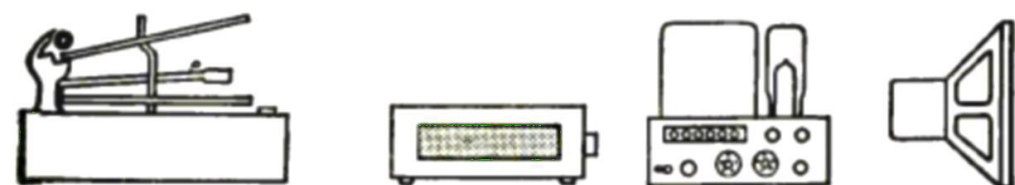


EQUIPMENT



PROFILE

AMPEX PORTABLE STEREO TAPE RECORDER, MODEL 2070

The Ampex Model 2070 is a self-contained stereo reel-to-reel tape recorder designed to offer the easy-loading convenience of a cartridge machine with the flexibility of a reel-to-reel machine. In addition there are several technical innovations which make this machine interesting from any viewpoint.

The first, and most striking feature, is automatic threading. One glance at the top of the machine reveals that there appears to be space for only one reel; in the place where the take-up reel would normally be we see a flat surface with a slot in it. The clever visual design points the way: one merely takes the tape from the supply reel, places it in front of the head as usual, then places it in the slot, and the machine does the rest. Not only does it thread itself on the special reel concealed beneath that flat surface, but the machine will automatically reverse the tape direction at the end of the reel, or whenever you want it to! And then, if you want it to, it will shut itself off.

The reversing command is placed on the tape by the machine itself and consists of a low-frequency tone which sets off a chain of circumstances which ends up by reversing the motor. Yes the motor is electrically reversible. The built-in low-frequency oscillator may be actuated to place its command signal anywhere you desire on the tape.

As far as ease of operation is concerned, we must admit that the 2070 (and its 2000 series family) is the easiest to

operate we have experienced in some time. It can be operated easily with one hand. The only thing we found fault with is that there is no indicator to show when the machine is on or off. The machine is turned on by lifting the tone control knob about $\frac{1}{4}$ -in. Unfortunately, because of the handsome visual design, it is very easy to overlook the fact that the knob is raised, and there is no other visual indicator of on-or-offness.

Although the 2070 plays back, mono or stereo, in either direction, it records in the forward direction only. It uses three heads to record 4-track stereo or mono and play it back. Head one is for playing back tracks 2 and 4 (reverse direction), head two is the erase head, head three plays back tracks 1 and 3 (forward direction) and records all tracks. The heads are mounted on an unusually rigid die-cast and machined block which is securely and accurately mounted to the die cast and machined main chassis.

In keeping with its professional head assembly, the 2070 uses tape lifters and pressure rods (not pressure pads) similar to the ones used on the Ampex 300 (scaled to size of course). Seem to be made of the same milky-white glass-like material. The tape guiding system is appropriately accurate.

The Drive System

Close examination reveals a highly unusual system for driving the tape past the heads: there are two capstans, one at each end of the tape head block. This short, tightly controlled path past the heads insures precise tension and speed control. In fact, as the performance data will reveal later, this machine has the lowest flutter we have encountered in a tape recorder designed for this purpose (professional recorders may have lower flutter).

The single-speed, electrically-reversible motor has a three-stepped pulley for driving the capstans, plus another pulley for driving the reels. The capstan pulleys drive a belt which loops about the two massive flywheels used to drive the cap-

stans. An x-ray view from the top would show the belt in a roughly triangular shape, around the motor pulley at the apex and around a flywheel in each remaining corner.

The tape reels are also driven by a belt system, which derives power from a pulley on the motor shaft. This belt goes around three idlers, two of them are close to the tape reels and mounted on an arm which permits these idlers to contact the respective reels for fast forward or reverse. Ordinary speed is imparted through a large diameter wheel below the reel which is brought into contact with an appropriate surface on the idler.

The drive system is both simple and rugged. Our guess would be that it will hold up extremely well, and with little, if any, trouble.

We are unable to describe the electronics of this machine because a schematic was not available at the time we tested it, at least not to us. However, we can note that it is a tube circuit.

Performance

An interesting facet of the performance specifications given by Ampex is that they publish two sets: average and guaranteed minimum performance. We found that all our readings came closer to the average rather than the minimum value. With the reputation of Ampex, it is exactly what we would expect.

The frequency response at $7\frac{1}{2}$ ips was within 2 db from 30 cps to 17 kc; at $3\frac{3}{4}$ ips within 3 db from 45 cps to 12 kc; at $1\frac{7}{8}$ ips within 3 db from 50 cps to 5.5 kc. Signal-to-noise ratio at $7\frac{1}{2}$ ips was 51 db, at $3\frac{3}{4}$ ips it was 46 db, and at $1\frac{7}{8}$ ips it was 42 db. Total flutter and wow at $7\frac{1}{2}$ ips was 0.07 per cent at $3\frac{3}{4}$ ips it was 0.14 per cent, and $1\frac{7}{8}$ ips it was 0.21 per cent. As we noted before, this flutter reading is excellent. The speed accuracy at $7\frac{1}{2}$ ips was within 0.5 per cent, at $3\frac{3}{4}$ ips it was within 0.8 per cent, and at $1\frac{7}{8}$ ips it was within 1.9 per cent.

Power output from the built-in amplifier was 8 watts rms per channel.

The Ampex Model 2070, and its related brethren in the 2000 series, are obviously excellent machines at a modest price. You'll be quite pleased at its ease of operation as we were, but its best quality is performance. **Circle 160**

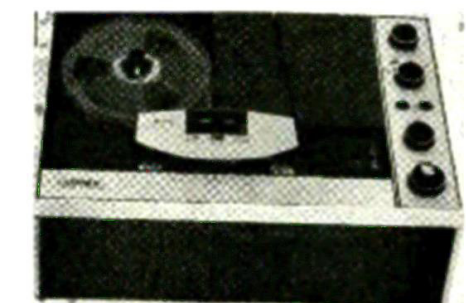


Fig. 1. Ampex Stereo Tape Recorder, model 2070.