inaudible.

After the needle-spike the Karat Diamond's step response settles down to an almost perfect step, far better than other cartridges; this shows the coherent single transverse transmission mode of the cantilever for the audio range. We've discussed many times in IAR how it's important to evaluate an audio device's transient behavior in the time domain as well as the amplitude frequency domain (see also the Adcom review below); the Karat Diamond's extraordinary performance as seen in the time domain substantiates a lot of what we hear (and don't hear) in this cartridge.

The Karat Diamond's distortion measures lower than average, and this correlates with a general lucidity and lack of strain the cartridge sonically evinces throughout its range, even at high modulation levels. Resolution of complex musical material is extraordinary, as might be expected from a device with speed, coherence, lack of time smearing, and low distortion.

What are the Karat Diamond's weak points? Well, there's nothing bad enough to intrude upon your enjoyment of music — to actively remind you that here is some Achilles' heel. But there are performance aspects in which this Dynavector, though still very good, is not quite the equal of a few other cartridges.

The bass is very good in fullness, balance, and extension but is not as solid and frightening as the Denon 103, nor as tight and defined as we'd like. Separation, lateral localization, and depth all sound very good and naturally realistic; they're as good as any other cartridge except the Koetsu, which is so extraordinary in these aspects.

It does not reveal as much musical information from the record in the midrange regions as the Koetsu does. This Dynavector doesn't do anything audibly wrong in the midranges, either actively or with veiling. And we don't aurally miss information there (as we do with many cartridges below whose tonal balance has a perceived midrange valley). Only by comparison with the Koetsu do we hear less midrange information (and part of this is due to the Koetsu's faults; see below).

The Karat's mounting holes are threads tapped directly into the phenol of the cartridge body; this allows intimate tightening of the cartridge against your headshell, but you can't use as much torque as we'd like to see, else you'll strip the threads.

The aural tonal balance of the Karat Diamond virtually doesn't exist; it simply sounds neutral, smooth, and balanced in all frequency regions. Our measured response curves largely confirm this, and so we have not introduced any RC filter compensation.

Although diamond for a cantilever is very rigid, it is not necessarily the lightest way to engineer a cantilever (aluminum, for example, can be made as a hollow tube, but diamond cannot). The measured rise above 14 kc in our noise (vinyl response) curve suggests that indeed the Karat Diamond's effective moving mass (of the stylus, cantilever, and generator moving system) is higher than some other cartridges, and its stylus/vinyl resonant frequency consequently lower. The steepness (high Q) of the rise confirms Dynavector's implication (in their literature) that they make minimal use of mechanical damping material. That probably helps sonic clarity, but also makes the rise too steep for us to properly compensate with a simple single pole RC filter. If you feel like experimenting, you could try up to 1000pf.

Incidentally, at least one stylus manufacturer, Namiki, is making diamond cantilevers available to cartridge manufacturers, so you should soon see this technology with its remarkable benefits in other, new top of the line cartridges (we understand that Yoshihisa Mori of Sony is working on such a prototype, and Sao Win is of course on top of this materials breakthrough).

As of this writing, we have as yet no test data on the optimum load R for the Karat Diamond (due to importer delays); our Ruby comments below might apply. Early production Karats have VTA QC variance; check yours. They claim this is now fixed, but we haven't yet verified it (due to importer delays).

The Karat series is an astounding turnaround for Onlife's (Dynavector and Ultimo are the tradenames) designer, Noboru Tominari, whose previous designs we have openly found problematic (cf. the 20C review below). We congratulate him.

Class 2b

Dynavector Karat Ruby

Comments

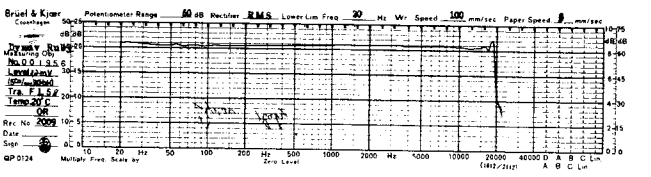
The Karat Ruby is generally similar in design to the Diamond; but ruby replaces diamond as the cantilever material, and there are reportedly differences in the coil, former, etc. The Ruby is a very good performer overall, but still is a distinctly poor cousin to the Diamond. There are striking differences between class 2a and 2b cartridges, audibly and measurably.

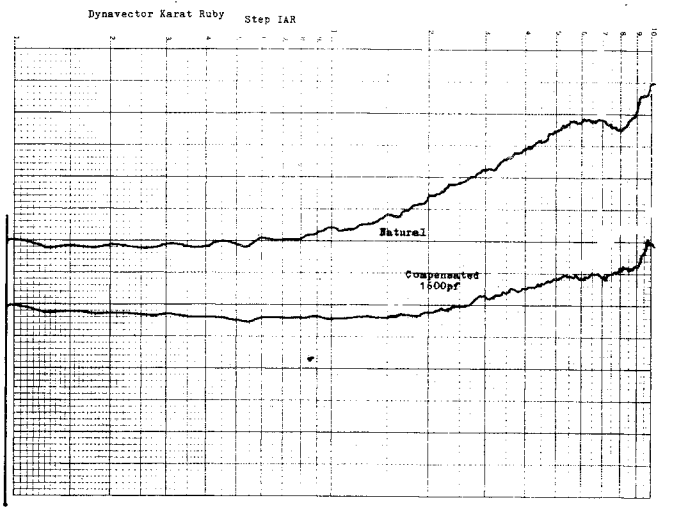
The most obvious difference between the Ruby and Diamond is, as usual, tonal balance. The Ruby sounds significantly brighter from the upper midrange on up, and our measurements correlate with this, showing a well behaved constant rise above 7 kc. If left uncompensated, this brightness emphasizes the Karats' slightly hard quality to a point where it becomes unpleasant. The Ruby also sounds a little rough and smeared in these regions compared to the crystalline smooth lucidity of the Diamond; we tentatively connect this with the time smearing liveliness of the ruby cantilever, whose 'needle' talk, though still moderate compared to most other cartridges, is much louder and more broadband than the diamond.

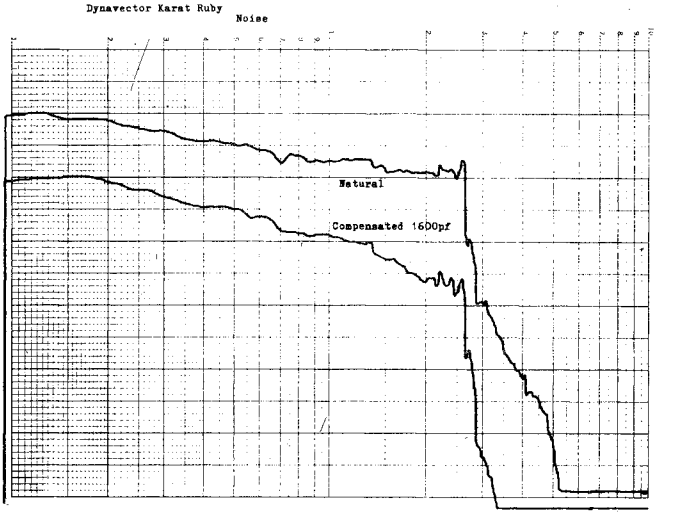
Flattening the Ruby's bright rise with filter compensation aurally subdues the excess hardness and the roughness we hear in these regions. The Ruby's overall musical presentation becomes much smoother, more refined, and more comfortably palatable in the quantity and quality of these regions. Lowering load resistance also cleans up the high end significantly, particularly a brittle edge we hear there with a large load R. The Ruby's source resistance is 34 ohms, and you lose a lot of signal level as you lower the load R to achieve lower distortion. Also, the midrange regions progressively lose 'life' below 60 ohms. So you might stop at 60 ohms, or try for lower R and lower distortion if you still like the tonal balance and still have an acceptable s/n ratio.

Once tamed with filter compensation and low load R, the Karat Ruby gives a very good overall account of the music on the record. It is a more balanced performer than the following cartridges in this survey. These others all have at least one active weakness that you can easily hear and are constantly reminded of while the music plays. The Karat Ruby does not have such a significant, active weakness. Our chief complaint is its bass, which is a little heavy and boomy in the upper bass and soggy in the lower bass, though this too is helped by a low load R.

Mfr's SSR







In all its positive attributes, the Karat Ruby is similar to, but a cut below the Diamond. However, the Ruby is about the equal of the best aspects of the other cartridges in class 2b. It has the quickness and treble delicacy of the Denon 103D or FR7 (but is harder than the latter), stage imaging and depth close to the Grado, directness and immediacy like the 103D, JVCs, and EMT. And so on.

But the Karat Ruby isn't a bargain priced substitute for the Karat Diamond, a steal offering virtually the same performance at about one fourth the price. It's a fairly priced alternative for those who can't possibly afford the Karat Diamond or Koetsu, and who know they must settle for less performance. Within this context, you should think of evaluating the Karat Ruby against the other similarly priced cartridges in class 2b, not against the Karat Diamond. And in this comparison with its peers it does very well. Early Rubies have VTA QC problems; check yours. IAR 5 •

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DYNAVECTOR DV-100R KARAT RUBY Moving-Coil Phono Cartridge

Tracked at 1.8 grams in Grace G-707, Linn Ittok LVII, and Lustre GST-801 pickup arms

After several years of research, Onlife's Dr. Tóminari has developed an entirely new generation of moving-coil cartridges. The 100R is one of two DV/KARAT models now in production. Like the much more expensive 100D, the 100R uses a Paroc line-contact stylus tip mounted through a 2.5mm long, 0.4mm square cantilever. The diamond tip is fitted through a square hole in the cantilever immediately after the hole is cut by a laser; the cantilever locks the tip in place as it cools.

The extremely short solid synthetic-ruby rod used for the DV-100R's cantilever appears to be at least partly responsible for the exceptionally fast transient rise and fall times observed in this cartridge. Its reproduction of inner detailing is excellent, and its inter-transient silence is unusually good. Detail and definition are also first-rate throughout the audible spectrum; transient impact is solid and free of overhang when the cartridge is loaded with an effective step-up device input impedance of 30 ohms.

The upper octaves reproduced by the DV/KARAT RUBY are very clean with a touch of brightness. The extreme high end is up a decibel or two relative to the midband. The bottom end is extremely tight and well-controlled, and completely lacking the "fullness" of many other moving-coil, moving-magnet, and strain-gauge cartridges. The midrange is virtually ruler flat, possessing a cleanliness and neutrality found in few other cartridges available at any price.

Tracking and tracing ability of this Dynavector are quite outstanding, particularly for a moving-coil design.

The 100R sets a pleasing stereo stage, with very good depth, height, and lateral spread. Images are sharply focused and positively placed within the stereo panorama; images are layered equally well top to bottom, side to side, and front to back of the reproduced stage. Background ambience and air are also recreated very realistically.

For best performance, alignment of the Dynavector with respect to the record groove is critical. Its fine line-contact tip must sit in the groove as close to perpendicular as possible. However, even when aligned this way (with the cartridge body raked very slightly backward) the vertical tracking angle of the cantilever is still a little too high, and correcting the VTA then misaligns the stylus in the record groove.

The DV/KARAT RUBY seems to be best suited to a medium-to-fairly-low-mass arm due to its moderate compliance and six-gram mass. It should be pointed

out though, that because this cartridge can only be mounted in a pickup arm with screws from the top of the cartridge body, it cannot be readily mounted in an arm such as the Mission 774, which uses screws that can only be fitted into the bottom of its headshell/mounting block.

The Dynavector 100R is certainly not a cartridge for the masses -- particularly for those audiophiles who prefer euphonic colorations in place of merciless accuracy. Yet, carefully aligned in the right arm, it is easily one of the finest cartridges currently available, and is certain to help set performance standards for other cartridges for some time to come.

DYNAVECTOR DV-100D KARAT DIAMOND Moving-Coil Phono Cartridge

Tracked at 1.8 grams in Linn Ittok LVII and Lustre GST-801 pickup arms

The DV-100D and DV-100R cartridges were designed as fraternal twins. From a distance, it is difficult to visually determine which is which; except for their cartridge body color and their cantilever materials, they are physically identical.

Whereas the DV-100R features a cantilever made out of a synthetic ruby rod, the DV-100D's cantilever is a 2.5mm long, 0.4mm square rod of pure, natural diamond.

Since both of these cartridges share the same internal makeup and the same Paroc line-contact stylus tip, any sonic differences between them should be due almost entirely to the differences in their cantilever materials.

The KARAT DIAMOND, even more so than the RUBY, is unbelievably critical of stylus/cantilever alignment. Changes in alignment as small as a quarter of a degree produce very dramatic changes in cleanliness, tonal balance, and instrumental timbre. Therefore, to take full advantage of this cartridge's capabilities, it must be carefully aligned for each record.

Correctly loaded and aligned, the 100D is a top-notch phono cartridge. Its transient rise and fall times are extremely fast; its inner detailing, inter-transient silence, and transient impact are all exceptionally good. Top-to-bottom detail and definition are excellent.

Used in a medium-to-moderately-low-mass pickup arm the DIAMOND handles record grooves much like a sports car glides through torturous turns -- with ease. Its tracking and tracing ability are almost flawless.

The middle octaves reproduced by the DIAMOND are surgically clean, smooth, and edgeless. The bottom end is incredibly tight and firm, with excellent impact. The treble region is finely etched and just slightly bright.

The DV-100D sets a stereo stage of very good height and width, and excellent depth. Its image focus and localization are superb; its three-dimensional layering of voices and instruments within the sound field is uncanny. In these areas, Dynavector's top cartridge is easily the best of any phono cartridge (regardless of generating principle) encountered to date.

With the possible exception of the latest JVC MC-1 moving coil, the DIAMOND must be counted among the most analytical cartridges available. It is capable of extracting an inordinate amount of information from the record groove, including hall ambience, subtle timbre changes, and recording flaws that the majority of cartridges fail to reproduce at all.

For most audiophiles to be able to fully appreciate the 100D's potential, it may require a totally new generation of arm wiring, leadout cables, and step-up devices. A great percentage of the arm cables, pre-preamplifiers, and transformers presently available for audiophile use seem to be plagued with far greater colorations than some of the finest cartridges with which they are designed to be used.

The Dynavector DV-100D is sonically superior (in varying degrees) to the DV-100R in nearly every parameter of audible performance. Yet, because of its highly critical alignment and its not-inconsiderable price tag, this cartridge may not be suited to every audiophile's system or audio budget. But for those who can afford it, this is truly a cartridge deserving of use as a reference standard.

the audio JOURNAL™

Volume 1, Number 4 July 1980

Dynavector Karat Diamond

This one is literally a gem of a cartridge. It is the first cartridge to our knowledge to use a ***cantilever*** actually fashioned from diamond. The cantilever is in fact cut for Dynavector by a precision jewel company in Japan. Diamond is not a particularly easy material to machine into the desired shape nor is it an inexpensive material to acquire in its raw form. At first glance this approach may seem something of an overkill. Why bother with all the trouble and expense?

Diamond has the distinction of being extremely rigid (nonelastic) — much more so than the various metals used in cantilever construction. At the extreme velocities that a stylus/cantilever system must move in order to trace record modulations, the cantilever will actually have the tendency to bend in accordance with the force applied by the modulations. The more elastic the cantilever, the less faithfully it can transmit modulations to the generating coils. A diamond cantilever, by virtue of its extreme rigidity, will transmit modulations with the least amount of distortion.

The question of elasticity is also taken into consideration in the bonding of the stylus to the cantilever. Something we learned from Sao Win is that depending on how it is bonded, the stylus tip will tend to move around in its mounting if precautions are not taken. The cantilever of the DV Diamond has a square hole drilled into the end by a laser. The stylus tip is pressed into that hole making an almost perfectly inelastic bond.

Just as unusual and clever as Dynavector's choice of cantilever materials and stylus bonding methods is something that Dynavector doesn't do. The DV Diamond cartridge uses no damping at all. Because of its very short length (2.5 mm), no damping is necessary. (The high frequency resonance is above 50 khz!) The properties of the rubber damping material used in most cartridges varies with age, temperature, and the amplitude of the signal, and the sound is accordingly affected. We could go on and on about the design of the DV Diamond (and bore our readers to tears), but the main point here is that the DV cartridge embodies clever and meaningful design concepts. Take notice!

These design considerations are certainly interesting just by themselves, but the real payoff lies in the most important aspect of any component: the sound, of course. The Diamond produces some of the cleanest, most distorion-free sound we have ever heard from a cartridge of any type. Dynavector matches this clean sound with a tracking ability that is second to none. We have not yet found a record with modulations that the Diamond would not track. In fact, that record may not exist because the Karat Diamond is one of the very few cartridges[1] that will track the cannon shots on the digital *1812 Overture*, Telarc DG-10041, without mistracking at all.[2]

As you might expect, the DV Karat Diamond has superior definition and inner detail[3]. All the subtleties are heard even at the lowest of volume settings. The individual instruments in a full orchestra or the voices in a large chorus retain their individual character. The Diamond does not have the tendency to lose definition or let the instruments "bleed together" on such large groups as do lesser cartridges[4]. The individual is heard as a defined part of the whole.

The performance in the frequency regions is equally superior. The treble region warrants singling out as it has a crystalline purity that is rare, perhaps even unique to this cartridge. It has been our experience that most cartridges reproduce hotly modulated treble passages (as in direct discs, etc.) with varying degrees of hardness and/or edginess[5] that quickly becomes fatiguing to the ears. The DV Diamond is an order of a magnitude better in this respect than any other cartridge we have tried. Most cartridges add something to the treble (distortion, coloration, or whatever you prefer) that is as obvious as the proverbial "sore thumb" when compared to the DV Diamond.

The midrange is very good—as good as any cartridge we have heard but not absolutely superior to other good moving-coils like the Ortofon MC-30. By virtue of its great definition and low distortion, the DV Diamond is able to retrieve every ounce of midrange depth and ambience in a recording. Listen, for instance, to some of the vocal passages in *Cantante Domino*, Proprius 7762. The natural reverberation of the recording site is heard unimpaired creating a stunningly realistic recorded experience.

1 The only others with this ability that we have heard are the Denon 103D and the Denon 303.
2 When properly set up, that is.
3 The Win is the only other cartridge that is equal to or perhaps even better in this respect. The Win, however, has a whole set of problems all its own.
4 This ability is at least in part due to the DV's tremendously fast transient response.
5 The worst cartridge in this respect is the Fulton. One of the better ones besides the Dynavector is the Ortofon MC-30.

This leaves only the bass to consider. Again, the definition on this area is remarkable rendering low frequencies (as in recordings of pipe organ) more audible than they otherwise might be. Also, as mentioned before, the tracking ability on bass transients is an eye-opener. There is, however, something about the sound of the bass that is different than what we hear from any other cartridge. We didn't notice it at first, not until someone mentioned it to us, and we began to concentrate on the bass.

There is something in the upper bass, something we can't quite put our finger on, that just isn't there with other cartridges. Don't get us wrong, though, this quality is a subtle one, and it certainly doesn't negate the superior qualities of the cartridge. But it is there nonetheless. A distortion perhaps? Or, maybe we are hearing harmonics or some such that other cartridges mask? Well, we really don't know.

The Diamond is a very fine cartridge no matter what its faults may be. To our knowledge, the only moving-coil of comparable quality is the Ortofon MC-30. The Dynavector and the Ortofon are about equal in overall musicality. In terms of trackability and ultimate definition, the DV runs circles around the MC-30. The DV Diamond is the kind of cartridge that the discriminating music lover can own and not want for any other. It is, of course, highly recommended.

Model: Karat Diamond / **Distributed by:** Dynavector Systems U.S.A., Inc., 30708 Lakefront Dr., Agoura, CA 91301 / **Impedence:** 30 ohms / **Output:** .2 mv / **Price:** $1000.

Associated equipment used for this review: **Preamps:** Threshold SL-10, Theta preamp + Marcof head amp; **Turntable:** Denon DP-2000; **Tonearm:** SME 3009 Series 3; **Amplifier:** Threshold 4000; **Speaker:** Dayton-Wright XG-10.

Other cartridges used for comparison during testing: **Fulton, Ortofon MC-30, Ortofon MC-20 Mk II, Gold Bug Medusa, Audio Technica AT-32, Win SDT-10-2.**

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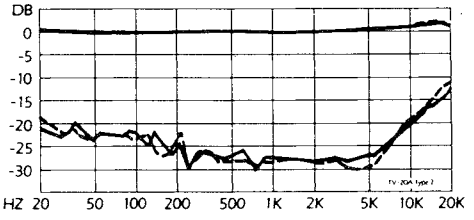
A Pickup for Those in Search of Perfection

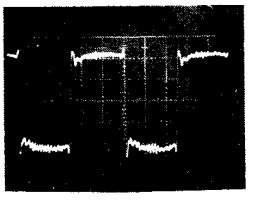
Dynavector DV-20A Type 2 pickup

FREQUENCY RESPONSE & CHANNEL SEPARATION
(test records: STR-100 to 40 Hz; STR-170 above)



Frequency response	
——— L ch	+2¼, -¼ dB, 20 Hz to 20 kHz
- - - - - R ch	+2¼, -¼ dB, 20 Hz to 20 kHz
Channel separation	
	≥25 dB, 230 Hz to 6.4 kHz; ≥15 dB, 20 Hz to 14.5 kHz
SENSITIVITY (at 1 kHz)	1.1 mV/cm/sec
CHANNEL BALANCE (at 1 kHz)	± ¼ dB
VERTICAL TRACKING ANGLE	28½°
LOW-FREQUENCY RESONANCE (in SME 3009)	
vertical	9.6 Hz; 1½ dB rise
lateral	negligible
MAXIMUM TRACKING LEVEL (re RIAA 0 VU; 1.6 grams)	
at 300 Hz	+18 dB
at 1 kHz	+12 dB
WEIGHT	5.1 grams
TIP DIMENSIONS	
tip radii	6.3 by 15.7 micrometers
scanning radii	6.3 and 7.3 micrometers

SQUARE-WAVE RESPONSE (1 kHz)



Dynavector Model DV-20A Type 2 stereo phono pickup, with elliptical diamond stylus. Price: $230. Warranty: "limited," one year parts and labor, excluding stylus wear. Manufacturer: Acousta Ginza, Japan; U.S. distributor: Dynavector Systems U.S.A., Inc., 30708 Lakefront Dr., Agoura, Calif. 91301.

Dynavector is rapidly distinguishing itself in the cartridge market for its continuing exploration of moving-coil pickup technology. While even rabid perfectionists may balk at a $1,000 pickup equipped with a solid diamond cantilever, Dynavector has one available. The unit reviewed here, the DV-20A Type 2, is more affordable, but under its "tin can" hood lurk several noteworthy technical innovations. This is a high-output design; that is, the output voltage is sufficient to drive a preamp without a head amp stage or stepup transformer. The cartridge has the moving-coil's virtue of being essentially insensitive to reactive properties of the load it must operate into and thus should work equally well with a wide range of preamps, receivers, and integrated amps.

While many moving-coil pickups are rather massive affairs, this one is comparable to the familiar low-mass fixed-coil designs. Dynavector tells us that it was able to reduce mass by fabricating the main frame from polyester-reinforced glass fiber, instead of the usual aluminum, and by using rare-earth magnets for lowest possible weight/flux-density ratio. With the reduction in weight comes higher compliance than is usual for a moving-coil model and greater ability to mate successfully with low-mass tonearms. CBS Technology Center found that resonance with our "standard" SME arm was not only near ideal in frequency, but extremely low in amplitude—vanishingly low in the horizontal plane.

The frequency response curve is one of the flattest we've yet encountered with a moving-coil pickup, with the characteristic high-frequency peak of many such designs very well controlled here. Dynavector says that it uses a disc capacitor to damp out high-frequency peaks due to the mechanical resonance of the tapered aluminum cantilever. The nude-mounted stylus appears much like a multiradial or "line contact" type under the CBS microscope, which also reveals good polish and alignment. The pickup passed the CBS "torture test" at 1.4 grams—on the high side in comparison to fixed-coil models but about average among moving-coil designs. The lab ran the remaining tests at 1.6 grams, the bottom of Dynavector's recommended range, which extends to 2.3 grams. Channel balance is about as accurate as you can get; the output difference was barely measurable in the lab. Distortion measurements are also firmly in the good-to-excellent category.

In terms of the DV-20A's musical performance, we were simply delighted. The lucidity of tone offered by this pickup is outstanding. Its ability to reproduce nuance and detail leaves us wondering whether we have ever really heard our records before—even familiar ones. A satisfying sweetness replaces the high-end brightness so common to moving-coil pickups and evidenced by an etched string sound. Stereo imaging is precise and stable. Noteworthy too is the ability to track some of our worst record warps; one with a heavy bass-drum modulation was negotiated with nary a bump.

Considering the number of phono cartridges available and their wide divergence in price, recommending pickups is an ungrateful task; each has its own sonic character, and the law of diminishing returns sets in for one listener before another even becomes interested. But here is a cartridge that we can recommend to phonophiles in search of perfection—one that raises the question, "How much better can a $1,000 pickup possibly be?"

Dynavector

Dynavector Systems USA

30708 Lake Front Drive,
Agoura. CA 91301
(213) 991-5010