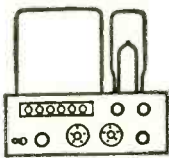
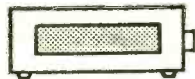
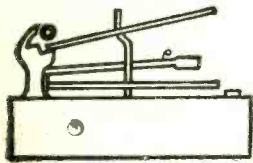


EQUIPMENT



PROFILE

KENWOOD MODEL KW-550 AUTOMATIC FM-STEREO TUNER

One of the normally present attributes of the old-school audiofan is the desire to have components which not only perform satisfactorily, but which also *look* impressive—a characteristic that seems to be retrogressive in this day of solid-state tuners and amplifiers which are shrinking in size so rapidly that one should soon be able to carry his entire hi-fi system around with him like teen-agers do their inevitable transistor radios—except that he would be dragging a long extension cord behind him.

Not so with the new Kenwood KW-550 tuner. It looks impressive, it is large enough to provide an imposing panel to grace your equipment cabinet, and its performance should satisfy most users.

Circuitry

The antenna input is unbalanced, and is provided with a local-distance switch which introduces a loss of some 22 db when in the local position, thus reducing the possibility of strong input signals introducing cross-modulation effects in the presence of high field strengths. To reduce this effect still more, feedback is applied around the first section of the cascode input amplifier, and a still-further deterrent is the application of a.g.c. voltage to this same first section, a 6CW4 Nuvistor. This tube, in conjunction with one half of a 6AQ8 forms the cascode r.f. amplifier section, with its output being fed to the second half of the 6AQ8 as the mixer with a tuned circuit between the sections. Another 6AQ8

serves as local oscillator and a.f.c. stage, the latter fed from the ratio detector but provided with a disabling switch.

A total of five stages make up the i.f. amplifier—two 6BA6's, two 6AU6's as limiters, and a 6BL8, with its pentode section an additional limiter and muting stage. The triode section of this tube controls the muting and a panel-mounted variable control sets the threshold. Two diodes comprise the ratio detector, and their output is then fed to the grid of a 6AU6, whose plate circuit serves to extract the 19-kc pilot, while the audio signal is available from its cathode. This signal is then split to two channels—one with SCA filtering to a band-pass filter for the sub-carrier, and the other through a low-pass filter to the dimension control, an under-chassis potentiometer which adjusts the amount of L + R signal that is mixed with the detected sub-carrier to set the amount of separation to its optimum value.

Sub-carrier detection is achieved by a balanced diode bridge energized by the 38-kc oscillator, which is the triode section of a 6BL8, which is synchronized by the 19-kc amplifier employing the pentode section of the same tube.

The first section of another 6AQ8 further amplifies the 19-kc pilot signal and feeds it to a filter combined with two more diodes to provide a d.c. potential which is applied to the grid of the second section of the tube so as to actuate a relay in its plate circuit. The relay has three sets of double-throw contacts—one set switches the indicator lights, and the other two switch the output amplifier sections to the appropriate stereo signal channel

or together to the mono bus. One feature which is apparently unique to the Kenwood is the stereo-monitor switch—in the off position, stereo reproduction is normal on a stereo station, but when the switch is operated, the L + R signal is eliminated, leaving only the L - R signal. Since there is no L - R signal in a mono transmission, operation of this switch will give an immediate indication of the presence of a stereo signal—if the program is mono, the sound will cut out all together.

The output amplifier of each channel comprises one half of a 12AX7 as an anode follower driving the volume control, which in turn feeds one half of a 12AU7 as a cathode follower. Parallel outputs are provided to feed an amplifier and a tape recorder simultaneously.

In addition, a separate output jack provides a mono signal at all times, regardless of whether the station is broadcasting in stereo—a useful feature to feed another amplifier for driving a remote speaker, or for center-speaker fill.

Operation

Listening tests show the set to have a minimum of hum and noise, bearing out the specifications of -60 db satisfactorily. In A-B listening with other tuners, the KW-550 appeared to be a little brighter in response, and stereo separation excellent. In fact, the over-all operation gives the impression of smoothness and sharp tuning with adequate rejection of interference from alternate channels. Switching between mono and stereo was precise and effective, and since the switching was performed by a relay, there was never any hesitancy about the changeover—it was either one or the other, and with no fringing.

With the stereo/auto/mono switch in the stereo position, of course, there was no switching, but the attendant advantage of remaining in the stereo mode avoids the annoyance of continually being switched in and out of stereo on fading signals, as is the case in fringe areas with some tuners.

We were especially pleased with the fact that the instruction book for the KW-550 included a schematic—in our opinion most important, since many component buyers are their own service men and need the schematic, and furthermore even if an outside service man is called in, he is not too likely to have ready access to a schematic if service should become necessary. Fortunately, the history of component equipment is comparatively free from instances of failure, but inevitably there are times when one of the several hundred bits and pieces which go into a device as complex as a tuner



Fig. 1. Kenwood Model KW-550 FM-Stereo Tuner.

does give up the ghost. Then a schematic is most essential.

Also commendable are the diagrams for interconnecting the KW-550 with other components to complete a home system. These should enable the novice with minimal knowledge of the art to put together a finely workable system which can give him the untold hours of pleasure he has a right to expect.

Circle No. 220

OKI 333 STEREO TAPE RECORDER

It is intriguing to see the new tape recorders being issued by manufacturers. Two trends are evident. One is transistors. More and more units are all solid state. The second is price-versus-quality. Price is on a good downslide, while performance characteristics go up.

This latest unit from the Japanese firm Oki is an outstanding example of the preceding; it offers a measure of musical sound that is well ahead of its modest price of \$300.

The Oki 333 is a four-track stereo record and play unit, complete unto itself. It contains built-in amplifiers and outrigger speakers. The entire unit packed-to-go looks very much like a super-sandwich. Two speaker slices fit on front and back of the transport mechanism. They are mounted on slip-hinges for easy removeability. Each speaker carries its own plug-in cord so that it may be set at some distance from the transport.

Five mechanical slide switches control all transport functions. Above the head covers is to be found the speed selector. Two speeds are provided; 7½ and 3¾ ips.

Two switches are on each side of the covers. To the left is REWIND and PAUSE. Swinging over to the right, we find RUN and FAST FORWARD. These are so interlocked that it is not possible to activate two simultaneously.

Just below these controls is a strip that contains three pilot lights. Two, towards the left are record indicators.

The one to the right, accompanied by the power on/off button, is the power pilot.

The lowest panel is the electronics. The 333 provides completely separate control, both record and play, for the two channels. There are two volume controls. And, there are two record buttons. Finally, there are a pair of playback buttons. One additional solitary button sets the preamp equalization for the chosen speed. One knob is a tone control; only for playback and only in the amplifier speaker output circuits.

The final attributes of the front panel are a pair of vu-type indicators. They are calibrated in decibels. Upon examination, we were delighted to find that this calibration was accurate. 10 db down from maximum recording level was 10 db down. Further, the meters, while it must be admitted that they look like the usual inexpensive kind put on home recorders, are very close to professional in quality. They are reasonably non-frequency-discriminatory, at least over the range of operation required by the recorder. And, they are well damped so they do offer a good average level.

Listening and Electronic Checks

We have noted previously that the Oki 333 is complete unto itself. The two speaker wings each contain a 6½ and a 2½-inch speaker. The smaller driver is fed through a series capacitor so that it acts as a tweeter.

We did a considerable amount of listening to commercially-recorded tapes. The over-all sound quality was surprisingly good. While these speakers, and the internal amplifiers in the recorder, are no serious threat to high-priced components, they, nevertheless, will provide good listenable sound at a room-filling volume.

Recordings made on the 333 at the higher speed, were close in sound to the original and, again, in excess of what is to be expected in this price league.

Total flutter and wow at 7½ ips met

the published specification on the nose, 0.12 per cent. No spec is given for the slow speed. We measured a highly satisfactory 0.25 per cent.

NAB response using Ampex test tape was as follows:

frequency (cps)	db
12,000	-4.0
10,000	+0.5
7,500	+2.5
5,000	+2.5
1,000	0.0
500	0.0
250	+1.0
100	+2.0
50	+5.0

Over-all record/play response at 7½ ips was ± 2 db from 50 cps to 11,000 cps.

Speed regulation was found satisfactory. Our sample ran 2 per cent fast at 117 volts. Zero error was reached at 95 volts. This means that musical numbers recorded on an accurate speed machine would play slightly sharp on the Oki. Tapes made on this machine, of course, would be pitch accurate.

A tape-activated microswitch is mounted in the tape head slot. It effectively shuts off both mechanical and electronic operation if the tape breaks or runs out. It does this, furthermore, in any mode, play or rewind.

Any product must be evaluated for what it is, not what it might be. The Oki 333 is a fine machine—most listenable, readily portable, and likely to be durable.

Circle No. 221

KOSS-REK-O-KUT 2-SPEED TURNTABLE/ARM, MODEL R-34

For many years the Koss and Rek-O-Kut names have been highly respected in their individual fields; headphones for Koss and turntables for Rek-O-Kut. Now that these two respected names have been wedded, one would suspect that the products of this union would be worthy of their forebears. Indeed this is true of the Model R-34 turntable and arm.

The R-34 consists of a two-speed turntable, 33 1/3 and 45 rpm, an S-440 arm, and a walnut base. The arm and turntable are mounted so as to eliminate acoustic feedback, and the turntable is belt driven. The result of all these measures is to reduce noise and rumble to an extremely low level. In addition, the hysteresis-synchronous drive motor is sufficiently accurate in speed to permit precise pitch reproduction of properly recorded discs.

This R-34 should not be confused with an earlier model which did not have a plug-in head, as does this model. This change is significant in that arm resonance is reduced. In any case, performance seems to have been improved



Fig. 2. OKI 333 Stereo Tape Recorder.