TECHNICAL NOTE

*A CARTRIDGE FOR RUNNING LONG
VARIABLE-INTERVAL TAPES¹*

Catania and Reynolds (1968) lament the fact that variable-interval tapes, to be effective, must also be long. However, length need no longer be correlated with unwieldiness. An inexpensive cartridge has been developed and tested with tapes up to 10 m long; it satisfactorily contains such tapes within an area of less than 1 sq ft. Construction is not difficult and requires 2 to 3 hr for a machine shop to build. Operation has proved reliable over a six-month period of near continuous use.

Fig. 1. The cartridge with a 9-m tape.

Figure 1 shows the cartridge with a 9-m tape in position. The reel and guide are illustrated in Fig. 2. The backplate is 0.0312 in. (0.08 cm) aluminium; the reel and guide are lathed from 0.75 in. (1.91 cm) Plexiglas.

The reel is 3.5 in. (8.89 cm) in diameter, and is tapered to allow the tape to pull off with a minimum

of resistance. The guide is 1.75 in. (4.45 cm) in diameter and is cut at an angle of 45 degrees (Fig. 2).

A 0.2808 in. (0.72 cm) hole was drilled in the center of the reel, allowing the reel to revolve freely on a 0.75 in. (1.91 cm) stand-off 0.25 in. (0.64 cm) in diameter. A 0.125 in. (0.32 cm) recess was cut in the face of the reel so that a 0.375 in. (0.95 cm) washer could be fitted over the stand-off without hindering the free rotation of the reel. The guide was prepared in the same way.

The reel is bolted directly to the backplate by a 1.25 in. (3.18 cm) size 6-32 roundhead bolt and butterfly nut. Two bolts are removed from the tape-puller face—one from the bottom edge, the other from the left-hand edge—a 1.25 in. (3.18 cm) 6-32 roundhead screw passes through the guide and the backplate, and into the bottom screw hole in the tape-puller face; a 0.5 in. (1.27 cm) 6-32 roundhead screw passes through the backplate and into the left-hand hole in the tape-puller face, securing the cartridge to the tape-puller. An 8 in. (20 cm) length of heavy gauge wire, held by the reel bolt, extends down approximately 4 in. (10 cm) at 6:00 o'clock and out 4 in. (10 cm) at 2:00 o'clock. The former portion of the wire ensures that the tape pulls the reel in the correct orientation to the guide. The latter portion of the wire insures that the tape feeding the guide does not catch the tape on the reel. Some

Fig. 2. Front view of backplate and side view of guide and reel.

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care should be taken in adjusting the retaining wire so that it feeds the tape properly. Once this wire is adjusted, however, it requires little additional attention.

Kodak 16-mm white movie leader has been found to give the best results. Broken tape edges and other similar irregularities tend to foul the cartridge, and excessively long tapes are too heavy to allow efficient operation. The longest tape in use in this laboratory is 30 ft (10 m), although a 100-ft (33-m) tape has been tested and found to be too long (it would bind as it pulled off the reel). Tapes with lengths between 10 m and 33 m have not been tested. The tapes, once punched, should be wound around the reel and then spliced. The tape should not be wound tightly around the reel. A certain amount of slack is necessary to

allow the tape to pull freely from the inside of the winding. To change tapes, merely remove the wound-up tape from the cartridge and hold it secure during storage with one or two paper clips.

REFERENCES

- Catania, A. C. and Reynolds, G. S. A quantitative analysis of the responding maintained by interval schedules of reinforcement. *Journal of the Experimental Analysis of Behavior*, 1968, **11**, 327-383.

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