



*Tools for data recovery experts*

## ***Guide for using HddSurgery™ head change tools:***

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- ***HDDS WDC BB/BD/JB/JD p1 (1 platter)***

## Table of contents:

1. Introduction .....	page 3
2. HddSurgery™ head change tools .....	page 4
3. Supported models .....	page 5
4. Head replacement process (12 steps)	
Step 1 - Handling the tool .....	page 6
Step 2 - Mounting the tool on actuator arm .....	page 7
Step 3 - Lifting the heads .....	page 8
Step 4 - Moving the tool outside of platter area .....	page 9
Step 5 - Unscrewing the head assembly .....	page 10
Step 6 - Dismounting the heads .....	page 11
Step 7 - Mounting the heads in a new drive .....	page 12
Step 8 - Moving the heads to the parking zone .....	page 13
Step 9 - Moving the tool outside of platter .....	page 14
Step 10 - Dismounting the tool .....	page 15

# 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.com](mailto:support@hddsurgery.com)

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 change tools

Western Digital hard drives from Marvell families Mammoth, Sabre and Unicorn (and other pre-Marvell hard drives) belong to the category of disks that "park heads" above the magnetic platter. This way of functioning implies that, in a situation when the drive is powered off, the heads are located on the surface that has no sensitive magnetic material. This allows drive to start the motor and then reach required speed.

The purpose of HddSurgery™ head change tools is to enable safe heads passage over the "data" area above platter surface, and to provide non-contact transfer to patient disc.

- **HDDS WDC BB/BD/JB/JD p1 (1 platter)**

This head change tool is made for safe and easy head replacement on Western Digital hard drive models BB, BD, JB, JD and all other models with 1 platter from Marvell families: Mammoth, Sabre and Unicorn, as well as on some other pre-Marvell hard drives.

During the whole procedure of head replacement, heads and platter do not have contact. Heads are lifted over NON-data area and safely guided over the platter. In process of installing back the donor head, same procedure needs to be done. Heads are guided over platter with no contact and safely deployed in non-data area.

## 3. Supported models

<b>HDDS WDC BB/BD/JB/JD p1 (1 platter)</b>			
<p>This tool can be used on Western Digital hard drive models BB, BD, JB, JD and all other models with 1 platter (such as LB, EB, PB) from following families:</p> <p>(two-letter marks can be found in model names - ex. WD800BB-55JKA0)</p>			
<b>MAMMOTH</b>	<b>SABRE</b>	<b>UNICORN</b>	<b>PRE-MARVELL</b>
EY, EZ, FA, FC, FM, FJ, HE, HF, JE, JS, JT, JY	JH, JJ, JK, JL, JM, JN, JP, JR, JU, KS, LN, MG	LR, LS, LT, LU, MR, MS, MT, MU	DJ, DK, DN, EP, ET, FR

## 4. Head replacement process

### Step 1 – Handling the tool

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 which could appear when it's not handled correctly.

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.

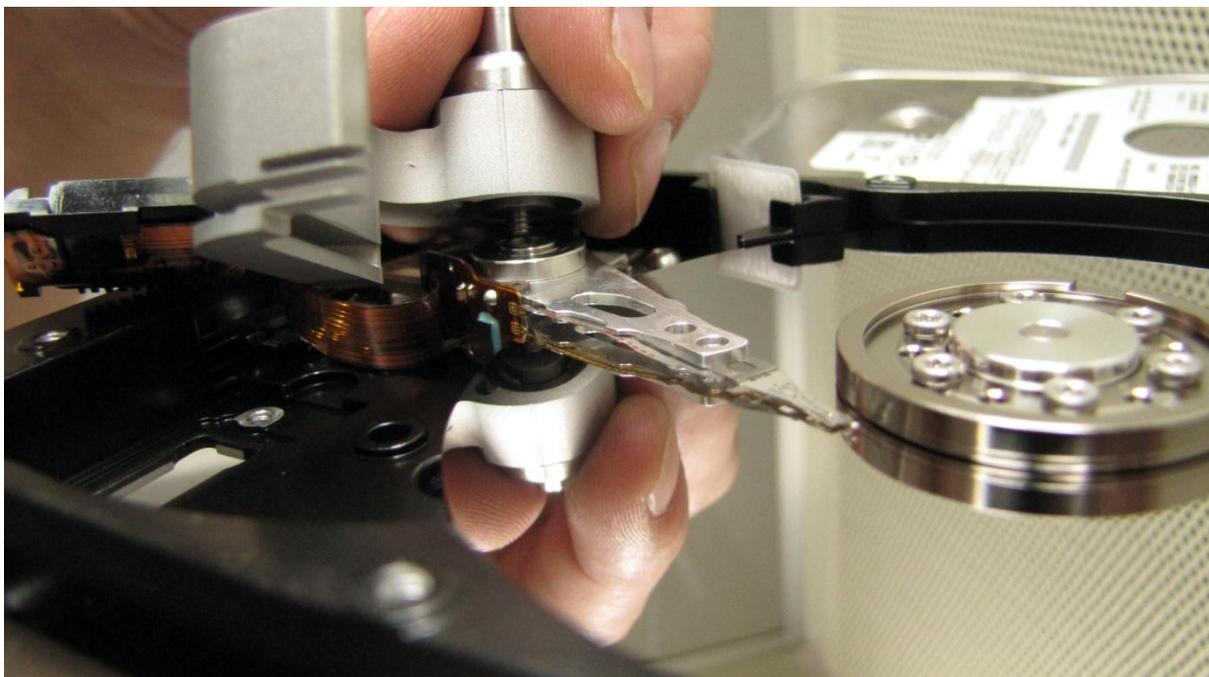


*Picture 1. (handling the tool)*

## Step 2 - Mounting the tool on actuator arm

Before opening the hard drive casing, demount PCB from the hard drive. Unscrew the lid and open the HDD. Then, remove the top magnet from the coil of the actuator arm. Unscrew the flat cable connector and carefully push the contact from the bottom upwards to release it. The pressure from below may cause the connector to pop out and possibly damage the platter, so hold the top of the flat cable connector firmly with another hand while pushing it up. Be careful and do not remove the security brake yet, because the actuator arm can move easily and heads might damage platter or even slip out of it while manipulating with the tool.

Carefully center the tool over the center hole of the hard disk actuator arm. Tighten the screw to perform tool installation. During the tool installation, make sure that tool's shank with snouts remains in the area outside of the platter.



Picture 2. (mounting the tool)

**!!! VERY IMPORTANT !!!**

**Be sure to tighten the screw in order to ensure good contact and proper tool height.**

## Step 3 - Lifting the heads

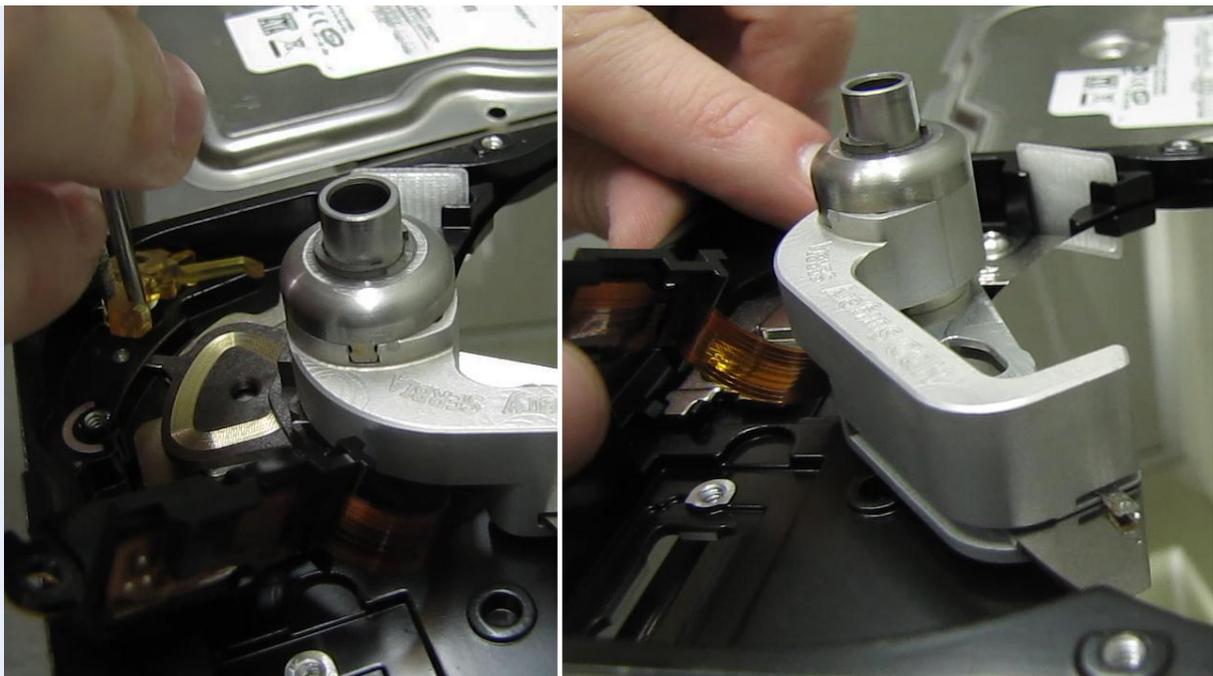
By horizontally moving tool shank, slide the tool over platter. Tool design enables it's snouts to lift the heads by relatively small force. If you feel that the necessary force is greater than the expected, check the tool position and possible damage to the HDD assembly. Push the tool as far as limiter is allowing.



*Picture 3. (lifting the heads)*

## Step 4 - Moving the tool with heads outside of platter area

Remove the security brake that's holding the actuator arm (and heads) in the parking position. Move the tool together with heads outside of the platter area. Do this by gently pushing the back side of the actuator arm (magnetic coil) together with the tool itself to prevent the heads from slipping off the tool's snouts.



*Picture 4. (moving the tool with heads outside of platter area)*

## Step 5 – Unscrewing the heads assembly

Remove the screw that's holding actuator arm and tool attached to the hard drive. It's the same screw which connects tool and actuator arm. Now the heads assembly can be lifted.

**!!! VERY IMPORTANT !!!**

When this screw is removed, heads and the tool are not having a tight connection anymore. **DO NOT** try to dismount the heads by pulling the tool.



Picture 5. (unscrewing the head assembly)

## Step 6 - Dismounting the heads

To lift the heads assembly, tweezers are needed. Use tweezers to grab the actuator arm through one of the holes on it. Pull the actuator arm up using the tweezers. To make sure that the heads assembly goes straight up, use one finger to pull its back side (magnetic coil) simultaneously. DO NOT try to dismount the heads by pulling the tool.



*Picture 6. (dismounting the heads)*

## Step 7 - Mounting the heads in a patient hard drive

Place the tool with head assembly to its place in new hard drive using the tweezers. Screw the screw to tighten the tool with head arm to the disk.



*Picture 7. (mounting the heads on a patient drive)*

## Step 8 – Moving the heads to the parking zone

Push the tool to scroll the heads back to their place above the platter. Return back the security brake and make sure that the heads are in the parking position.



*Picture 8. (moving the heads to their place)*

## Step 9 - Moving the tool outside of platter

Horizontally push tool shank with a finger to return the tool outside of platter area.

**!!! VERY IMPORTANT !!!**

**With your other hand, hold back side of the head arm (magnetic coil) to prevent heads from moving.**



*Picture 9. (returning the tool outside of platter)*

## Step 10 - Dismounting the tool

When the tool is not longer over platter area, dismount it from the actuator arm, by removing the screw which connects them.



*Picture 10. (removing the tool)*

Put the lid back and close the HDD casing. Mount PCB back and clone the drive.

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

<http://www.hddsurgery.com/>

Also you can watch the videos that show how this tool works on our YouTube channel.

<http://www.youtube.com/user/HddSurgery>