APPLICATIONS TO THE MAGNETIC TAPE STORAGE UNIT, FACIT ECM 64 (THE CAROUSEL MEMORY)

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Abstract.

The magnetic tape storage unit, ECM 64 or the "Carousel Memory", has been developed by Facit Electronics AB, Stockholm. The prototype of the Memory has been connected to the Facit EDB 3 computer for one and a half year. The applications to the Carousel Memory related here come from the use of this computer by the Facit Service Bureau in Stockholm. Although being a prototype the Carousel Memory is working 24 hours a day.

Fig. 1
Technical Introduction.

The ECM 64 is connected to the computer by a core storage that can be used as a buffer storage. Transfer of data from ECM is “time shared” and performed whilst the central unit is working at other programs. Transfers can be both peripheral and radial (see Fig. 1).

Figure 2 shows the ECM unit. The platter contains 64 spools and each spool has a 9 m (30’) tape of 19 mm width (3”). Tape speed is 5 m per second (16’ per second).

When reading or writing the platter turns to the addressed spools in a radial position. It can revolve in both directions. Reading or writing is performed during unwinding of the spools after which the rewinding runs automatically.

Figure 3 shows a part of the platter.

Security pins can be attached to the spools to prevent unauthorized writing on the tape. At this moment many thousands of spools are in use at the Facit Service Bureau.

Figure 4 shows a magnetic tape spool.

The average access time is 2 seconds but the direct immediate access facilities, however, are not as important as the dividing up of information into categories. One spool is, slightly exaggerating, equivalent to one conventional tape station. There are two platter types, one with fixed spools and one with easily removable spools.

To a platter is attached 64 spools of tape. On a spool of tape can be stored 128 blocks of information (data). One block consists of 64 words and one word of 40 bits. A platter can thus store more than half a million words or over 20 million bits. To find the data on a platter a binary word (address) is formed from the block number, the spool number, and the unit number. In the same word is also stored the number of blocks to be transferred. The smallest amount of data that can be transferred is one block. In a transfer all the data on the first addressed block is read continuously. The Facit EDB computer is of one address type and stores two instructions in each word. The speed is 22,000 additions per second. The transfer rate from buffer to internal store is 44,000 words per second.

Cut and Fill Programs.

The first application to be explained is the cut and fill computation from road building. The data from levelling are written in a field book and thereafter punched on paper tape. The paper tape is fed into the machine and converted onto magnetic tape. The contents of the field