

Memorex 630

1968

Memorex 630

1st "plug compatible" IBM Disk Drive (compatible with IBM 2311)

Why it's important

1. First IBM System/360 disk drive from a supplier other than IBM.
2. This shipment marks the beginning of the independent disk drive suppliers who today dominate the industry [Note 1].

The Memorex 630 was "plug compatible" with the IBM 2311 (quadruple capacity of the [IBM 1311](#)) in that it connected to IBM System/360 computers thru the IBM 2841 Storage Control Unit. It's disk packs were interchangeable, that is, "media compatible" with packs written on the IBM 2311.

Discussion

It is rumored that Memorex decided to enter the plug compatible disk drive business when IBM refused to give a volume discount on the IBM 2311 for a then contemplated key to disk system - the IBM price of about \$27k, versus an estimated cost of \$1.7k presented too much of a revenue and margin opportunity.

In 1966 Peripheral Systems Corp was formed by Memorex to pursue the key to disk system opportunity but it was soon redirected to a 2311 plug compatible disk drive development.. The initial development contemplated a hydraulic actuator like the 2311, but after Roy Applequist joined Memorex in April 1967, the project quickly switched to a voice coil motor. Other key engineers on the project included Dave Jepson (recording), Joseph Moos (servo) and John Richards (electronics). Ken Fannin was the chief engineer. The productivity of this group is noteworthy when compared to the size of a typical IBM disk drive development project (30 to 90 persons) or the "dirty dozen" [12 ex-IBM engineers] who founded the second shipping plug compatible disk drive company, ISS (Information Storage Systems), founded in December 1967.

Memorex was immediately followed into the IBM plug compatible disk drive market by a number of companies, including but not limited to ISS, Century Data, Telex, Marshall, Control Data Corporation, Potter Instruments, Ampex, etc.

Noteworthy features include the voice coil motor, ramp loading of heads, a "baby buggy" carriage and mechanical detenting to a rack on the carriage. It's seek time was substantially faster than the 2311 and arguably, because of fewer parts, it was marketed as more reliable.

The Memorex 630 was demonstrated at the November 1967 Fall Joint Computer Conference and first shipped to a Management Assistance Incorporated (MAI) customer in June 1968. A variant, the Memorex 620 was plug compatible with the IBM 2311-11 for use on the IBM System/360 model 20. Because of the rental nature of the IBM peripherals market, these products were mainly rented to IBM end users thru lease/ rental firms such as MAI.

OEM versions of the product were sold to Digital Equipment Corporation (Memorex 630-1 resold as DEC RP01), to RCA Corp. (Memorex 630-2) and others.

Several hundred units were shipped in the first six months of production (2nd half of 1968) at a price in excess of \$10k and a cost of less than \$4k. The product was quickly replaced by a quadruple capacity version, the [Memorex 660](#).

Notes:

1. The first independent disk drive was the Bryant 4000 series, circa 1961. and there were other captive and independent manufactures in the 1960s but the production volume available selling to other than IBM was not sufficient to create a robust market. Most captive manufactures exited the market, IBM in 2003. As of 2011 only Toshiba retains captive disk drive manufacturing and most of its sales are outside of Toshiba.

Additional information

- [Oral History of Roy Applequist](#), Computer History Museum, Accession Number 102657959
- US Patent 3,544,980, Magnetic Recording Disc Drive With Head Positioning And Collision Avoidance Apparatus, Applequist et al
- [Memorex Corporate History Timeline](#), Computer History Museum
- [Pugh et. al., "IBM's 360 and Early 370 Systems," \(c\) 1991, p. 270](#)

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