

Many people are
unaware that most
scratched discs can
be repaired.

But the question is,
what kind of disc
repair is right for you?

Disc Repair & Maintenance Made Easy



venmill industries
INCORPORATED

Storage Media Timeline



What is Optical Media?

Optical media is family of transportable digital data storage media that includes CDs, DVDs, and Blu-Ray discs. The reason it's called optical media is because the data is stored digitally and read by an optical laser. Optical media has become the preferred method of mass storage, particularly of audio, video, and game data.

How does optical media differ from older analogue storage formats? (*i.e. tapes, records, floppy discs, etc.*)

The media degrades each time the data is accessed due to the physical contact from the magnetic read head.

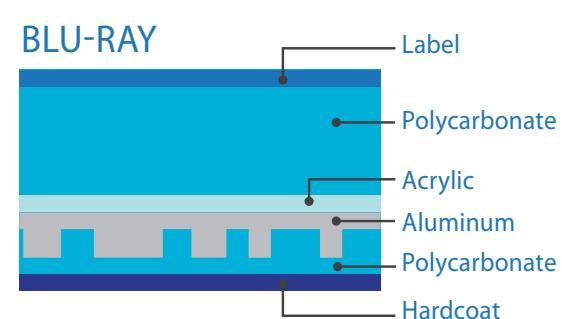
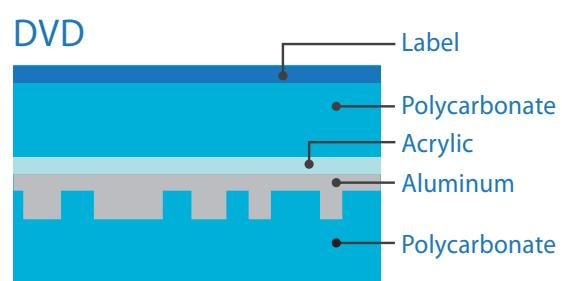
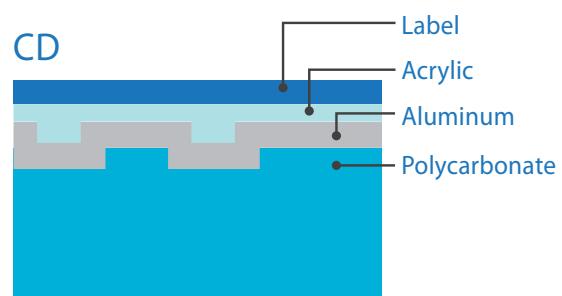
- A record requires a needle to read data
- A tape requires a magnetic head to access
- A floppy disc requires magnetic head

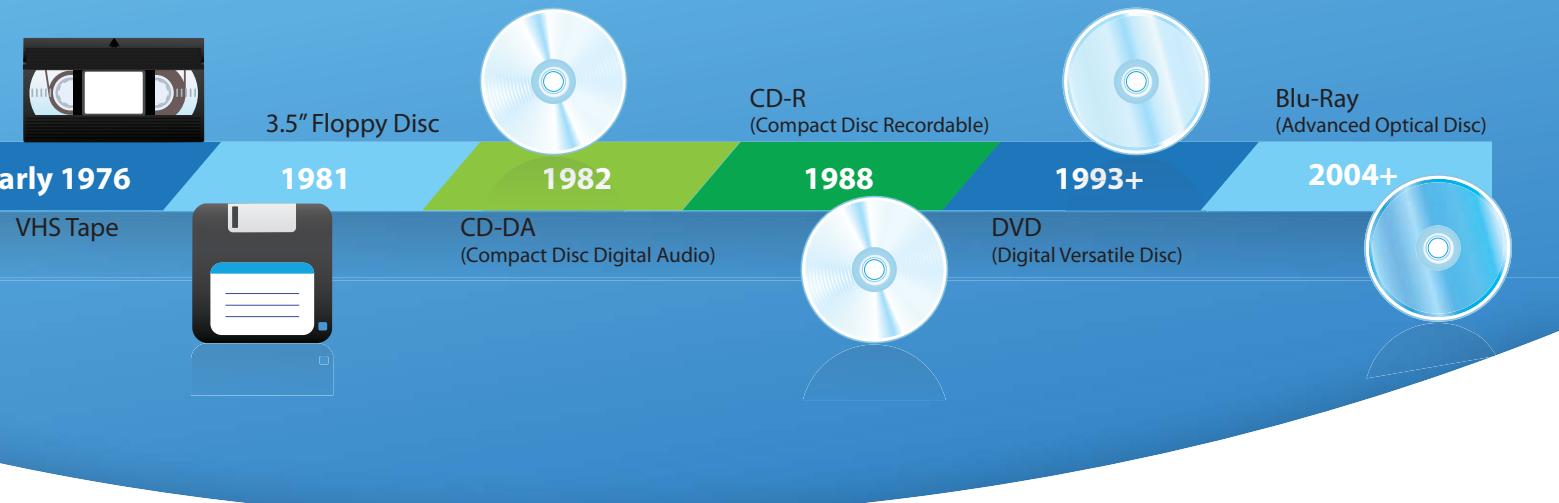
Optical media is read by a laser inside a player. That laser reads from the inside circle out as show in the illustration below. The physical storage of data on an optical disc depends on the type. Notice the illustrations to the right to see how each disc is constructed.



The laser from a player reads the disc from the inside out.

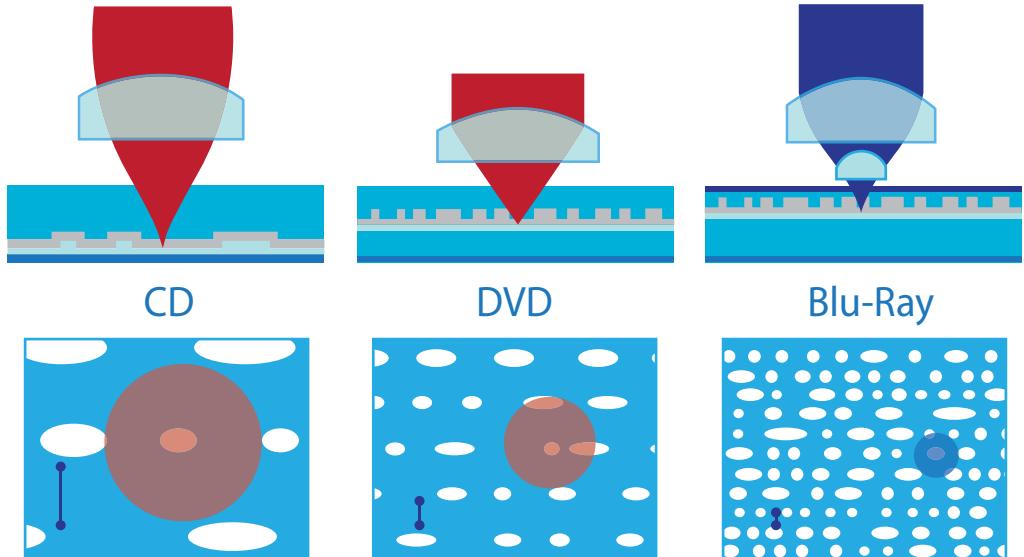
Where is the data located on a CD, DVD, and Blu-Ray Disc?





Laser reading
the data stored
on a CD, DVD,
and Blu-Ray.

As quality has increased over the years the data encryption has become smaller and tighter allowing for more information to be stored and viewed.



About Scratches and the Effect on Your Customers

The quality of your rental collection is paramount. The physical condition of collection is a defining factor and the yard stick you will be measured on by the rental customer. Pride is your collection differentiates you from the competition. You do not return to a restaurant with poor quality food or service, and in turn customers do not return to rental store with poor condition discs.

Simply reacting a customer complaint is potentially fatal as 10% of customers are vocal and 90% vote with their feet



Scratch Philosophy

1. Why do they occur?

Everyday use and handling make the protective plastic layer susceptible to surface scratches and blemishes which can disrupt disc playback.

Did You Know: The average scratch is less than 1 micron deep.

2. How to identify?

Simply inspect the bottom reflective side for any contaminants or scratches. For contaminants such as food, dust, grease, or fingerprints, we recommend simply using VenMill's Disc Cleaning-Kit, including a disc cleaning spray and scratch resistant microfiber cloth. Scratches will need to be repaired using a disc repair machine.

The CD reflection test: (This is more common for music discs, CD-Rs, and CD-RWs; as the data layer is under the printed graphic on top of the disc.) Inspect the "playside" (bottom of the disc) for scratch damage. If you can see through the disc and/or light can shine through the graphic on the disc, then chances are that the data layer has been damaged making the disc non-repairable.

3. What can be repaired & what can not?

In most instances even deep scratches can be repaired. Cracked, warped, dents, deep gouges or data damage cannot be repaired.

4. How do I know when to repair and when to maintain a disc?

The Fingernail test: Run your finger nail across the surface of the disc over the scratch, if you can feel the scratch groove in most instances the disc will need to be resurfaced to the depth of the scratch, leaving it optically flat and scratch free.

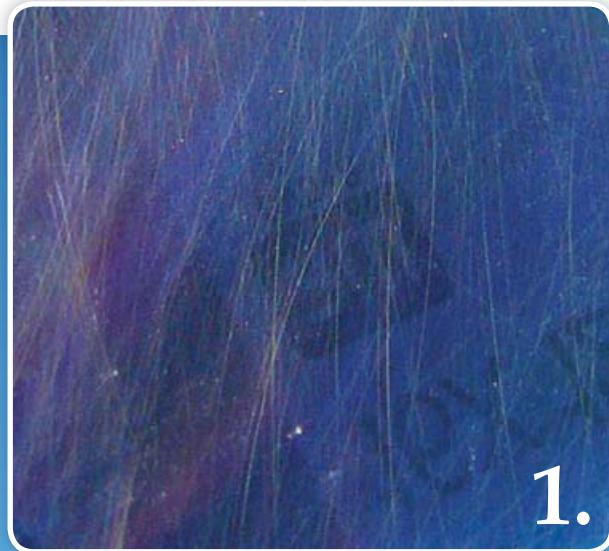
5. Scratch Depth

Light scratches and fingerprints are the most common reasons for disc read errors, maintaining an optically clear surface is imperative to ensure the discs data can be accessed each and every time.

Deep scratches about 5-10% of scratch damage is greater than 15-20 micron and will require the disc to be resurfaced before returning to a maintenance process.

The OptoClear Experiment

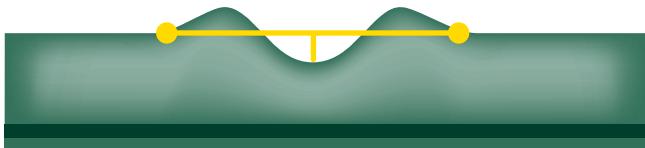
1. Heavily Scratch a disc.
2. Try to repair heavily scratched disc with "others'" repair machine.
3. Repair both heavily scratched disc and results from "others'" repair machines using VenMill's OptoClear™ Technology



1.

Use your fingernail to determine which repair setting needed

Scratch not felt with fingernail;
OptoClear Process Used for Repair.



*Majority of scratches on a disc (approx. 90-95%)
are less than 1 micron deep*

Scratched felt with fingernail;
Sanding Processes Needed First.



*Approx. 5-10% (not including permanently damaged discs) scratches
are deep enough that a small amount of surface will need to be removed.*

The Fingernail Test?

How can you tell when a disc can be repaired using the OptoClear™ Technology process or when it should be sanded first, prior to the buffing the process? Well, it's pretty easy. Use the fingernail test.

Most scratched discs can be repaired only using the OptoClear™ Technology. The majority of scratches found on a disc are less than 1 micron deep, meaning you can see them but you can't feel

them with your fingers. For the few deeply gauged discs you will need to first sand off some of the layer of plastic. To determine if a disc should be sanded first, run your fingernail across the surface. If you feel the scratch then it is most likely that the surface will need to be sanded first.

By running this self test first, it can save you a lot of money by not unnecessarily running a disc thru a sanding cycle and save you a lot of time.

2.

3.

Distributor Contact:



Reface Industries PTY LTD
ABN 106 335 433
107 Kew St, Welshpool, Perth,
WA, 6106

1300 REFACE (1300 733223)

P: +61 8 9472 8888
F: +61 8 9472 8866
W: reface.com.au

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www.venmill.com

keep it *playing* :)[®]



**DON'T THROW YOUR
SCRATCHED DISCS IN THE TRASH!
REPAIR OR RECYCLE.**

DID YOU KNOW? Over 4 million computer discs are thrown away each day, with a degrading time of over 500 years. That is 1,500,000,000 discs in landfills each year. eWaste is a growing problem because of disregard towards technology.

Usually most eWaste is disposed of before it stops working or people not aware that it can be repaired!

Contact us to recycle your discs.

