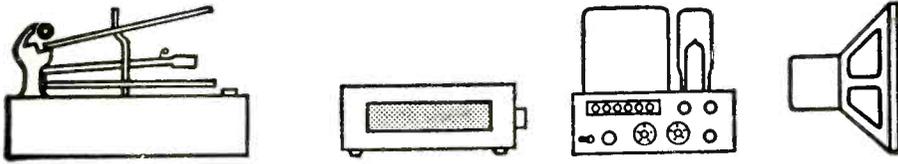


EQUIPMENT



PROFILE



Fig. 1. Marantz 7T Solid-State Preamp

MARANTZ 7T SOLID-STATE STEREO PREAMPLIFIER

Here are the manufacturer's published specifications on this new unit:
Frequency response—20-20,000 Hz \pm 0.1 dB.
Total Noise: 80 dB below 10 mV input.
I. M. Distortion: 0.15 per cent at 10 volts equivalent output.
Dynamic range: up to 100 mV at less than 0.15 per cent IM distortion.

Our tests proved every Marantz claim conservative. But that is what we have come to expect from this firm.

The Marantz 7T is all solid-state. This would seem then to be the successor to the Model 7 vacuum-tube preamplifier. All of the established virtues have been kept in this new version; in fact, there are some interesting innovations.

Exterior appearance is unchanged in this model except for the addition of three jacks on the front panel. These are for headphones (600 ohms or higher), stereo tape recorder in, and stereo recorder out. These last two functions are duplicated on the rear panel. With the front-panel inputs it is now possible to use the preamp as a dubbing go-between with two recorders.

Other innovations include a center-channel output with a separate level control.

As with the earlier tube unit, the preamp will accept a wide variety of input sources. There are direct low-level inputs for two magnetic-phono systems, high-impedance microphone, and tape head. In the phono positions a three-position front-panel switch chooses OLD 78, RIAA, or OLD COLUMBIA LP equalizations. The tape-head

input (high impedance) has a rear panel trim pot to adjust high-end response.

The tone-control action along with the high-and low-cut filters remains unchanged from the earlier models (except, of course, that transistors are now used). Low-cut positions are at 50 or 100 Hz, while high-cut points are called out at 5 and 9 kHz. In each case, the position marked is (accurately) the three-dB-down point.

The tone controls themselves are step-type, offering accurately contoured and repeatable positions of boost and cut.

As we said at the beginning, our bench

measurements proved the published specs conservative. Frequency response is, in fact from 5 to 50,000 Hz \pm 0, -1 dB. IM distortion measurements through the full preamp were 0.12 per cent at 3 volts rms out. RIAA equalization is within 1 dB of RIAA specification, and that includes extension to the 20-20,000 Hz range.

We could go on. We did not find a test that proved this unit less than it is claimed to be. Moving on to listening tests showed that this 7T takes a sonic back seat to nothing. It operates with very-low-level cartridges without noise, and very-high-level cartridges without distortion. It has six a.c. convenience outlets on the rear panel. It still has a husky power on/off switch that won't give up under a heavy a.c. load. In fact, removing the top cover reveals a level of construction that is consistent with that which we have come to expect from Marantz. And, lest there be any misunderstanding about what that level is—it is a good cut above that which is usually seen in home componentry.

There is, thus, every reason to believe that trouble-free longevity is another virtue of this unit. Marantz is asking \$295 for the 7T with an additional \$24.00 for the walnut cabinet. We feel that it is worth every penny.

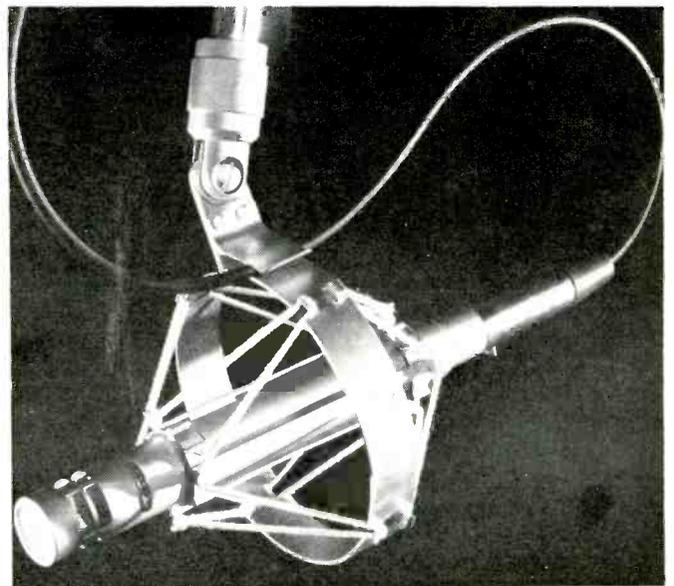
Circle 201

SYNCRON S-10 CONDENSER MICROPHONE

We often speak of the individual character of transducers, mentioning phono cartridges and speakers as typical, and completely forgetting that microphones too belong in that class. They have every bit as much individual personality as any product. And, as is true of all transducers, it is difficult (if not impossible) to laboratory test them and come out with a firm knowledge of what the product will sound like.

Condenser microphones have built a reputation for quality that has set them apart from other systems. If they have become the Rolls-Royce of the recordists; they have also demanded equivalent image pocketbooks. And, they have been bulky, with their need of separate power supplies.

Fig. 2. The S-10 Synchron condenser microphone. It is shown in a shock mount.



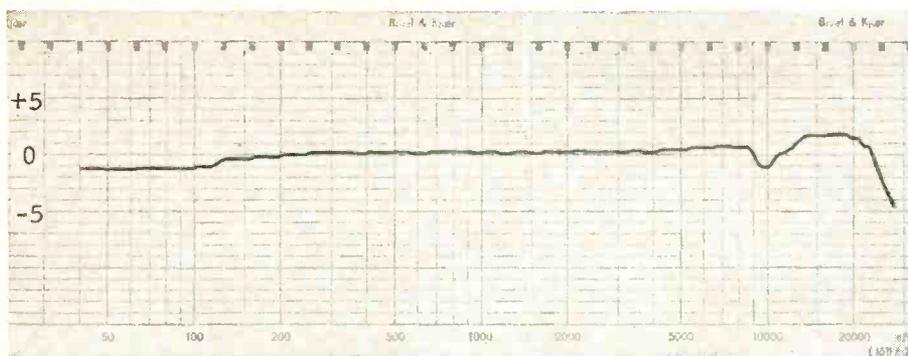


Fig. 3. The B & K frequency response curve of the S-10 Synchron.

Transistors have done much for the bulk, reducing the power packs to manageable size and to independence from power lines.

This microphone is not the first to be issued that is completely self-contained, but it certainly is the most manageable in that it is no larger than many a dynamic. Perhaps even this is not a "first" as such. What is dramatic is that the S-10 offers a degree of reliability and dependability that was not available in a portable before. A single replaceable Mallory TR-126 battery is contained within the slim lines of the microphone. Also within is the impedance matching circuitry. It uses a field-effect transistor.

The Mallory battery is only called upon to power the FET. Buried well within the casing is a separate power source that gives the needed 62 volts of polarization to the condenser element. This is a lifetime item. And it should be just that since no current is actually being drawn.

The replaceable Mallory is guaranteed for 1000 hours of operation. We suspect that this figure is conservative by a factor of many times. Longevity can be further enhanced by simply removing the 4-conductor XLR plug between the microphone and the 20 feet of cable. This breaks the battery circuit.

Other mechanical virtues of the S-10 are a weight of 9 ounces and a 7/8-inch diameter by 7 1/2-inch length. The patterning of the microphone is cardioid, the diaphragm material is Mylar, output is -53 dBm re 10 dyne/cm² into 200 ohms, and the microphone can be operated into any load from 30 ohms to high impedance.

This Synchron handles like a real pro. We were supplied with accessories which include a windscreen (\$14.95), a vibration suspension (\$29.95), and a desk stand (\$19.95). The microphone itself with a battery, carrying case, and swivel mount, and with 2-wire shielded cable, sells for \$240.00.

Tests

The best way to test a microphone is to use it. This becomes even more meaningful if it is compared against established favorite units. Frequency-response measurements require extraordinarily sophisticated equipment. So, we are reproducing the B & K curve tracing that was done by Synchron on this sample. We have no reason to believe that it is anything but accurate.

As would be expected from such a curve, the S-10 is neutral in sonic effect. It certainly doesn't have that bright rising top end that was so characteristic of the earliest condensers. When we first heard playbacks of recordings made with the S-10 we were struck by the general lack of microphone coloration. At the same time, there is no feeling of masking dullness. Rather, the S-10 comes through as a crisp and transparent performer.

With the feeling of independence that the self-contained aspect of this microphone offers, it is easy to forget that you are working with a condenser. It goes anywhere with ease. The result for us, has been some outstanding field recordings with a clarity and depth that we have found inappreciable indeed. Under the most exacting music applications, the S-10 is easy to get to like. And we do.

Circle 202

EUPHONICS CK-15-LS CARTRIDGE SYSTEM

Most of the phono cartridges on the market today share a common operating principle in that they are electrical generators. As transducers they convert the mechanical motion imparted by the stylus in the record groove into electrical energy.

This is not the only way to derive sound from a disc. An alternative, of course, is to create a cartridge that uses stylus motion to *modulate* an existing external voltage.

The problem of generators has been that when element size is reduced sufficiently for needed mass reduction requirements, voltage output suffers. So the theory behind a modulator device is that it is an attack from a different direction. Obviously, if you use an external voltage there need not be a direct correlation of output vs. element size.

This is the case with these Euphonics cartridges. They are not generators. Rather they use a tiny silicon element (two for stereo). Each is called appropriately, a Pixie. The stylus motion is directly transmitted to these elements causing them to twist slightly. This motion varies the electrical resistance of the Pixie. Voltage from a separate power supply is thus modulated in accordance with the undulation of the record groove.

The power supply itself derives its voltage from the household a.c. The supply is entirely transistorized; it runs cool and should go on indefinitely. During our tests there was never a hint of performance change due in any way to environmental effects on these components. The circuit is simple; it ought to be rock-stable at all times.

With such a system it would be expected that the designers could place output at most any level they choose. What they have, in fact, evolved is most interesting.

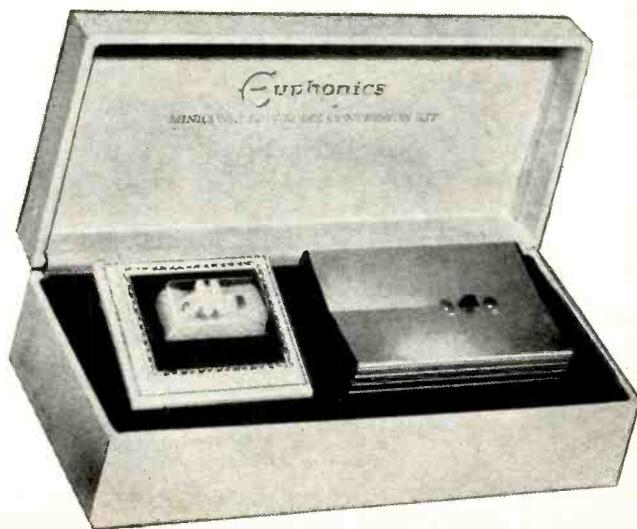
The power supply has a top-mounted slide switch. In one position, the output is like that of a magnetic cartridge. It needs RIAA equalization. Output to the preamplifier measured 11.2 mV on the left channel and 11.8 mV on the right. (From a 1 kHz recorded velocity of 3.54 cm/sec per channel.)

The alternate position of that top switch changes the output to an RIAA equalized high level. This will directly feed an AUX amplifier input.

Our tests were all performed in the low-output position.

The frequency response graph in Fig. 5 is indicative of the facilities of this approach. Neither this sweep nor square-wave observation detected an obvious resonant peak below 20 kHz.

Fig. 4. The Euphonics CK-15-LS Phono Cartridge and its power supply.



Dynamic-compliance figures obtained were quite high. Lateral compliance is 4.5 and vertical compliance is 6 ($\times 10^{-9}$). Remember that this is *dynamic* compliance measured under actual playing conditions; not in a static test jig.

rear, to throw the balance weight in the opposite direction from the offset. The result is an approximate torsional balance (depending on the weight of the cartridge) around the pivot.

The shell offers an interesting feature

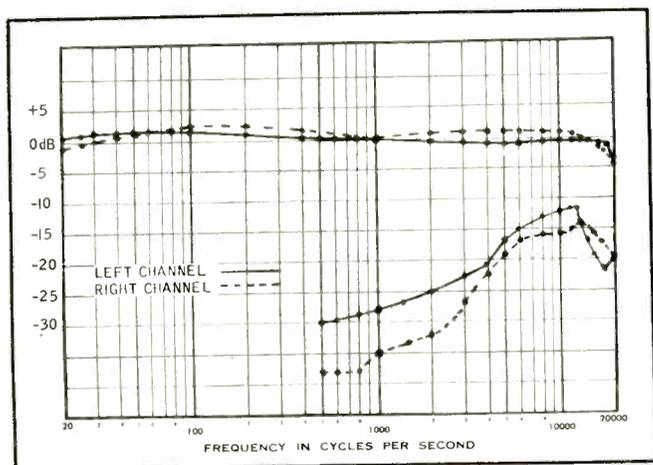


Fig. 5. Frequency response and channel separation of the Euphonics CK-15-LS cartridge. The test record is the CBS STR-100.

IM distortion measurements of the Euphonics were quite respectable, though not the best we have seen. The +9dB band of the CBS STR-111 was 3.8 per cent lateral and 3.0 per cent vertical distortion. Lest you think these figures *bad*, the best we have ever seen was about 2.5 per cent horizontal or vertical, and never have we both figures from the same cartridge. Therefore, this Euphonics must be considered a low-distortion product.

Required tracking force in a good arm can be held to 1.5 grams. This force includes an adequate protective factor to safely see the stylus through high-modulated discs.

As can be guessed, the Euphonics produces a faultless sound. Given a good source, the adjectives that come to mind are: *shimmering, bright, clean*. The flat frequency response makes this cartridge sound unspectacular. But that is as it should be. A cartridge's job is to extract what is in a record groove. This the Euphonics does with a great deal of truth.

Circle 203

THORENS TD-150 TURNTABLE

This latest entry from the Swiss firm of Thorens is available as a complete arm/turntable/walnut base package. These components may not be had separately.

The TD-150 system is of that type where the arm mount and turntable sub-assembly are linked solidly together while this combination is isolated (by three springs) from the base. The justification for this approach is that there is a significant reduction in sensitivity to acoustic feedback and a lessening of reaction to external vertical shock.

In any case, the TD-150 package is formed around a two-speed turntable. Drive is from a unique double synchronous motor and is via a belt to an inner platter. 33 or 45 is selected by the one control knob. That same knob is also the power on/off. Push it down for *off*; pull up for *on*.

The arm is of low-mass construction. The metal tube is double canted: up forward to achieve an offset angle; in the

we have not seen before. In addition to the now common forward/rear slide of the cartridge for correct overhang, there is a tilt adjust to allow the correct stylus tracking angle to be set. This is commonly 15 degrees but should be set in accordance with the instructions provided by the cartridge manufacturer.

The arm as a whole is of the type that achieves stylus force by adjusting the counterweight. There are no springs. A clever metal template fits over the rear section of the arm. It contains slots calibrated for each quarter gram of force. With this in place the rear weight is adjusted to balance the arm. (There are coarse and fine movement controls.) With the template removed, stylus force is correctly set to an accuracy of 0.1 gram.

There is need to also mention a damped arm-lift mechanism. This is a particular aid to butter-fingered operators (like us).

Tests

Total unweighted rumble measured -35 dB below 1kHz at 3.54 cm/sec. lateral and

vertical, or lateral only. Weighting with a 50 Hz chop-off gave a figure of -45 dB. The practical results of these numbers are to be heard when music springs forth from a velvety silence (when there is no rumble on the disc itself, that is).

Total flutter and wow was measured at 0.05 per cent. Arm resonance is below 10 Hz. Speed accuracy under load was consistently 0.5 per cent fast—well within specifications.

There is a multiple-spindle adapter. Used one way, it is the standard spindle. Used reversed, it is the large hole adapter. It is also the gauge against which correct stylus overhang is set.

All in all, this Thorens shows much that is clever and good. Certainly, it performs well. It gives every promise of being durable. At \$99.75 it makes a very attractive package. It is recommended without reservation.

Circle 204

THORENS TD-124 SERIES II

There are some products that seem to go on indefinitely. The TD-124 is one of them. We have had one in almost daily use for over six years. The only service has been a one time change of the belt.

The Series II designation is indicative of some real improvements on a product that was already excellent. Some of these are visible in a restyled knob and rubber mat. Most, however, are below the surface.

The TD-124 uses a drive system that is like no other. The shaft of a four-pole motor has a pulley which drives a small belt. This, in turn, is wound around a second pulley that drives a large puck. The second pulley is stepped to offer the range of four speeds that are available. The puck is in contact with the rim of a heavy inner turntable. On top of that platter lies a light aluminum one. A clutch arrangement places them in contact or separation. When separated, the inner table spins while the outer one (with the disc) is stationary. Thus, slip-starts may be made easily.

There is a magnetic eddy brake that is operative around the four nominal speeds. This allows a vernier adjustment of speed

(Continued on page 51)



Fig. 6. The Thorens TD-150 System.

(from page 36)

NEW LITERATURE

● **Service Technician's Aid.** Sprague's popular Electrolytic Capacitor Replacement Manual is now ready in a new expanded and up-to-date edition. It now contains nearly 100 more set suppliers that were not to be found in earlier editions. All told, 389 different makes are featured, going from Acme to Zephyr, including TV sets as well as home, auto, and portable radios, tape recorders and antenna rotators manufactured from 1947 up to November, 1965. The 64-page manual lists original part numbers for each manufacturer, followed by ratings, recommended Sprague replacements, and list prices. More than 2500 electrolytic capacitors are included in an effort to ensure exact replacement. This is Manual K-108 and is available free of charge from Sprague's distributors or directly from the company. Circle 206

● **MATV Distribution Systems.** A new booklet by Blonder-Tongue describes system components which give any existing or future MATV system full 82-channel capability. Included are full architects and engineers specifications. High-lighted in the publication, titled "Don't get Caught in the TV Traffic Jam", is a new system to permit high-level distribution of UHF signals without the necessity for conversion to VHF. Also shown are the advantages of this system to such users as schools, hotels, apartment house developments, and TV dealer showrooms. There is no charge for the booklet. Circle 208

● **Magnetic Tape Specifications.** Irish Magnetic Tape has recently released a brochure outlining the technical specifications on its 190 and 200 series recording tape. The specifications cover a total of seventeen magnetic properties and fifteen physical ones. Also offered are characteristics that are general to the entire Irish line. The brochure is offered free of charge. Circle 209

● **Magnetic Films.** A brochure issued by Reeves Soundcraft Division of Reeves Industries describes new microplated magnetic films. The four-page bulletin provides illustrations, physical characteristics, and price information on the Soundcraft line of 35mm and 16mm full-coated and 35mm Magna-Stripe magnetic films, available in lengths from 400 to 2000 feet. The publication also describes Reeves' Magna-Striping service for 16mm prints and raw stock. Copies are available at no charge. Circle 207

● **Tape Cartridge System.** KRS Instruments, Division of Datapulse, Inc., has just released a two page sheet that describes their STACTape stackable, continuous-loop, magnetic tape cartridges, that offer editing reversibility, 1200-foot tape capacity, and maximum tape protection. This is KRS Instruments Technical Bulletin S-1. Circle 210

of about ± 3 per cent. It may be accomplished while a record is playing.

Other niceties include a built-in illuminated strobe that shows dots for the 33 speed. The inner weighted platter is now non-ferrous. So it can be used to better advantage with certain magnetic cartridges that are sensitive to such things.

There is a built-in leveling bubble. And, most useful to a tinkerer is the fact that the arm-mounting plate is readily removable and interchangeable. There are boards and bases for 12- or 16-inch arms.

Total rumble measured 31 dB below a 1-kHz signal of 3.54 cm/sec recorded velocity. A 50-Hz cut off reduced rumble to -43. These figures are better than they appear to be. The prime rumble frequency is 15 Hz. This is a practical situation of inaudible rumble.

Flutter is 0.08 per cent. Our experience with the original unit makes us think that this figure will stay that way. The same is true of the other characteristics.

The Thorens TD-124 is for the music lover with the need for a dependable-quality unit. As a completely separate component, it is ideal as the foundation upon which to build a complete system. Certainly, we consider this table to be in a class by itself. \$125 may seem a lot to spend for a turntable—but then this is what you must pay for the construction involved. We said this about the original TD-124. The Series II has only added emphasis to that belief. Circle 205

ACOUSTICAL REARGUARD

**D-12**

Range: 40-15,000 cps
Response: ± 3 db over entire range
Dimensions: 5 $\frac{1}{8}$ " x 2 $\frac{1}{2}$ " x 2 $\frac{1}{8}$ "
Data sheet available on request

Insensitive to sound reaching this dynamic microphone from the rear...An exceptionally pronounced cardioid pattern produces an acoustical shield of approximately 180° that effectively isolates unwanted sounds originating from noisy audiences, feed-back or reflection.

FOR SUPERIOR SOUND

**C-60**

Range: 30-18,000 cps (cardioid)
30-30,000 cps (omni-directional)
Response: ± 2.5 db over entire range
Dimensions: $\frac{3}{4}$ " Dia. x 4"
Data sheet available on request

A high quality condenser microphone for music and speech. Its characteristics provide truest fidelity for reproduction and recording. The C-60's many uses and users attest to the unusual versatility of this microphone. Available with either cardioid or omni-directional capsule.

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