



*Tools for data recovery experts*

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

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- ***HDDS Sea 7200.11/ES.2 p2 (2 platters)***
- ***HDDS Sea 7200.11/.12/LP/ES.2 p3-4 (3 or 4 platters)***

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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.

A donor selection process is not covered by these guidelines. 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

Seagate hard drives belong in the category of disks that "park heads" above the magnetic platters. That 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 to the required speed.

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

- HDDS Sea 7200.11/ES.2 p2 (2 platters)

This head change tool is made for safe and easy head replacement on Seagate 7200.12, Seagate 7200.11, Seagate LP and Seagate ES.2 drives with 2 platters.

- HDDS Sea 7200.11/.12/LP/ES.2 p3-4 (3 or 4 platters)

This head change tool is made for safe and easy head replacement on Seagate 7200.11, Seagate LP and Seagate ES.2 drives with 3 or 4 platters, and on Seagate 7200.12 and Seagate LP drives with 2 platters. As there is no conceptual difference between these two tools, we will explain only the functioning of HDDS Sea 7200.11/.12/LP/ES.2 p3-4 tool. In the case of HDDS Sea 7200.11/ES.2 p2, apply the same procedure.

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

## 3. Supported models

<b>HDDS Sea 7200.11/ES.2 p2 (2 platters)</b>		
<b>SATA</b>  ST3500320AS ST3500620AS ST3500820AS	<b>ES.2 SATA</b>  ST3500320NS	<b>ES.2 SAS</b>  ST3500620SS
<b>HDDS Sea 7200.11/.12/LP/ES.2 p3-4 (3 or 4 platters)</b>		
<b>SATA</b>  ST32000542AS ST31500341AS ST31500541AS ST31000333AS ST31000340AS ST31000640AS ST31000520AS ST31000524AS ST31000528AS ST3750330AS ST3750630AS ST3750525AS ST3750528AS ST3640323AS ST3640623AS	<b>ES.2 SATA</b>  ST31000340NS ST3750330NS	<b>ES.2 SAS</b>  ST31000640SS ST3750630SS

## 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 to it which could appear when 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 it's 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 arms

Unscrew and remove the screws that are holding flat cable contact and, using a finger, push the connector from the bottom upwards to release it. The pressure from below may cause this connector to pop out and possibly damage the platters. Because of this, hold the top of the connector firmly with one hand, while pushing it from below with another.

Carefully center the tool over the axle hole of the hard disk head arm. Take care that the notch on the bottom of the tool coincides with the commas in the actuator arm base. Place a screw through the tool's shaft and tighten it to connect the tool to the head arm.



*Picture 2. (mounting the tool )*

While tightening this screw, hold the tool with your hand and make sure that its shank with snouts remains in the area outside of the platters.

### **!!! IMPORTANT !!!**

Be sure to tighten the mounting screw because this will ensure a good contact and proper tool height.

## Step 3 - Lifting the heads

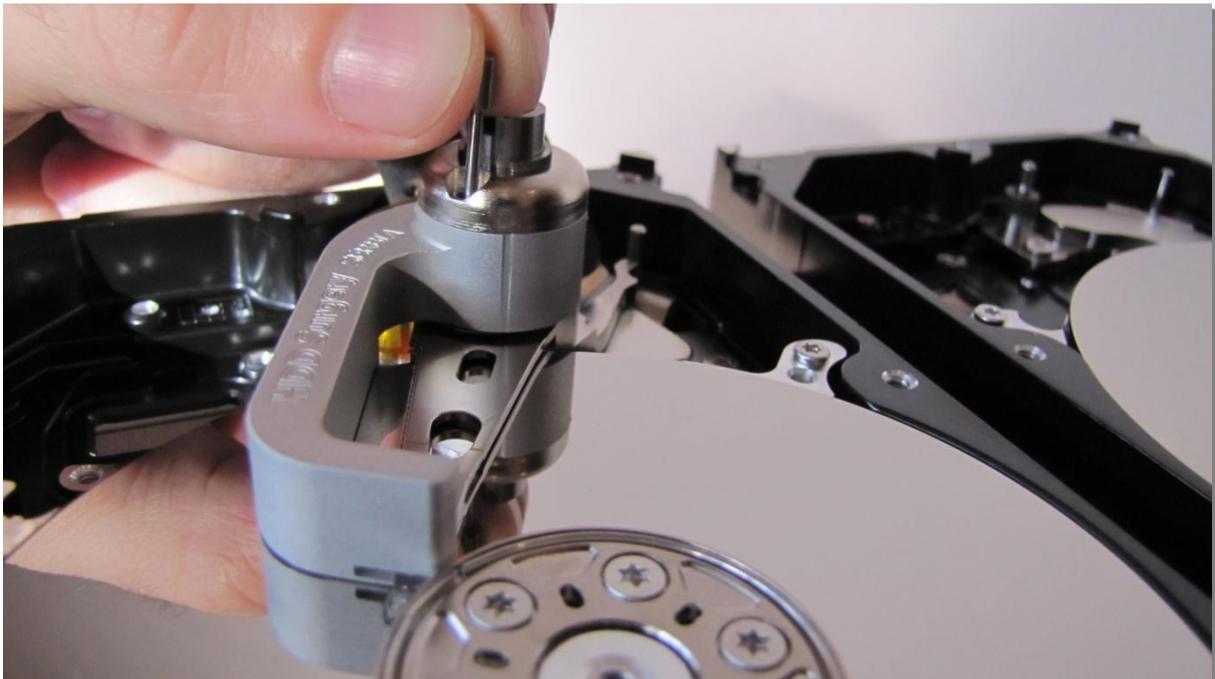
By horizontally moving tool shank we slide the tool over platters. Construction of the tool enables its snouts to lift the heads by using a relatively small force. If you feel that the necessary force is greater than expected, check the tool's position and possible damage to the HDA assembly. Push the tool until its snouts lift the heads – as far as the limiter is allowing.



*Picture 3. (lifting the heads)*

## Step 4 - Securing the tool

The tool has a hole at its edge, which coincides with the hole in the head arm. The leftmost position of the tool is necessary to ensure the bond between the tool and actuator arm. Securing of the tool is done by using the securing pin.



*Picture 4. (securing the tool)*

### **!!!IMPORTANT!!!**

If the connection of the tool and actuator arms is not properly engaged, heads might slip from snouts during the disassembly.

## Step 5 - Moving the tool outside of platters area

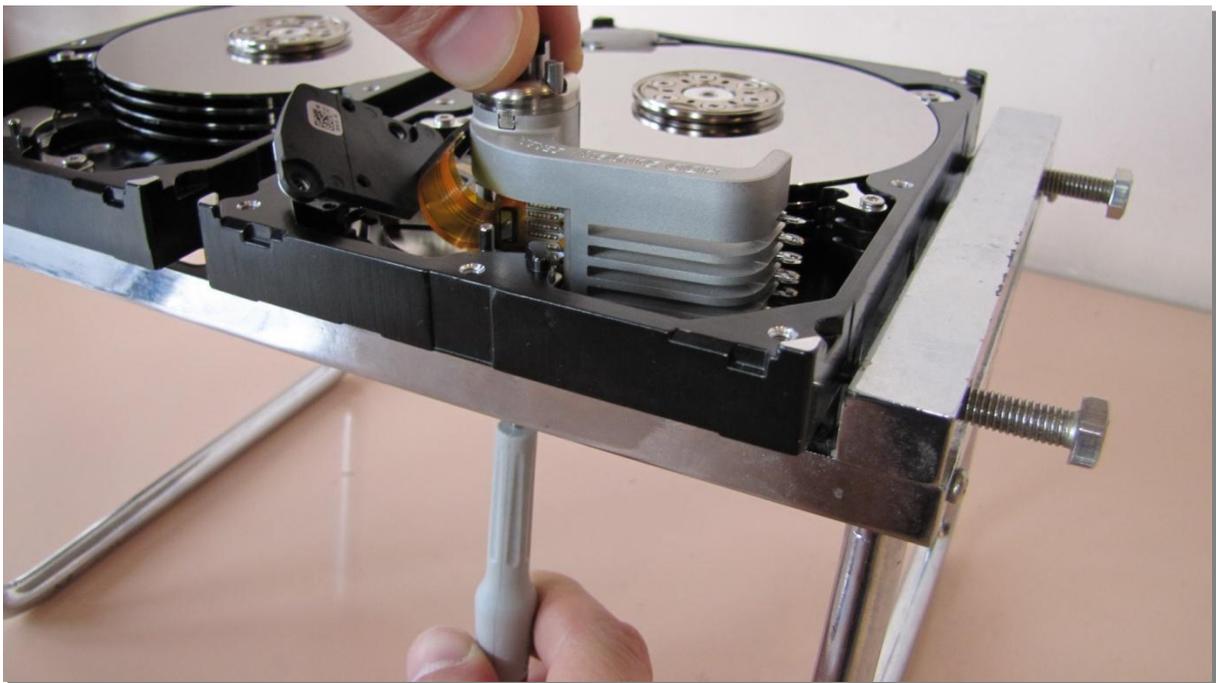
By vertical scrolling move the tool (previously secured by pin) to the initial position.



*Picture 5. (moving secured tool with heads outside of platters area)*

## Step 6 - Dismounting the heads

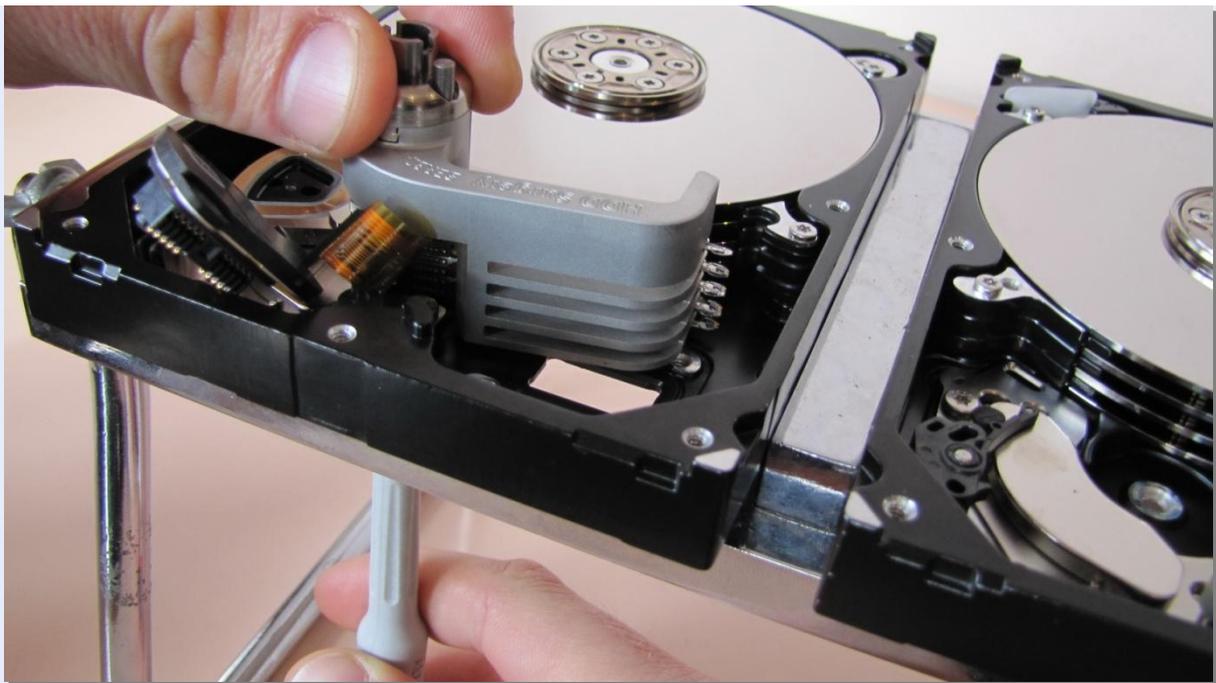
In order to dismount the heads from the hard drive, unscrew the screw at the bottom of the hard drive that's holding the actuator axis connected to the casing. While unscrewing this screw, hold the tool outside of the platter area with your other hand. Turn the screwdriver counter-clockwise until heads are free.



*Picture 6. (dismounting the heads)*

## Step 7 - Mounting the heads in a new drive

Place the tool with heads to its place in a patient hard disk. Screw the arm from the bottom side of the hard disk. After this, tighten the screw that's holding the tool and head arm connected too, just in case it got loosen up during the manipulation. This operation is necessary because of possible changes in height!



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

By horizontal force return the heads back towards the central section of the platters.

## Step 8 - Removing the pin

Carefully remove the securing pin when heads are above the parking zone.



*Picture 8. (remove the securing pin)*

## Step 9 - Removing the tool outside of platters

Using a finger push the tool shank horizontally to move the tool outside of the platter area.

### !!! IMPORTANT !!!

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



Picture 9. (returning the tool outside of platters)

## Step 10 - Dismounting the tool

Take out the screw and remove the tool. While unscrewing the screw, use the assisting tool to make counter-force.



*Picture 10. (removing the tool, using the assisting tool)*

Put the lid back and close the disk. Put PCB back and start cloning 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>