

# Memorex 3680 Disk Storage.

Museum Catalog #: <i>NEWUC:2005.44</i>	Manufacturer: <i>Memorex Corp</i>	Date: <i>1984</i>	Part. No: <i>92338003</i>	EC: <i>3348</i>
Comp: <i>Disk Drive</i>	Length: <i>810 mm</i>	Height: <i>500 mm</i>	Width: <i>410 mm</i>	Weight: <i>103 Kg</i>



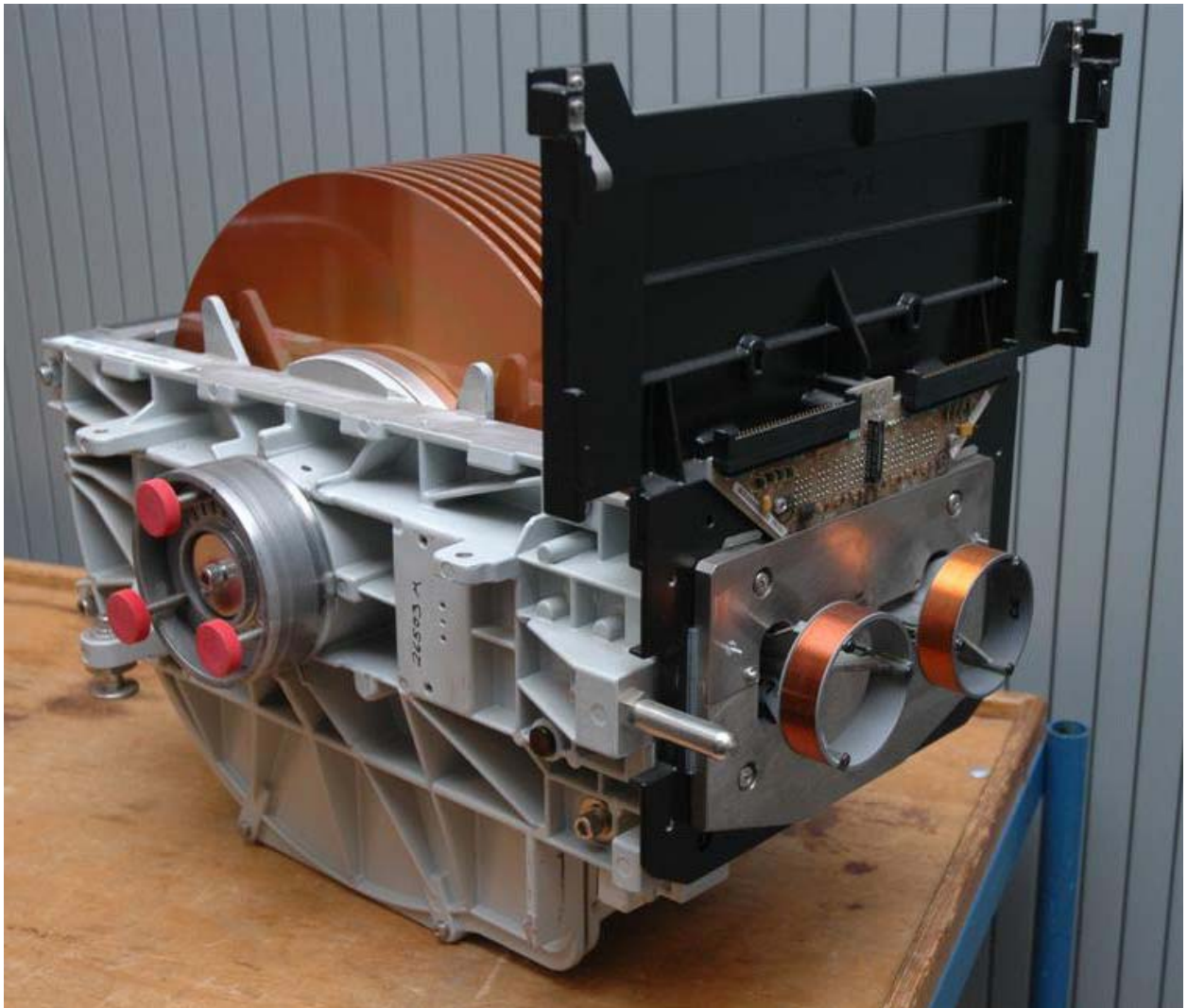
This is a photograph of a Memorex 3680 disk drive unit being repaired, as was too often the case. At the bottom is a power supply and out of sight, a large electric motor that turned the pack of disks via a belt. Above is control circuitry, and just visible a bit of the disk storage FRU itself.

The engineer is Jack Morgan who joined Memorex in 1979 and was based in Memorex England's North West office and covered in an around the Newcastle area. He came to the computer department often over many years.



What you are looking at weighs over **2 Hundredweight**, one tenth of a ton [102 kg, 224 lbs].

This is just a head disk assembly, actuator motors and base casting, it does not include the electric motor that turned the disks, or the power supplies, or the control logic, or the cabinet - framework, and enclosing panels. The total weight is 283 kg [625 lbs].



The Memorex 3680 Head Disk Assembly removed from the disk drive.

A higher capacity version, the Memorex 3682, used a very similar Head Disk Assembly; the most notable difference was that the disks were thinner.

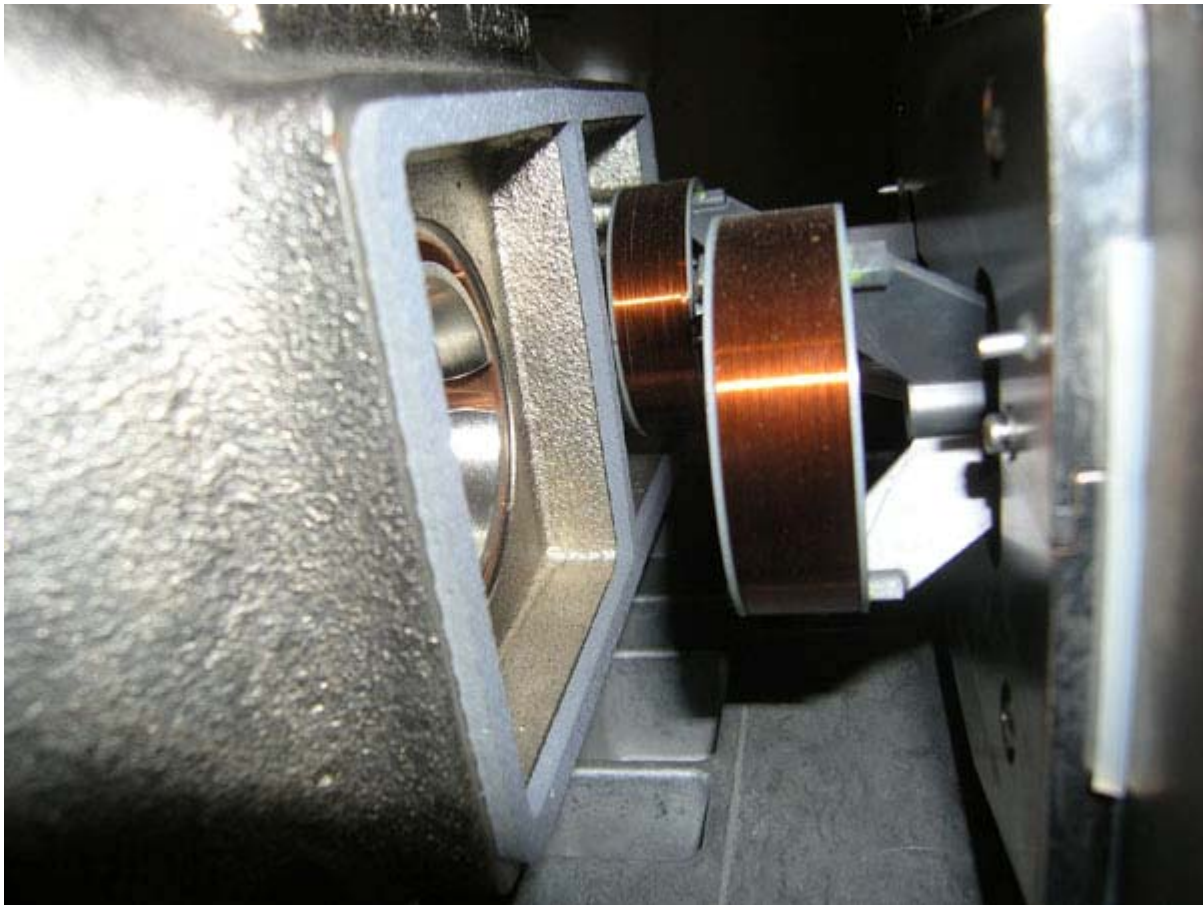




Here is a view of the 8 disk platters, giving 14 recording surfaces, plus two servo surfaces.

This head disk assembly was really two disk drives. Although only one set of disks, one motor and power supplies, it had two independent head assemblies and electronic identities.

This is not a removeable disk! It is an FRU, (Field Replaceable Unit), but its removal involved two people and quite some time. It was only removed if damaged.



Here is the two head assembly voice coils. The two voice coils are out of their magnetic actuator motors (on the left) because the head disk assembly has been released to a position where it can be removed from the drive.

Another significant aspect of this disk drive is that it moves each head assembly in a straight line along a radius of the disk drive surfaces. This was the same for earlier disk drives. This movement involved many bearings to keep the head assembly in place. All of these bearings are prone to wear, this restricted the density of the track spacing.

This is an example of a *linear voice coil actuator*.



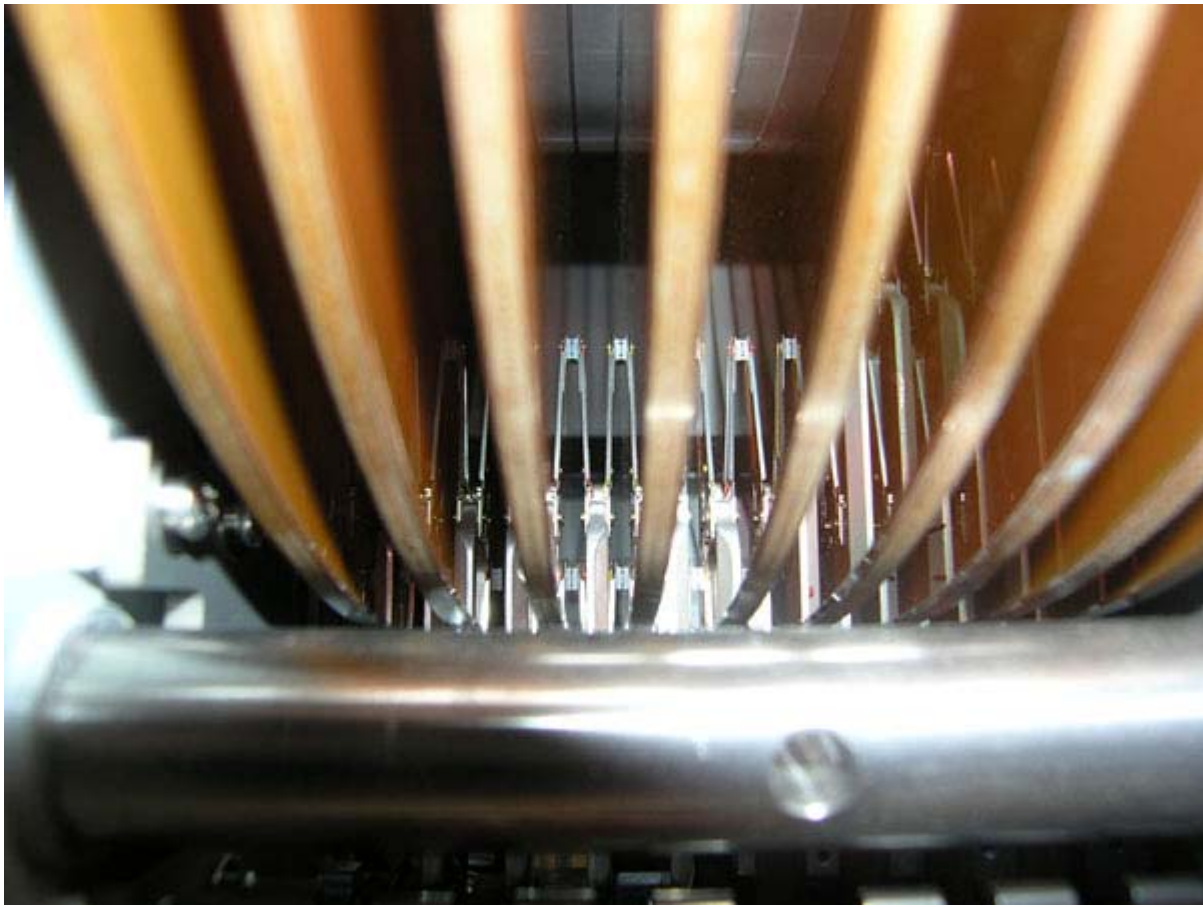
This is a rear view of the two magnets. The label reads:

**CAUTION**  
**UNIT WEIGHT**  
**156 POUNDS**  
**(71 KGS)**

This disk drive was at the end of an era.

Up to here in order to store more data the drives were built larger, and in order to go faster the driving force was more, which meant that the components were made stronger, which meant the force needed to be larger, components stronger, ...

This spiraling up of force, weight, strength stopped in about 1985, and this MEMOREX disk drive was typical of the behemoths that existed at the end.



In this photograph you can see that each of the head-arm assemblies had two heads per surface

The other significant fact of the MEMOREX disk drive was its thin film head. Here you can see them and their reflection on each disk surface.

The thin film head was manufactured using a photolithographic process, the same as was used to manufacture the semiconductor chips. The thin film heads had very narrow and controlled head gap. This enabled writing at greater densities and at closer track spacing.



Mus.Cat. <i>NEWUC:2005.50</i>	Mnfctr: <i>Memorex Corp</i>	Date: <i>1982</i>	Part. No:	EC:
Comp: <i>Paper Weight</i>	Length: <i>126 mm</i>	Height: <i>58 mm</i>	Width: <i>57 mm</i>	Weight: <i>256 g</i>



This advertising artifact was given away in 1982 to promote MEMOREX disk drives.

As well as the enlarged photo of a thin film head it incorporated an actual thin film head within the plastic, but it is hard to see. It is under the **hn** of **Technology** and above the word **film**.

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