Tools for data recovery experts

Guide for using HddSurgery™ head change tools:

- ***HDDS WDC 2.5” - 3.5” Ramp Set***

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1. Introduction

This guide is intended as a short course in handling of our tools for professionals in data recovery. It is assumed that the user is experienced in data recovery and familiar with "traditional" ways of saving data. This manual should not be taken as a guide for training.

Using these tools without adequate software support is not recommended. It is recommended to use some of the proven systems for cloning, such as Ace Lab, Salvation Data, Copy-r and other products.

It is possible to recover data without HddSurgery™ tools. In many cases, the known processes of hard drive head replacement are effective and sufficient. The general idea behind HddSurgery™ tools was to make sure that the process of replacing damaged hard drive heads goes with no errors. The use of HddSurgery™ tools prevents the ferromagnetic read/write heads to come in any kind of contact with the platter i.e. disk surface or other read/write heads. Also, with some basic procedures and short training, it is possible to let junior data recovery technicians handle complex tasks. With the development of these tools, we are trying to eliminate the element of luck that usually accompanies the process of data recovery.

Experienced data recovery technicians or engineers can have great success even without our tools, but they can have absolute security only by using HddSurgery™ tools.

Non-contact head replacement implies that there is no contact between the heads, or between heads and platters in the process of dismounting the donor heads and mounting heads on the patient drive. Traditional techniques of replacing the heads imply contact between the heads and contact of heads with the platters in data area. These problems especially come to light on drives that have suffered some form of physical damage.

This tool doesn't solve the head compatibility problem. It will only assure that the head replacement goes easily. If you have questions about compatibility, you can send them to HddSurgery™ support team on support@hddsurgery.co.kr

HddSurgery™ is not responsible for any eventual damage caused by usage of our tools. HddSurgery™ is not responsible for the data stored on the patient or donor hard drives.

2. HddSurgery™ head replacement tools

HddSurgery™ **HDDS WDC 2.5" – 3.5" Ramp Set** is a set of head replacement tools which can be used to safely and easily replace heads on almost all 2.5" and 3.5" Western Digital hard drives which "park heads" on a ramp. Set contains 7 pairs of head replacement tools: **WDC 3.5" Ramp p1**, **WDC 3.5" Ramp p2-3**, **WDC 3.5" Ramp p4**, **WDC 2.5" Ramp p1, WDC 2.5" Ramp p1-2, WDC 2.5" Ramp p3** and **WDC 2.5" Ramp p4**.

▪ WDC 3.5" Ramp p1

This head replacement tool can be used on 3.5" Western Digital hard drive models AAKS, AAJS, AAJB and all other models with 1 platter from families: Pinclite, Pinnacle, Tahoe, Tahoe LT, DragFly1, Sequoia, Sequoia PMR and STG Twin Lakes.

▪ WDC 3.5" Ramp p2-3

WDC 3.5" Ramp p2-3 head replacement tool can be used on 3.5" Western Digital hard drive models AAKS, AAJS, AAJB, AAKB, EADS, EARS and all other models with 2 or 3 platters from families: Tornado, Tornado PATA, Tornado 2R, Tornado 2PMR, Tornado 2D, Atlantis, Atlantis PATA, Spider, Gekko, DragFly2, DragFly3, Kermit, Sadle G6, Sadle 2D and Sadle BK.

▪ WDC 3.5" Ramp p4

WDC 3.5" Ramp p4 head replacement tool can be used on 3.5" Western Digital hard drive models AAKS, AACS, EADS, EARS, EACS, EZRX and all other models with 4 platters from families: Jupiter, Hulk and DragFly4. As there is no conceptual difference between these three tools for 3.5" hard drives, we will explain only the functioning of WDC 3.5" Ramp p2-3 tool. In the case of WDC 3.5" Ramp p4 and WDC 3.5" Ramp p1 apply the same procedure.

- ## WDC 2.5” Ramp p1

This head replacement tool can be used on 2.5” Western Digital hard drive BEVT models and all other models with 1 platter from family Jamaica and other.

- ## WDC 2.5” Ramp p1-2

This head replacement tool can be used on 2.5” Western Digital hard drive models BEVT, BEKT, BEVS, BMVV and all other models with 1 or 2 platters from families: Mariner, Mercury, Zephyr, Marn5 4K, Esprit, Europa, Denali and other.

- ## WDC 2.5” Ramp p3

This head replacement tool can be used on 2.5” Western Digital hard drive models TMVV, TPVT, TMVW and all other models with 3 platters from families: Helios, Shasta 3D and other.

- ## WDC 2.5” Ramp p4

This head replacement tool can be used on 2.5” Western Digital hard drive models NMVW and all other models with 4 platters from Shrek and Shrek LT families.

3. Supported models

WDC 3.5” Ramp p1 (1 platter)				
(two, three and four-letter marks can be found in model names – ex. WD3200AAJS-00**V4A**0)				
Pinclite L7A, L9A, M0A, Z0A	**Tahoe** V0A, V1A, UU3A, M9A, YZCA	**Tahoe LT** 1CA, J37A	**Sequoia PMR** VZ, WA, WB, WM, WN, WP, WR, WS, WT, C0, D1	**Sequoia** PN, PR, PS, PT, PU, PV, SV, SW, SY, SZ
STG Twin Lakes VK, VL, VM, VN, VP, VR, VS, VT, VU	**Pinnacle** B3, B4, B5, B6, B7, E2, F0, F1, F2, H4	**Pinnacle PATA** J2, J3, J4, J5	**DragFly1** N7B	**Other** A0RT, A1CS, N9A, G0A, L2B, S9B
WDC 3.5” Ramp p2-3 (2 or 3 platters)				
(two, three and four-letter marks can be found in model names – ex. WD5000AAKS-00**TM**A0)				
Tornado TA, TP, TB, TR, TC, TS, TH, TJ, TK, TL, TM, TN, RY, RZ, SB, SC, SD, SE	**Tornado PATA** TV, UF, TW, UG, TY, TZ, UJ, UA, UK, UB, UL, UC, UM, UD, UN, UE, UP, UH	**Tornado 2R** YE, YF, YG, YH, YJ, YK, YL, YM, YN, YP, YR, YS, YT, YU, YV, YW, YY, YZ, C8	**Tornado 2PMR** WF, WG, WH, WJ, WK, WL	**Tornado 2D** VV, VW, VY, WC, WD, WE, B9, C9
Atlantis D2, E7, A7, A8, A9, B0, B1, B2, C1, C2, C3	**Atlantis PATA** H8, H9, J0, J1	**Spider** ZS, ZT, ZU, ZV, ZW, ZY, ZZ, D0	**Gekko** G8, G9, H0, H1	**Kermit** D6, D7, E0, E1
DragFly2 M2B, 3BB, Y5B	**DragFly3** P8B, Z5B	**Sadle BK** MVWB	**Sadle G6** MVWB	**Sadle 2D** N0YB

WDC 3.5” Ramp p4 (4 platters)

(two, three and four-letter marks can be found in model names – ex. WD20EADS-00**R6B**0)

Hulk	Jupiter	DragFly4	Other
ZJB, ZKB, C7B	RCA, RBA	S2B, S8B, R6B	MMMB, J2GB, U2B, S0XB, T3B, J99B, R8UY, KEZB, Z9B

WDC 2.5” Ramp p1 (1 platter)

(four-letter marks can be found in model names – ex. WD1600BEVT-08**A23T**1)

Jamaica
A23T

(Information about these model names were added at the moment of writing annex of this manual)

WDC 2.5” Ramp p1-2 (1 or 2 platters)

(two, three and four-letter marks can be found in model names – ex. WD5000BEVT-00**A0RT**0)

Mariner	Zephyr	Mercury	Marn5 4K	Europa	Esprit
A0RT, A1CS	HXZT, SXZS, AMCS	ZA, ZB	GNWS	KA9T	KPFT

Denali	Saturn	McKinley	Lynx		Other
VA, VB, VC, VD, VE, ZC, ZD, UZ	F3, F4	US, UR, UT, SN, SP, SR	UW, UY		PK4T, SCST, GNWS, A08S

WDC 2.5” Ramp p3 (3 platters)		
(two, three and four-letter marks can be found in model names – ex. WD10TPVT-00**HT5T**1)		
Helios	**Shasta 3D**	**Other**
ZSMS, TK7S	HT5T, BG7S, A27S	A28T, U4RT

WDC 2.5” Ramp p4 (4 platters)	
(four-letter marks can be found in model names – ex. WD20NMVW – 11**AV3S**4)	
Shrek	**Shrek LT**
W68S, Z2TT	AV3S, EA4T
(Information about these model names were added at the moment of writing annex of this manual)	

4. Handling the tools

When not in use, the tool should always be kept in a wooden box delivered with the tool. This way of keeping the tool prevents any possible damage to it which could appear when not handled properly.

When taking the tool out of the box, always hold it for the shank. Never hold the tool in the part where the head lifting snouts are.

Due to sensitivity of hard drive platters to dust and any kind of contamination, be sure to clean the tool before its use. Tool can be cleaned with a piece of cotton wool and alcohol. When cleaning the head lifting snouts, be extremely gentle.

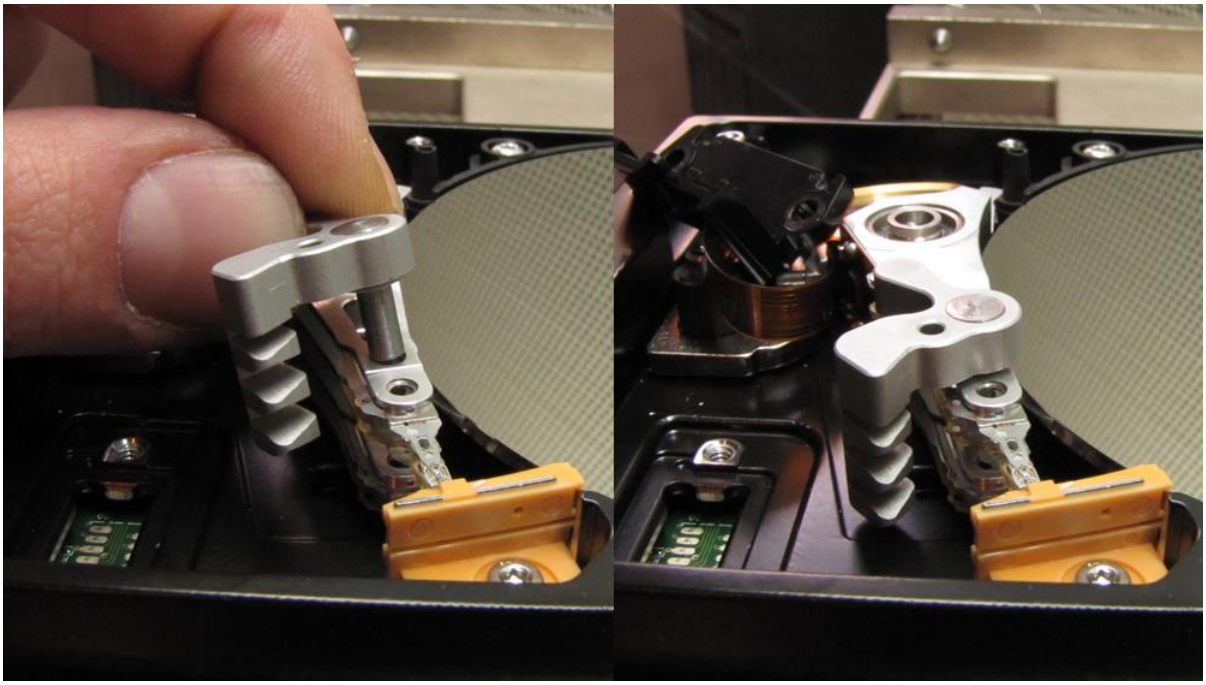
Picture 1. (handling the tools)

5. Head replacement on 3.5” hard drives

Step 1 – Mounting the tool on actuator arm

Remove screws holding flat cable contact and with a finger push contact from the bottom upwards to release it. The pressure from below may cause flat cable contacts to pop out and possibly damage platters, so hold firmly top of a flat cable contact with another hand while pushing related plastic. Before applying pressure, remove screws from their holes.

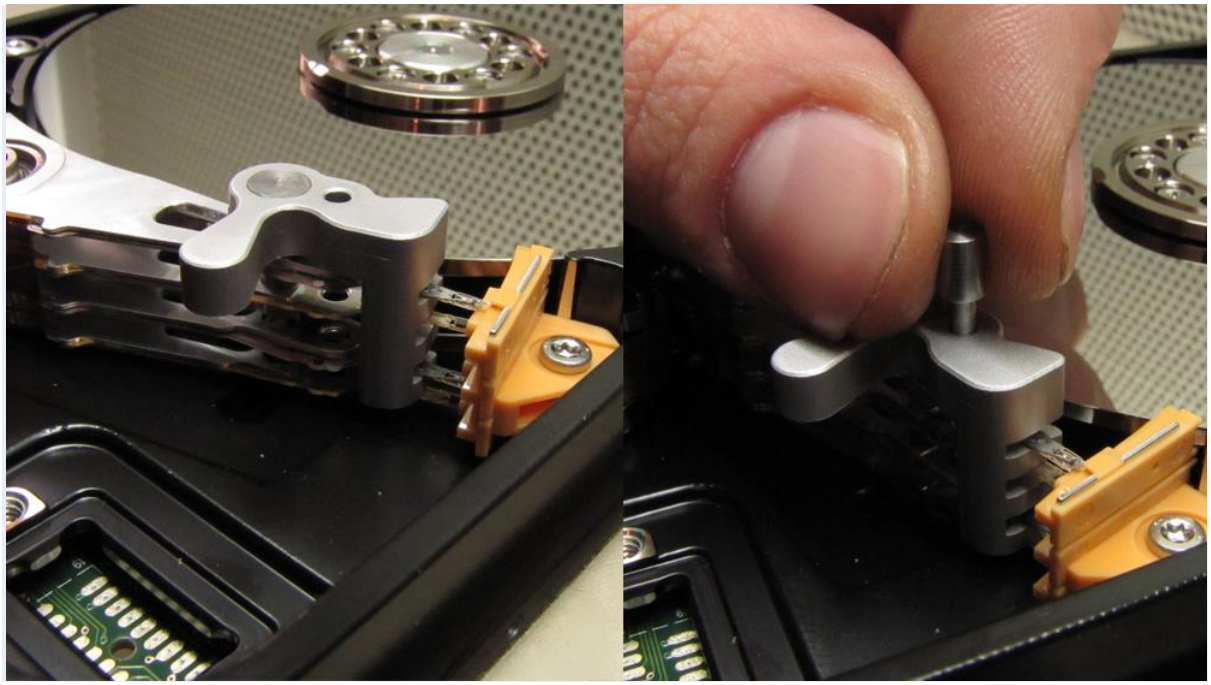
Carefully center the axis of the tool over the larger round hole near the top of the head arm (near the heads themselves). Take care that the snouts stand away from the heads, and push the axis of the tool all the way down through the hole. Axis of the tool should go easily through this hole.



Picture 2. (mounting the head replacement tool)

Step 2 – Securing the heads with the tool

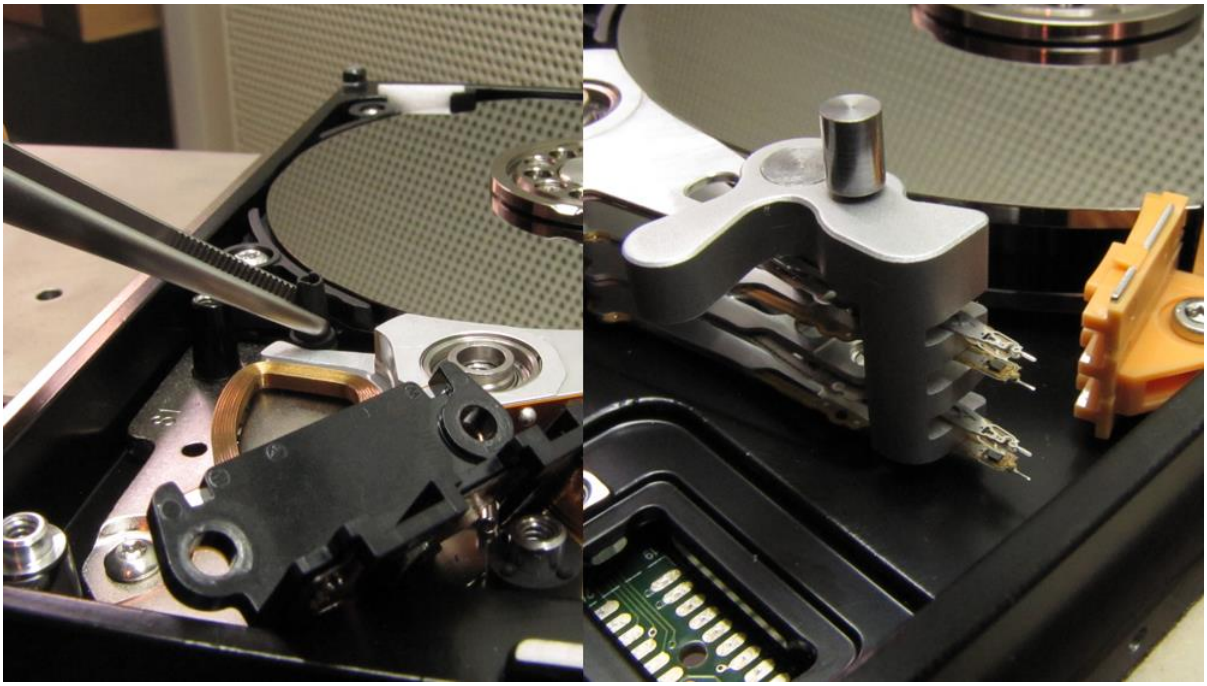
Push the tool so the snouts go between the heads. Snouts should not move or lift the heads. They will just keep the distance between them and assure that the heads don't touch each other. Secure the tool in this position with provided securing pin. Pin should go through the hole easily.



Picture 3. (securing the heads with the tool)

Step 3 – Moving the heads off the ramp

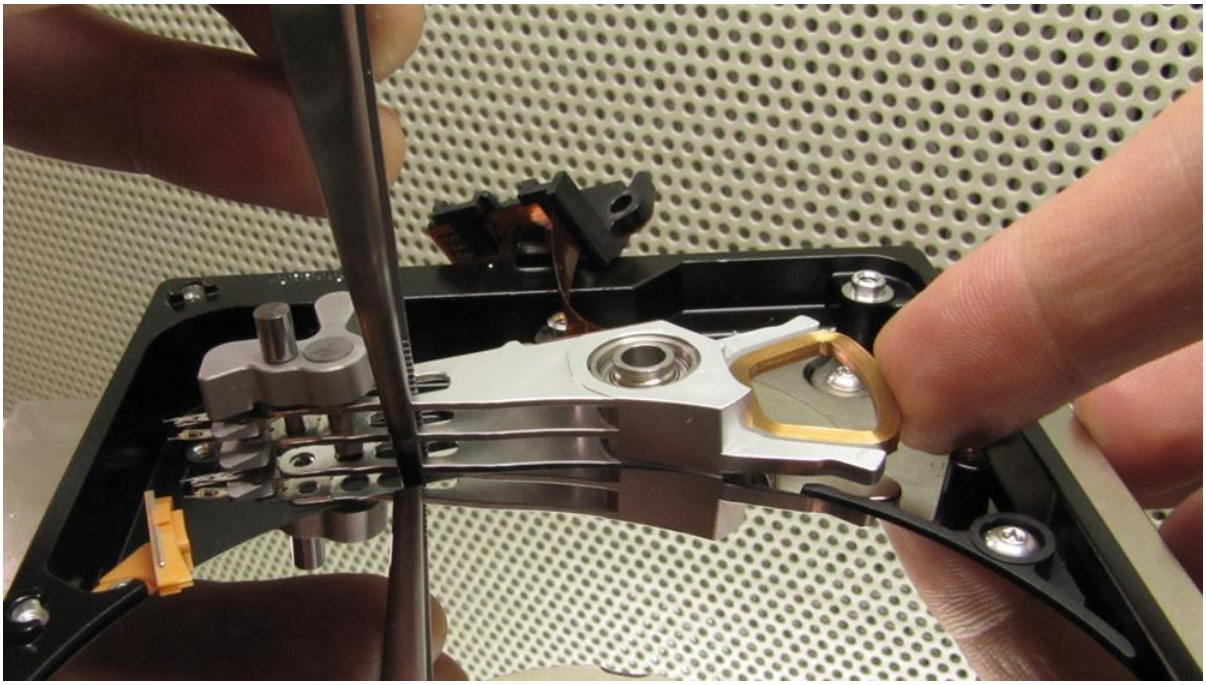
Remove the security brake and scroll the heads off the ramp. When heads are off the ramp, tool will prevent the heads from touching each other and head assembly can be safely and easily transferred to another drive.



Picture 4. (moving the heads off the ramp)

Step 4 – Dismounting the heads

To lift the head assembly, tweezers are needed. Use tweezers to grab the head assembly through one of the holes on the head arm. Pull the head arm up using the tweezers. To make sure that the head assembly goes straight up, use one finger to pull the back side of the head arm (side where the magnetic coil is) simultaneously. Don't try to dismount the heads by pulling the tool.



Picture 5. (dismounting the heads)

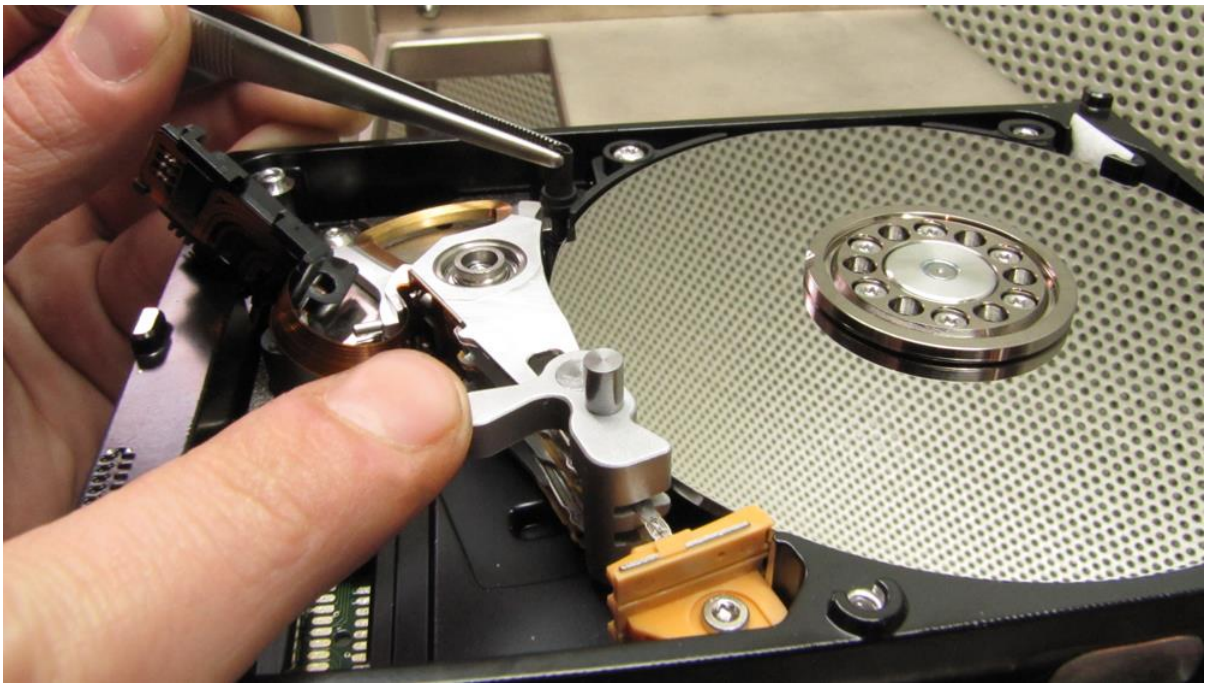
Step 5 – Mounting the heads in a patient drive

Place the head assembly with the tool to its place in a patient hard drive using the tweezers. Assist the process with your other hand.

Picture 6. (mounting the heads in a patient drive)

Step 6 – Moving the heads to the ramp

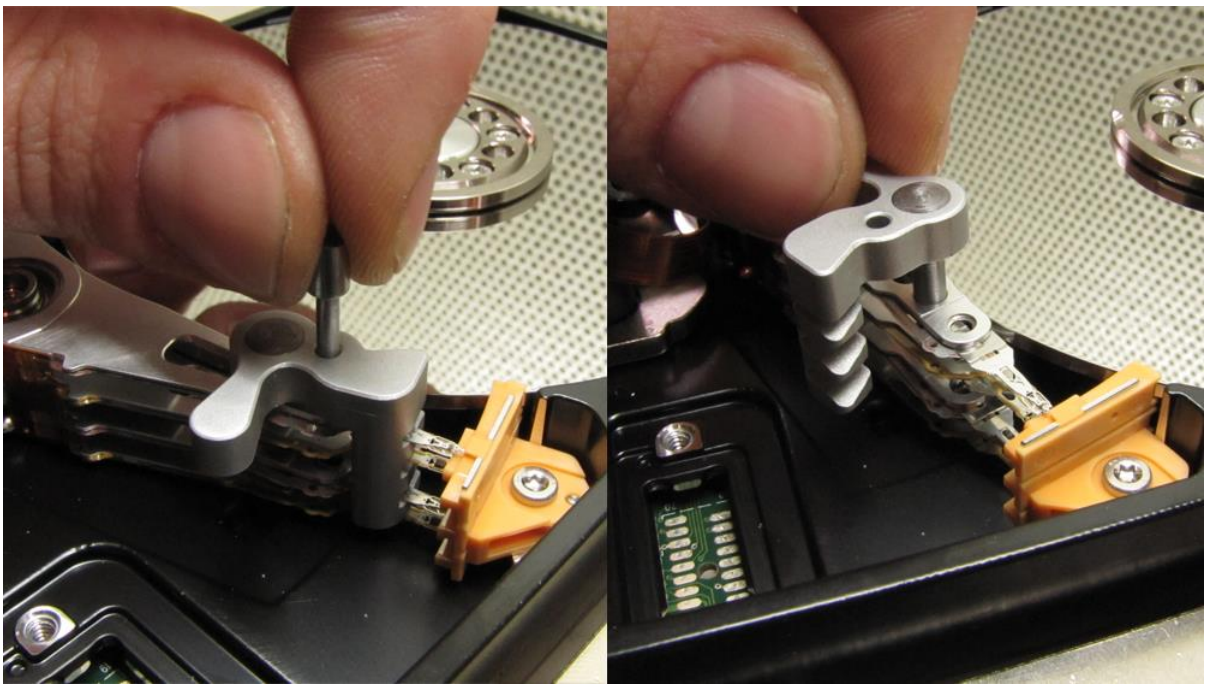
Push the heads over the ramp. While holding the heads on the ramp, use tweezers to return the security brake to its place.



Picture 7. (moving the heads to the ramp)

Step 7 – Dismounting the tool

Remove the security pin from the tool. Scroll the tool away from the heads. While holding the head arm in its place with one hand, pull the axis of the tool out of the hole to dismount the tool.



Picture 8. (dismounting the tool)

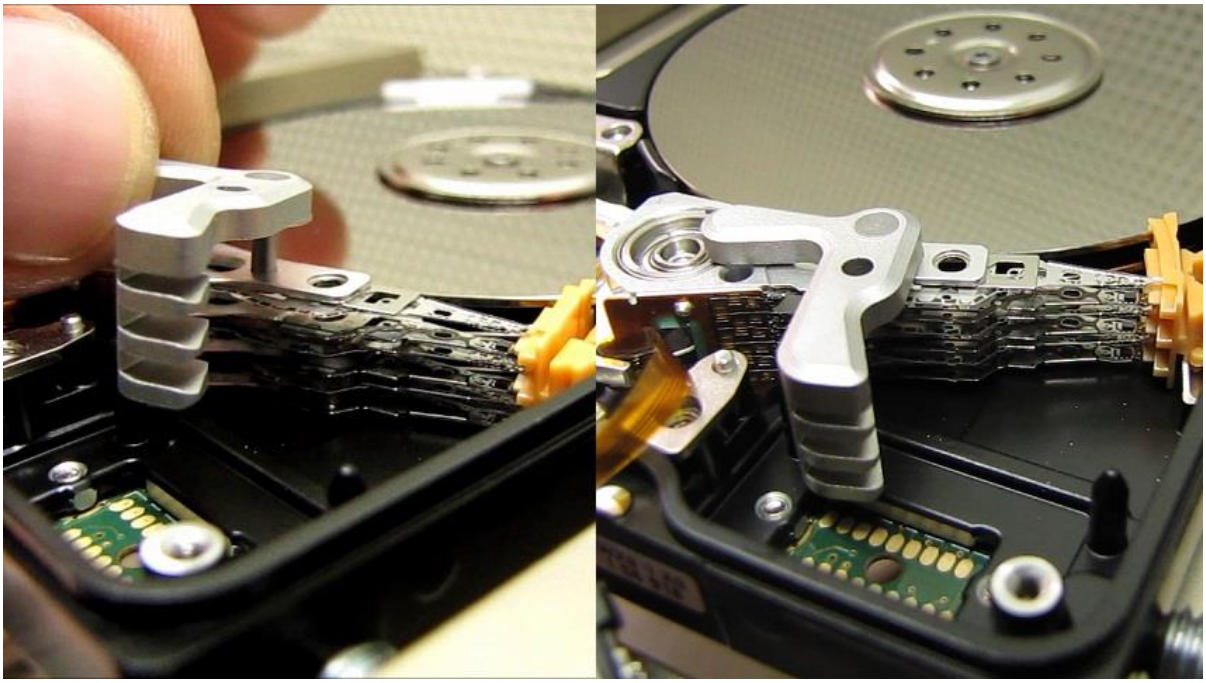
Put the lid back and close the disk. Put PCB back and clone the drive.

6. Head replacement on 2.5” hard drives (1, 2 and 3 platters)

Step 1 – Mounting the tool on actuator arm

With your finger, push the head connector from the bottom upwards to release it. The pressure from below may cause flat cable contacts to pop out and possibly damage platters, so hold firmly top of a flat cable contact with another hand while pushing related plastic. Also, while handling this connector, make sure that the heads stay on the ramp.

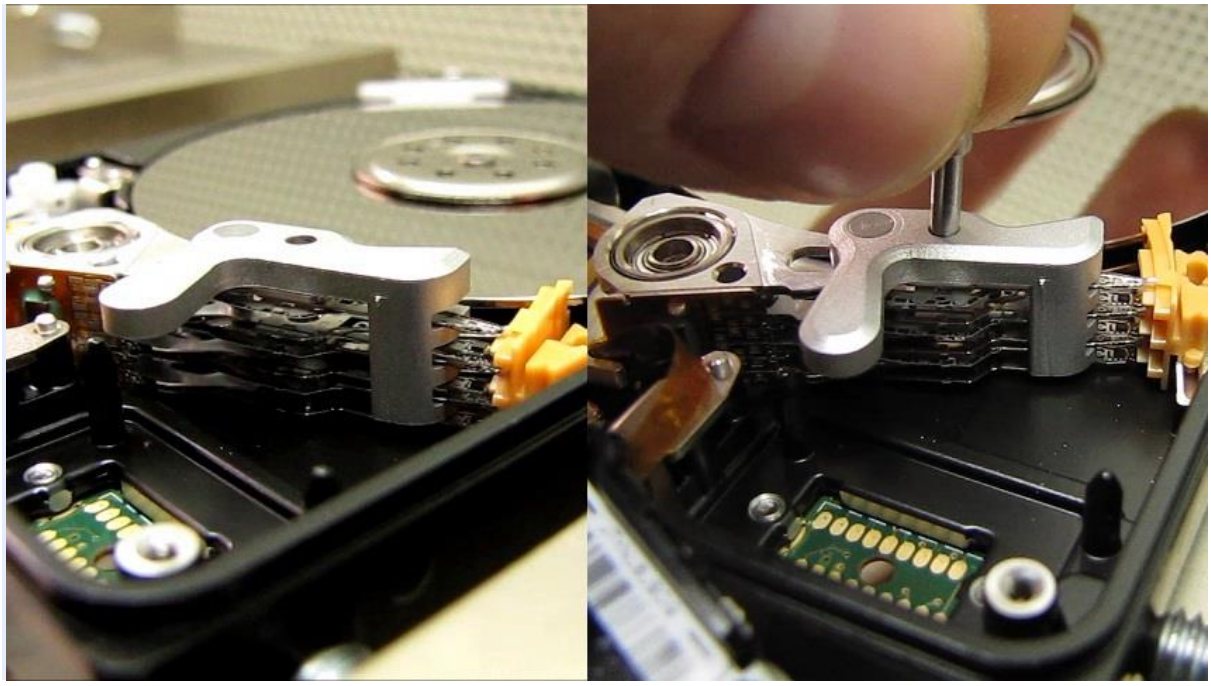
Carefully center the axis of the tool over the smaller round hole near the top of the head arm (near the heads themselves). Take care that the snouts stand away from the heads, and push the axis of the tool all the way down through the hole. Axis of the tool should go easily through this hole.



Picture 9. (mounting the head replacement tool)

Step 2 – Securing the heads with the tool

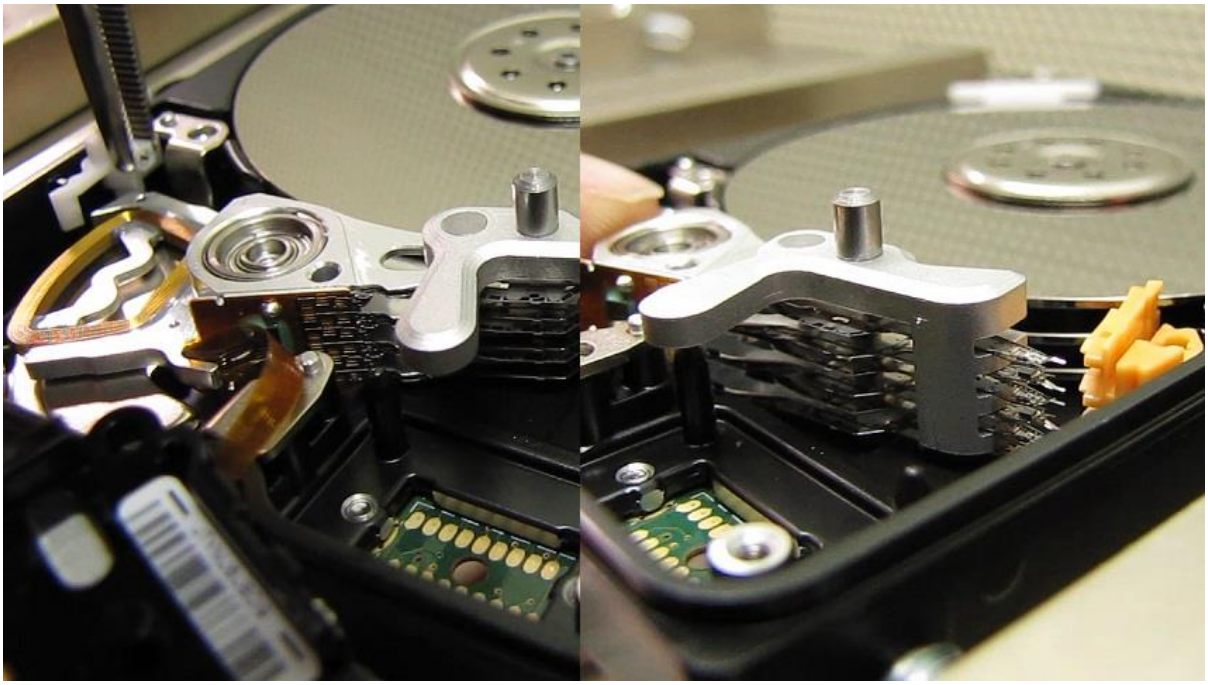
Push the tool so the snouts go between the heads. Snouts should not move or lift the heads. They will just keep the distance between them and assure that the heads don't touch each other. Secure the tool in this position with provided securing pin. Pin should go through the hole easily.



Picture 10. (securing the heads with the tool)

Step 3 – Moving the heads off the ramp

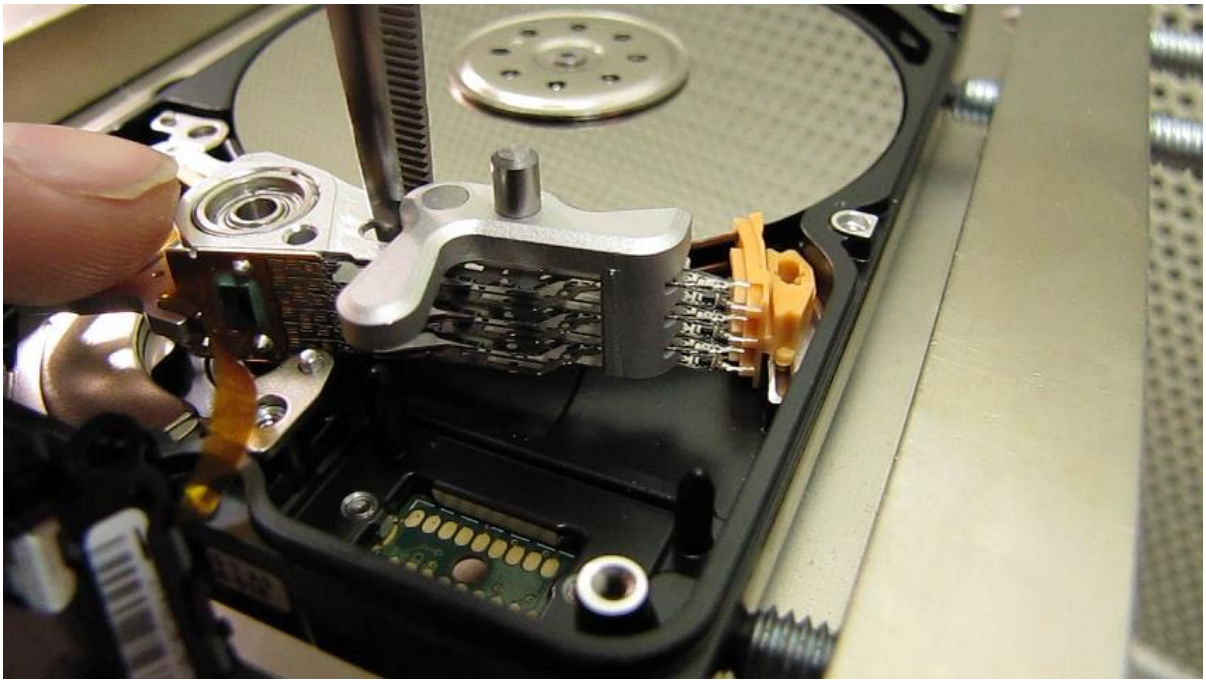
Remove the security brake and scroll the heads off the ramp. When heads are off the ramp, tool will prevent the heads from touching each other and head assembly can be safely and easily transferred to another drive.



Picture 11. (moving the heads off the ramp)

Step 4 – Dismounting the heads

To lift the head assembly, tweezers are needed. Use tweezers to grab the head assembly through one of the holes on the head arm. Pull the head arm up using the tweezers (For Hard drives with 4 platters unscrew the screw – See Annex on page 24). To make sure that the head assembly goes straight up, use one finger to pull the back side of the head arm (side where the magnetic coil is) simultaneously. Don't try to dismount the heads by pulling the tool.



Picture 12. (dismounting the heads)

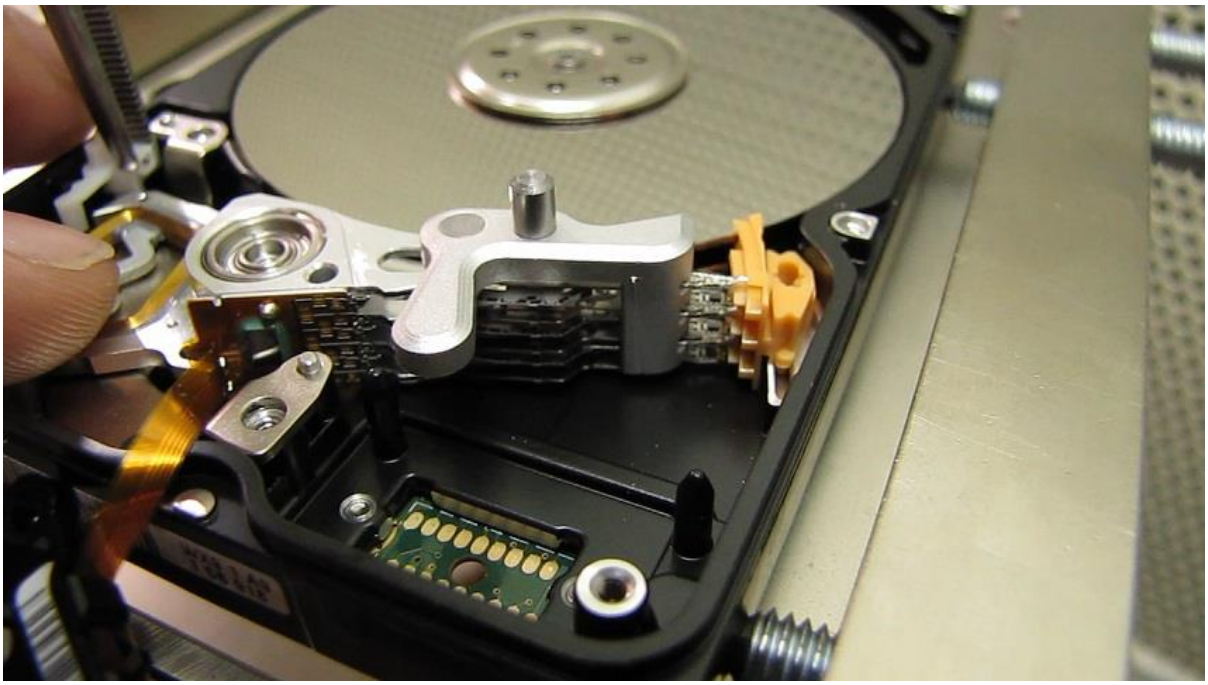
Step 5 – Mounting the heads in a patient drive

Place the head assembly with the tool to its place in a patient hard drive using the tweezers (For Hard drives with 4 platters put the screw back - See Annex on page 24). Assist the process with your other hand.

Picture 13. (mounting the heads in a patient drive)

Step 6 – Moving the heads to the ramp

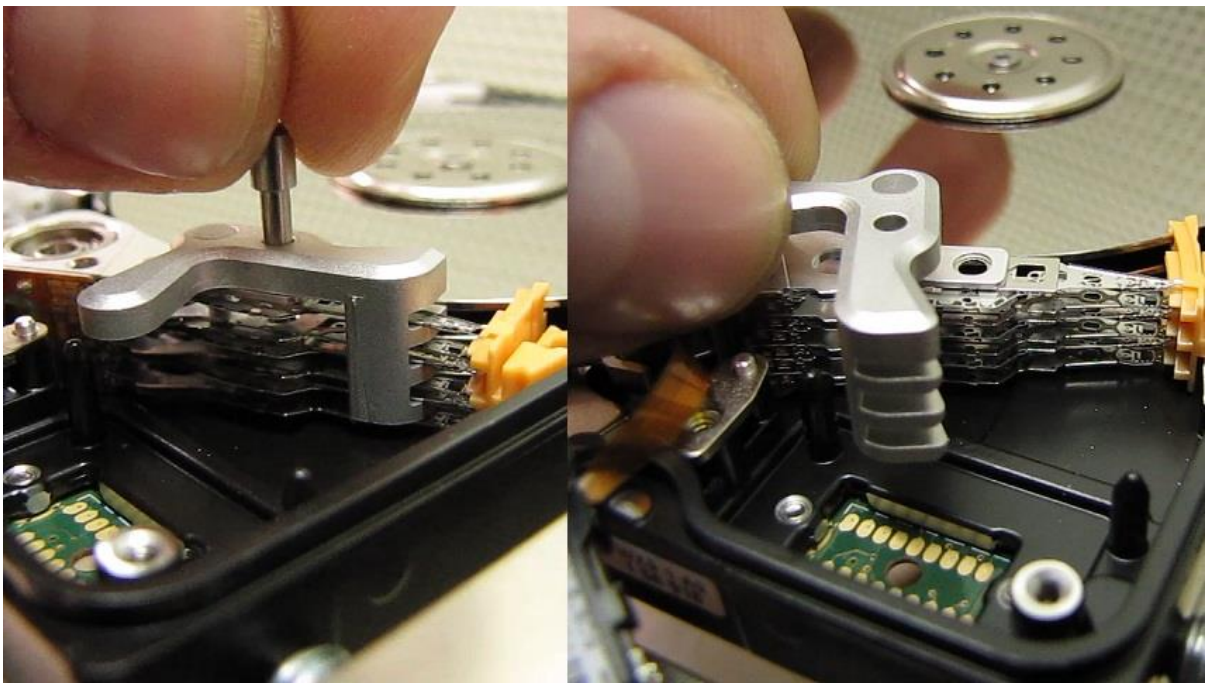
Push the heads over the ramp. While holding the heads on the ramp, use tweezers to return the security brake to its place.



Picture 14. (moving the heads to the ramp)

Step 7 – Dismounting the tool

Remove the security pin from the tool. Scroll the tool away from the heads. While holding the head arm in its place with one hand, pull the axis of the tool out of the hole to dismount the tool.



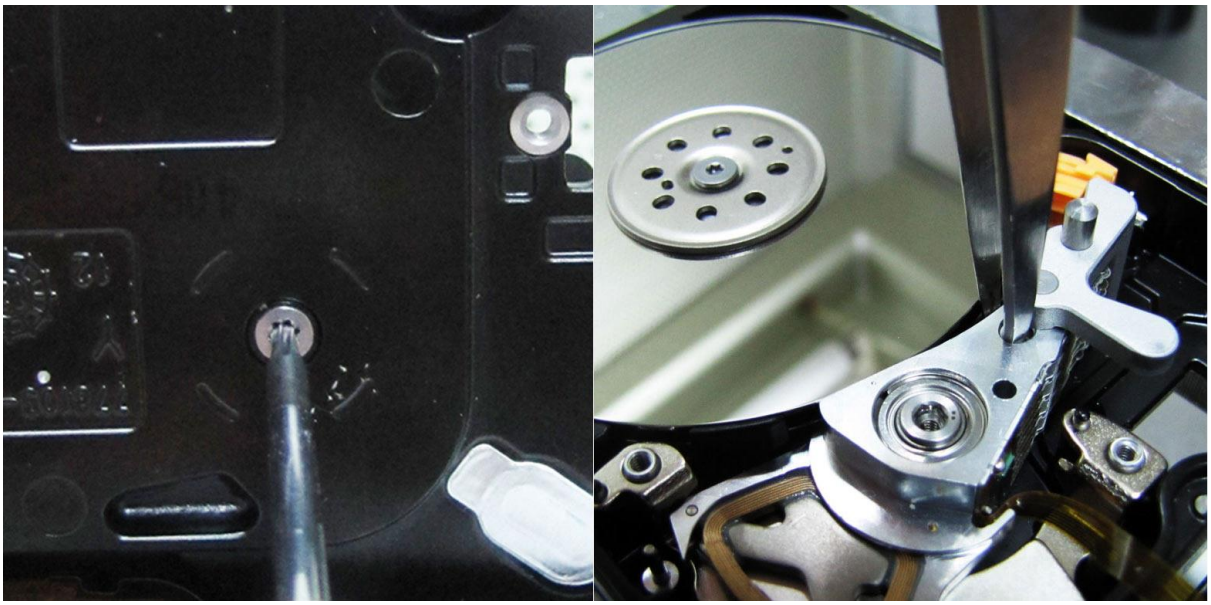
Picture 15. (dismounting the tool)

Put the lid back and close the disk. Put PCB back and clone the drive.

7. Annex to chapter 6 (Steps 4a & 6a) - Head replacement on 2.5” hard drives (4 platters)

Head replacement procedure on 2.5” hard drives with four platters is pretty much the same like the procedure on 2.5” hard drives with 1, 2 or 3 platters. You should follow the procedure described from page 17 to page 20 on this manual and then see this annex.

Step 4 (removing the head arm) is different because hard drives with four platters/eight heads have **screw** that’s holding the head arm connected to the hard drive casing, which needs to be removed before removing the heads in step 4 (on page 20):



Picture 16. (dismounting the heads on 2.5” hard drives with 4 platters)

It is important to use smaller tweezers when pulling out the head arm because of the smaller holes in the head arm, and to hold the head arm with the other hand when pulling.

In **Step 5a** You need to put back the head arm, then put back the screw while holding the head arm to its place, move heads on the ramp and secure their position with the security brake. After that it is needed to remove the tool as it’s described in step 7 (on page 23).

You can find more information about this tool and many other tools used for data recovery on our website.

http://www.hddsurgery.co.kr