

PERTEC

PRODUCT IMPROVEMENT BULLETIN

PERIPHERAL EQUIPMENT DIVISION

REVISION A - AUGUST 15, 1976

TITLE			CARE AND CLEANLINESS OF D3000 DISK DRIVES AND MEDIA		PIB NO. DK3006A
PRODUCT LINE	TAPE DISK FORMATTER X	EQUIPMENT CHANGED N/A	MODEL SERIES AFFECTED D3000	EFFECTIVE DATE June 7, 1974	
CLASS OF BULLETIN:		ORDER PART KIT NO.	EFFECTIVITY		
<input type="checkbox"/> IMPROVEMENT		N/A	ALL MODEL D3000 DISK DRIVES		
<input type="checkbox"/> RETROFIT ON FAILURE			THIS PIB 3006A REPLACES PIB 3006 AND SERVICE INFORMATION NOTE DK 3001A IN ITS ENTIRETY - REMOVE AND DISCARD BOTH.		
<input type="checkbox"/> RETROFIT RECOMMENDED					
<input checked="" type="checkbox"/> SERVICE INFORMATION ONLY					
<p>PERTEC field reports indicate that some D3000 disk drives do not realize 100 percent up-time due to the lack of care, cleanliness and preventive maintenance.</p> <p>The D3000 disk drive was designed for easy and troublefree operation; however, there are certain aspects of the D3000 that will require cleaning and proper maintenance for compliance to warranty provisions and to produce the best possible results from the unit:</p> <ul style="list-style-type: none">A. Cartridge handling and storageB. CE alignment recommended during installationC. Care, cleanliness and preventive maintenance <p>Cleanliness and proper maintenance techniques are aspects your user should also be following to achieve best possible results from his D3000. Feel free to forward this improvement bulletin to your users. For more copies of the bulletin, please contact PERTEC, Product Support, below.</p> <p>Read your Operating & Service manual thoroughly as to cleanliness, operation, and proper maintenance.</p> <p>The last fifteen pages of this document demonstrates some types of defects and damage to the media and heads. The pictures of the media have been reprinted with permission of COMPUTER LINK CORPORATION, 14 Cambridge Street, Burlington, Mass. 01803. These pictures are copyrighted and may not be reprinted without permission of COMPUTER LINK CORPORATION.</p> <p>A. CARTRIDGE HANDLING AND STORAGE</p> <p style="text-align: center;">CAUTION</p> <p>DO NOT attempt to install or use a cartridge which is suspected of contamination or damage. Please refer to page 3-1 of your instruction manual for "Cartridge Handling and Storage!"</p>					

Should Additional Information Be Required — Contact

DISTRIBUTION CODE - 6318

PERTEC

PERIPHERAL EQUIPMENT DIVISION

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ATTENTION: PRODUCT SUPPORT MANAGER

PERTEC 20 K012C (11)

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B. CE ALIGNMENT RECOMMENDED DURING INSTALLATION

Prior to placing the D3000 disk drive into operation, it is recommended that the CE alignment procedure contained in Section VI of your instruction manual be performed. Since PERTEC cannot control the amount of shock a unit may encounter during shipping, it is possible that extreme shock during transit may occur. For this reason, PERTEC recommends that the CE alignment procedures be performed. Please refer to PIB DK3058 or section VI of your instruction manuals for "CE Alignment",

C. CARE, CLEANLINESS AND PREVENTIVE MAINTENANCE

Periodic preventive maintenance requirements of the D3000 disk drive are detailed in Section VI of your instruction manual. Periodic cleaning of heads and disks, and filter changing should be performed according to the prescribed schedules and procedures (highlighted in Appendix A, attached).

PERTEC recommends that operators, incoming inspection departments, and service personnel constantly be on the "look-out" for any situation that might prevent less than outstanding performance as a result of contaminants allowed to reside on the disk pack (cartridge) and/or head surface (highlighted in Appendix B attached). For proper care and cleanliness, refer to PIB DK3058 or Section VI of your Operating and Service manual for "Periodic Maintenance".

D. When flying head type disk drives exhibit evidence of a dirty head it is very probable that the disk is dirty also, and a dirty disk will probably indicate dirty heads.

Should a clean disk be used with dirty heads, the heads will contaminate the disk. Should a dirty disk be used in a drive that has clean heads, the heads will become contaminated.

One contaminated disk in a system can cause all disk and all heads in this system to become contaminated.

CAUTION:

DO NOT leave packs or platters open for extended periods (i.e., 5 minutes) without drive motor rotating. This will allow dust particles, combined with contamination from smog, cigarette smoke and other similar chemical substances, to create head crash conditions and will promote data problems with time. If platters are exposed for any extended period they should be cleaned.

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"APPENDIX A"

D3000

PREVENTIVE MAINTENANCE SCHEDULE

INTERVAL	ITEM
1000 Hours*	Clean Heads and Disks. Check Disk Cleaning Brushes (Top Load Only).
1000 Hours	Clean Pre-filter.
2000 Hours	Lubricate Static Discharge.
2000 Hours	Check belt for Wear and Proper Tension
2000 Hours or 6 Months*	Replace Air Filter
2000 Hours	Lubricate Catch Assembly Ball Studs in Bezel.
2000 Hours or 6 Months	Clean Spindle Magnetic Chuck and Cone.
4000 Hours or 12 Months	Clean Positioner
4000 Hours or 12 Months	Check CE Alignment
4000 Hours or 12 Months	Clean Base Casting and Inspect Machine.
12,000 Hours	Replace Disk Cleaning Brushes, Check Brush Cleaning Motor and Drive Mechanism for Wear. Lubricate Brush Arm Pivot and Drive Slot (Top Load Only).
24,000 Hours	Replace Drive Motor. Replace, Spindle.

The above listed preventive maintenance frequency is based on operating hours. Typically about 200 hours operating time per month will be accumulated for the average installation. When operating hours are less than the specified time interval, perform the maintenance on the time interval stated in the table above.

* More frequent servicing may be required if operating in an abnormally dirty environment or if a high rate of cartridge loading is encountered.

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PROCEDURE FOR CLEANING THE LOWER PLATTER

Parts Required:

1. Lint-free wipers such as Microwipes TX500 or equivalent. (Available from Texwipe, Inc., Hillside, New Jersey 07642.
2. Isopropyl alcohol, 91 percent by volume.
3. Disk cleaning wands (two required). Texwipe part no. TX800. (PERTEC P/N 623-0002).

Procedure:

1. Remove the drive from the system.
2. Remove cover from drive.
3. Raise Logic PCBA
4. A. Front Loader - Remove the access cover plate on the side of the lower disk cover.
B. Top Loader - Remove brush holder assembly for access to lower platter.

NOTE:

The lower platter area is considered a clean area and cleaning requirements depend on how often and how long this platter is exposed to the unfiltered atmosphere.

5. Prepare two cleaning wands as follows: One for alcohol and one for wiping dry)
 - A. Insert lint-free wipers into the barbed slot of each wand.
 - B. Rotate wand counterclockwise thereby wrapping wiper completely around wand. Take care not to contaminate wiper.
6. Dampen one wiper with isopropyl alcohol.
7. While rotating the spindle chuck counterclockwise, insert the alcohol impregnated cleaning wand at a 90-degree angle to the disk pointing directly at center. The wand should remain flat and stationary opposing the rotation of the disk, thereby removing or dissolving all foreign matter.

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8. Before the alcohol has evaporated repeat step 7 to wipe the disk surface dry using the second cleaning wand.

CAUTION

EXCESSIVE WAND PRESSURES CAN CAUSE DRY FRICTION
HEAT WHICH CAN DESTROY RECORDED DATA.

CAUTION

DO NOT ALLOW ALCOHOL TO DRY ON THE DISK SURFACE.
DO NOT TOUCH THE DISK WITH FINGERS, ACIDS EMITTED
FROM SKIN CAN CAUSE PERMANENT DAMAGE TO THE DISK
SURFACE.

9. Inspect the disk surface by illuminating the lower disk area with a suitable light source, e.g., flashlight.
10. Repeat steps (7) through 8 for the second surface of the lower disk.
11. Reinstall the plate and/or hardware removed in step (4) above.

NOTE

Removable cartridge disks can be cleaned in a similar manner, or they can be disassembled for cleaning. It is important that the slots (notches) in cartridge hubs be kept clean and free of dirt and particles.

12. Lower the Logic PCBA
13. Reinstall the cover.

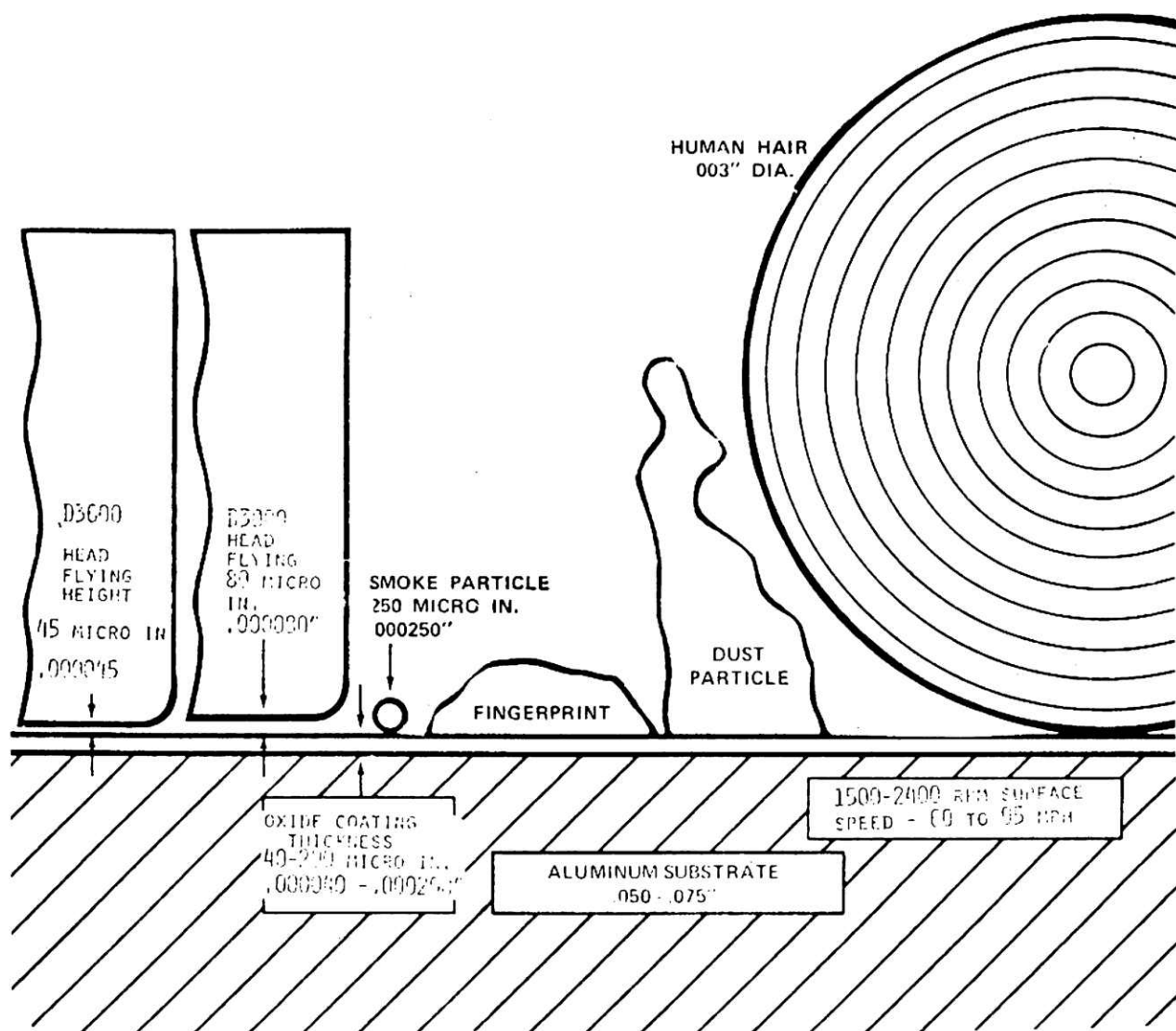
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MEDIA AND HEADS

- WHY IS THE HANDLING OF MEDIA AND HEADS SO IMPORTANT?
- WHY MUST WE USE TLC?
- WHY CAN A SMOKE PARTICLE, FINGERPRINT, DUST PARTICLE, METAL PARTICLES, OR HUMAN HAIR CAUSE PROBLEMS IN A DISK DRIVE?
- WHY MUST WE ALWAYS CONSIDER THE CLEANLINESS OF THE MEDIA AND HEADS?

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RELATIONSHIP OF MEDIA AND HEADS TO VARIOUS TYPES OF CONTAMINATION

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MEDIA AND HEADS

- MEDIA

- MEDIA IMPERFECTIONS FALL INTO THREE CATEGORIES:
 1. VISIBLE COATING IRREGULARITIES WHICH CAUSE NO PROBLEMS.
 2. COATING DEFECTS WHICH CAUSE DATA ERRORS.
 3. MECHANICAL DEFECTS LIKELY TO CAUSE HEAD/MEDIA INTERFERENCE (CRASH)

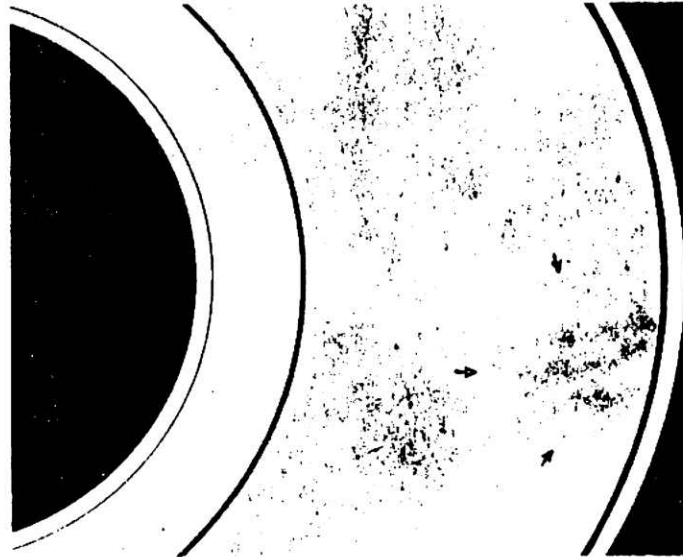
NOTE: THE PICTURES OF THE DISK RELATED DEFECTS ARE PRESENTED FOR INFORMATIONAL PURPOSES ONLY, AND SHOULD NOT BE USED FOR ACCEPTANCE OR REJECTION PURPOSES AT THIS TIME.

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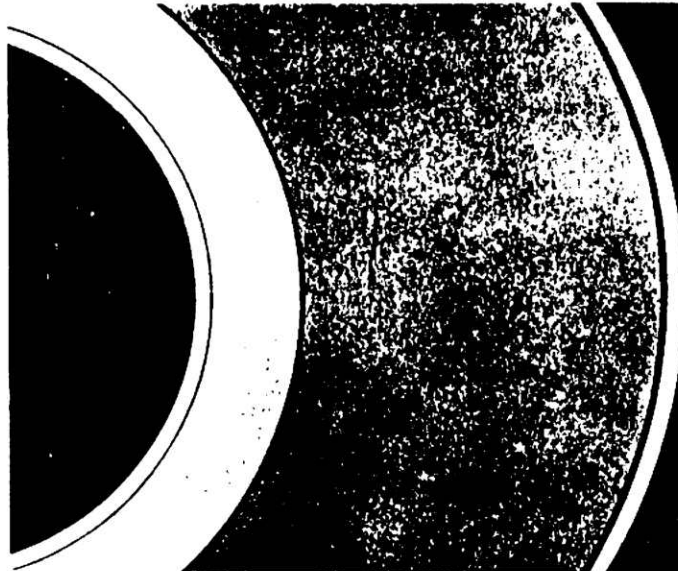
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MEDIA AND HEADS



RIPPLES OR POCKETS

Ripples, unpolished areas and surface depressions can cause head flying problems resulting in head/disk interference.



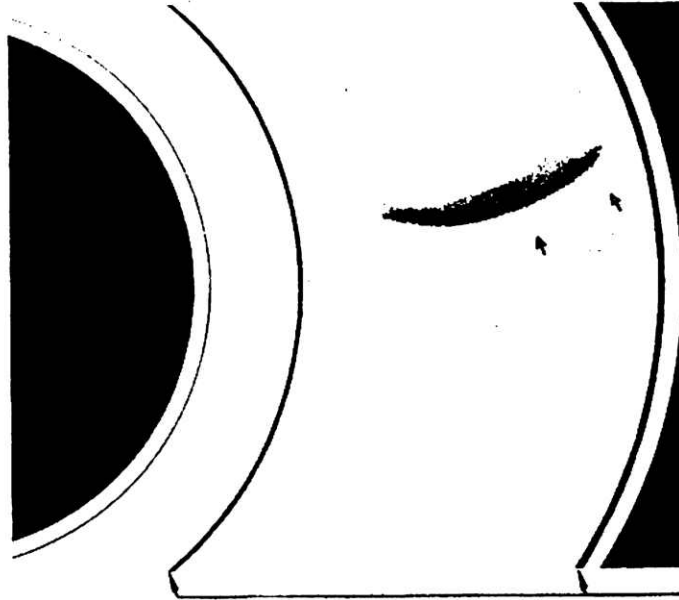
SCRATCH WITH VISIBLE ALUMINUM

A scratch deep enough to reach the aluminum may cause ridges which will result in head/disk interference. This disk should not be continued in service.

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MEDIA AND HEADS



Useable
Data Area

LAPPING SCRATCHES

These are color or surface texture variations caused by the manufacturing process. These do not pose any problem either magnetic or mechanical.



EDGE DAMAGE

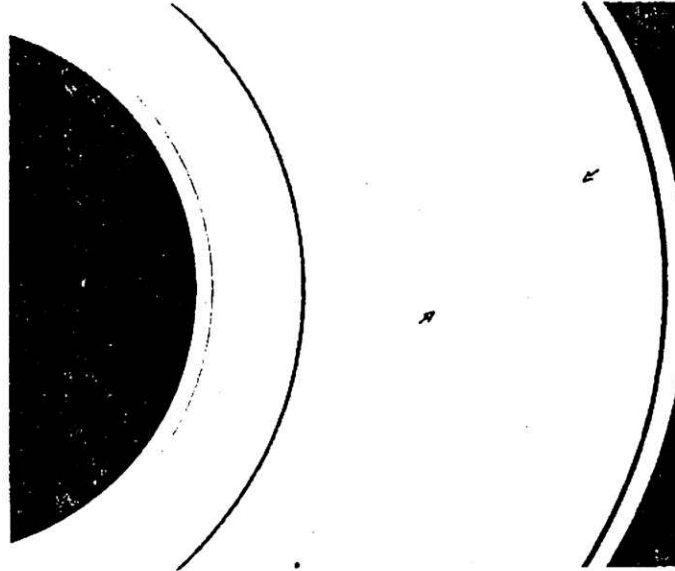
Edge damage which causes distortion of the edge is a potential problem.

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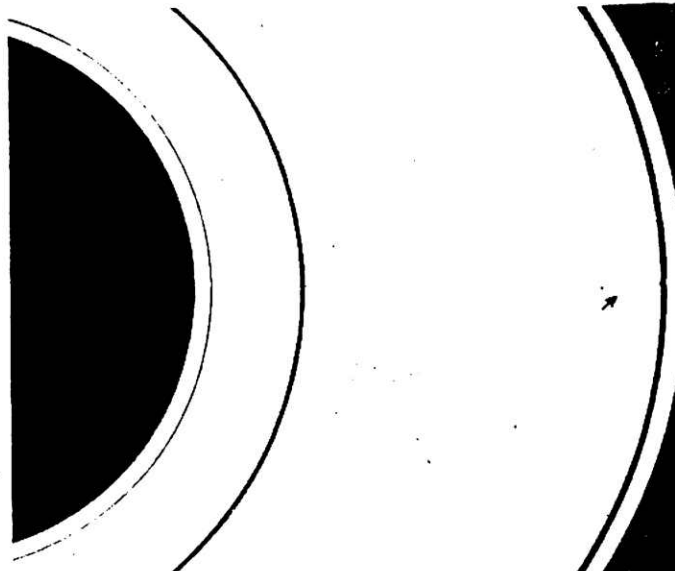
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ALCOHOL RESIDUE

Alcohol used to clean disk surfaces must be wiped dry. The alcohol acts as a solvent and carrier for the dirt and oil on the disk surface. If not wiped off the dirt and oil will tend to concentrate in one area as the alcohol evaporates causing a potential hazard from the residue. A careful cleaning and wiping dry will probably remove this residue.



NON-HEAD TYPE SCRATCH

A scratch caused by external means which penetrates to the aluminum is a hazard.

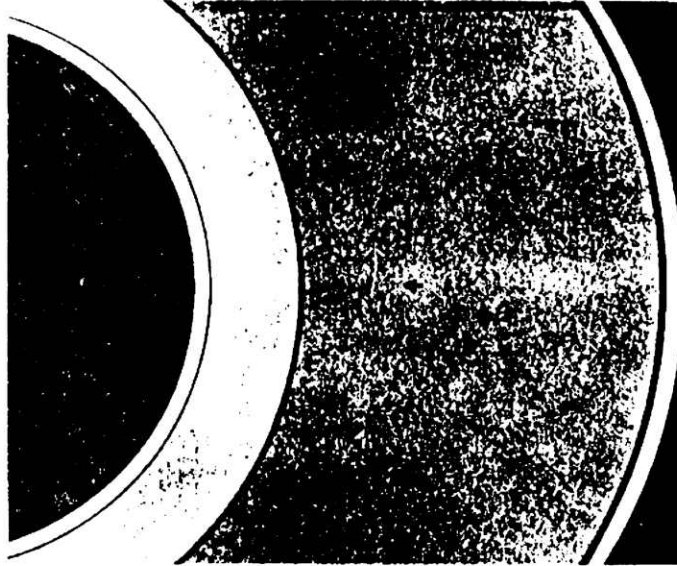
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COMET TAIL WITH VISIBLE ALUMINUM

This results from the head hitting a small particle on the surface. The particle or the coating may protrude above the surface and should be considered a hazard.



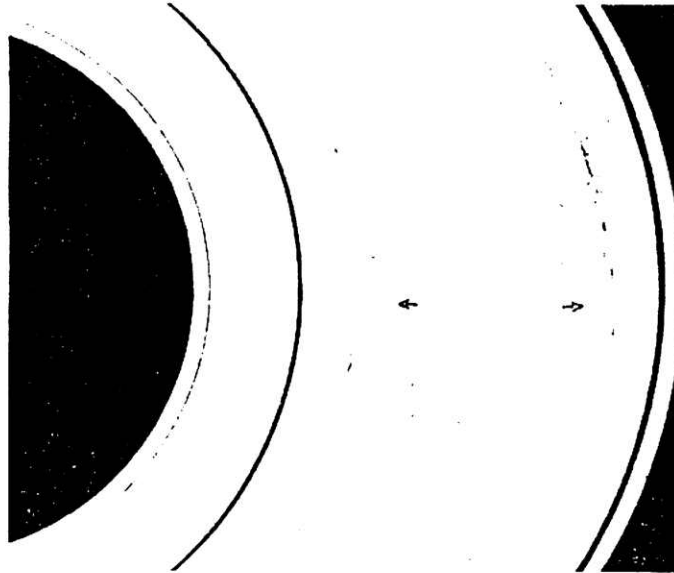
BURNED COATING

Prolonged head/disk contact will discolor the coating due to the heat generated. These can cause small ridges on the disk surface which do create a hazard.

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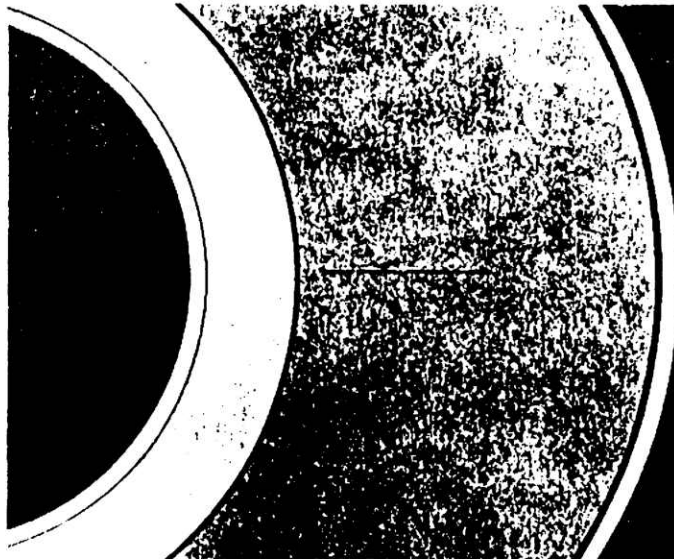
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DULL BANDS

Multiple scratches or dull bands caused by head contact cause surface roughness which can collect contaminants and can cause further head/disk interference.



COATING RUN

This is a streak in a radial direction. It may cause mechanical problems and may also cause magnetic errors.

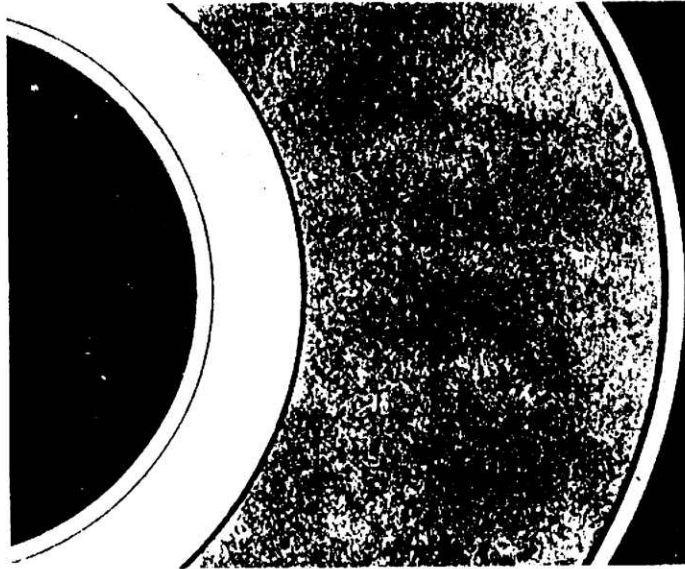
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PINHOLES

Tiny holes in the coating should be inspected carefully. If the diameter is less than 1/32" and if there is no bare aluminum showing they probably will not cause problems.



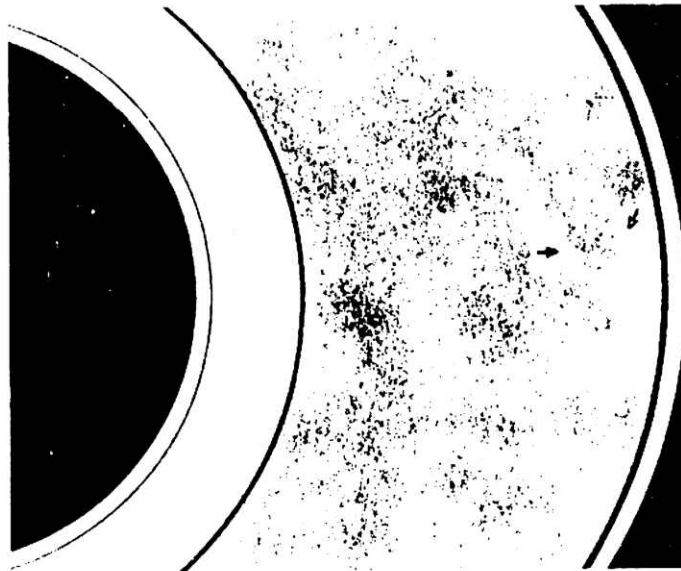
SURFACE TEXTURE

Bands of different surface texture or color which are smooth and blend in with the rest of the surface are not a problem.

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HEAD LOAD MARKS

Head load marks are caused by momentary contact by the head when loading or unloading. They are small, circular light shiny spots. They present no problem.

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MEDIA AND HEADS

- HANDLING OF MEDIA

DO

- WEAR WHITE, LINT-FREE GLOVES WHEN HANDLING DISKS.
- HANDLE DISKS USING BOTH HANDS.
- HANDLE ONLY ONE DISK AT A TIME.
- TOUCH DISKS ONLY WITH FINGERTIPS AT EITHER THE OUTSIDE OR INSIDE EDGES.
- TRANSPORT DISKS IN THEIR ORIGINAL SHIPPING CONTAINER.
- CLEAN DISKS BEFORE FLYING READ/WRITE HEADS ON THEM.
- USE A SOLUTION OF 91% ISOPROPYL ALCOHOL WITH LINT-FREE, NON-ABRASIVE PADS TO CLEAN DISKS.
- CLEAN BOTH SURFACES OF THE DISK AT THE SAME TIME, APPLYING EQUAL PRESSURE ON BOTH SURFACES.
- CLEAN DISKS WHILE THEY ARE SPINNING TO ALLOW THE ALCOHOL TO EVAPORATE, THUS ELIMINATING ANY POSSIBLE RESIDUE.
- HANDLE REJECTED DISKS CAREFULLY. REPLACE IN ORIGINAL CONTAINERS USING GLOVES AND ABOVE PROCEDURES.

M O R E

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MEDIA AND HEADS

- HANDLING OF MEDIA - (CONTINUED)

DON'T

- STRIKE OR ALLOW THE OXIDE AREAS OF A DISK TO COME IN CONTACT WITH ANY FOREIGN OBJECTS, I.E. BRACELETS, PENDENTS, BENCHES, ETC.
- ALLOW FINGERS TO CONTACT THE DISK SURFACE.
- LAY UNPROTECTED DISKS ON TABLES, WORK BENCHES, ETC.
- SMOKE, EAT OR DRINK IN AREAS WHERE EXPOSED DISKS ARE PRESENT.
- BLOW DUST OFF OF DISKS.
- LEAVE THE SHIPPING CONTAINER OPEN ANY LONGER THAN IS NECESSARY TO REMOVE OR ADD A DISK.

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MEDIA AND HEADS

- HEADS

- WE MUST CONSIDER THE FOLLOWING:

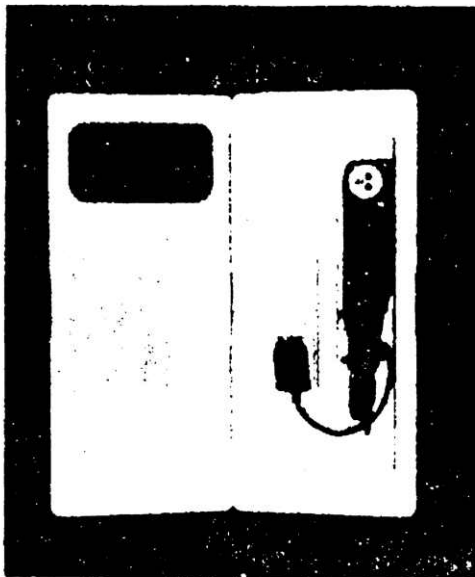
1. HEADS MUST BE HANDLED WITH EXTREME CARE.
2. HEADS ARE MANUFACTURED TO VERY CLOSE TOLERANCES.
3. WE MUST USE PROPER PACKAGING TECHNIQUES FOR TRANSPORTATION AND STORAGE.

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MEDIA AND HEADS

- EXAMPLES OF PROPER CARE AND HANDLING OF THE MAGNETIC HEADS. PEAK PERFORMANCE OF THE DISK DRIVE CANNOT BE EXPECTED UNLESS PROPER CARE IS TAKEN WHEN HANDLING THESE HEADS.

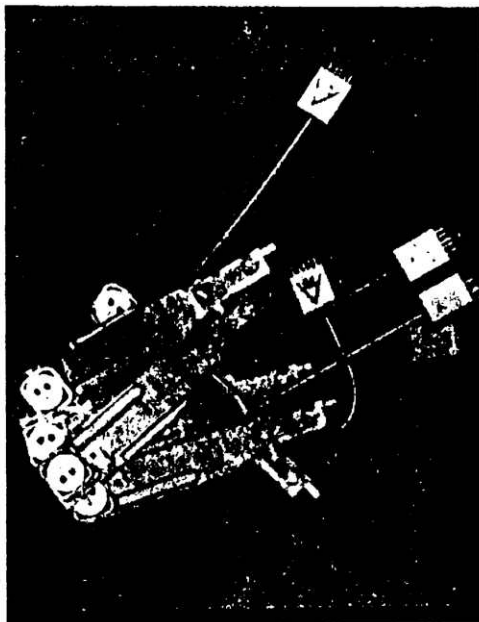


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MEDIA AND HEADS

- EXAMPLES OF IMPROPER HANDLING OF THE MAGNETIC HEADS; THESE EXAMPLES ARE ONLY A FEW OF THE WAYS A HEAD CAN BE DAMAGED BY IMPROPER CARE.



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MEDIA AND HEADS

- HEADS
 - CLEAN HEADS BEFORE FLYING USING A SOLUTION OF 91% ISOPROPYL ALCOHOL WITH COTTON SWABS. USE MINIMUM PRESSURE.
 - DO NOT HANDLE THE HEAD NEAR THE GIMBLE AREA.
 - HANDLE THE HEAD BY THE STIFFENER.
 - DO NOT LAY HEAD ASSEMBLY WITH THE AIR BEARING SURFACE DOWN.
 - DO NOT STACK OR BINCH HEADS TOGETHER.
 - WHEN HEADS ARE REMOVED FOR SERVICE OR TROUBLE SHOOTING, PLACE IN ORIGINAL TYPE BOXES.