



Tools for data recovery experts

Guide for using HddSurgery™ head change tool:

- ***HDDS Sea 7200.12/.11/.10+ p1 Set (1 platter)***

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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

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. This way of functioning implies that, in a situation when the drive is powered off, its heads are located on the platter surface, but in the area that has no sensitive magnetic material. This allows the drive to start the motor to the required speed.

In order to replace the heads on these Seagate hard drives, it is required to transfer the heads over the "data" area on the platters and then slide them off the platters so they could be removed. After this, when installing the donor heads, they need to be "lifted" on to the platters and then slid over the platters to the "parking area". This procedure requires 2 types of contact: contact between heads and platters, and contact between the heads themselves. During these contacts, both platters and heads could get damaged.

By using HddSurgery™ head change tools both these types of contact are eliminated. The purpose of HddSurgery™ head change tools is to ensure a safe passage of heads over the "data area", and to provide a non-contact transfer to patient disk.

▪ HDDS Sea 7200.12/.11/.10+ p1 Set

This set of head change tools is made for safe and easy head replacement on Seagate 7200.12, 7200.11, 7200.10, SV35.5 and LP, but also Maxtor DiamondMax 23, DiamondMax 22 and DiamondMax 21 hard drives with 1 platter. The package contains 2 tools: for drives with 1 platter and 2 heads, and for drives with 1 platter and 1 head.

During the whole procedure of head replacement, there is no contact between the heads and platters or between the heads themselves. Heads are lifted above the "parking area" and then safely guided over the platters. Same procedure needs to be done when installing back the donor heads. Heads are guided over the platters and then safely deployed in the "parking area".

3. Supported models

HDDS Sea 7200.12/.11/.10+ p1 (1 platter, 2 heads)			
SATA			ATA
ST750DM003	ST3320613AS	ST380811AS	ST3160815A
ST500DM002	ST3320813AS	ST380211AS	ST3160215A
ST320DM000	ST3250410AS	ST3402111AS	
ST3500410SV	ST3250310AS		STM3160215A
ST3500410AS	ST3160815AS	STM3160815AS	
ST3500413AS	ST3160215AS	STM3500418AS	
ST3500418AS	ST3160811AS	STM3320418AS	
ST3320413AS	ST3160211AS	STM3320614AS	
ST3320418AS	ST3120811AS	STM3250310AS	
ST3500412AS	ST3120211AS	STM3160215AS	
HDDS Sea 7200.12/.11/.10+ p1 (1 platter, 1 head)			
SATA			ATA
ST3250312AS	ST3160813AS	STM3250318AS	ST380215A
ST3250318AS	ST380815AS	STM3160318AS	
ST3160316AS	ST380215AS	STM3160813AS	STM380215A
ST3160318AS		STM380815AS	
		STM380215AS	

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 that could happen 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.

Hard disk platter rotation speed makes the platters very sensitive to dust and any other kind of contamination. Because of this, 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

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 bound between the tool and actuator arm. Securing of the tool is done by using the securing pin.

Hard disks with one head don't have a hole in the arm through which a pin could be placed, so this step is skipped. Since this tool is not secured with a pin, be careful in the next few steps that the head doesn't slide off the tool in the process.



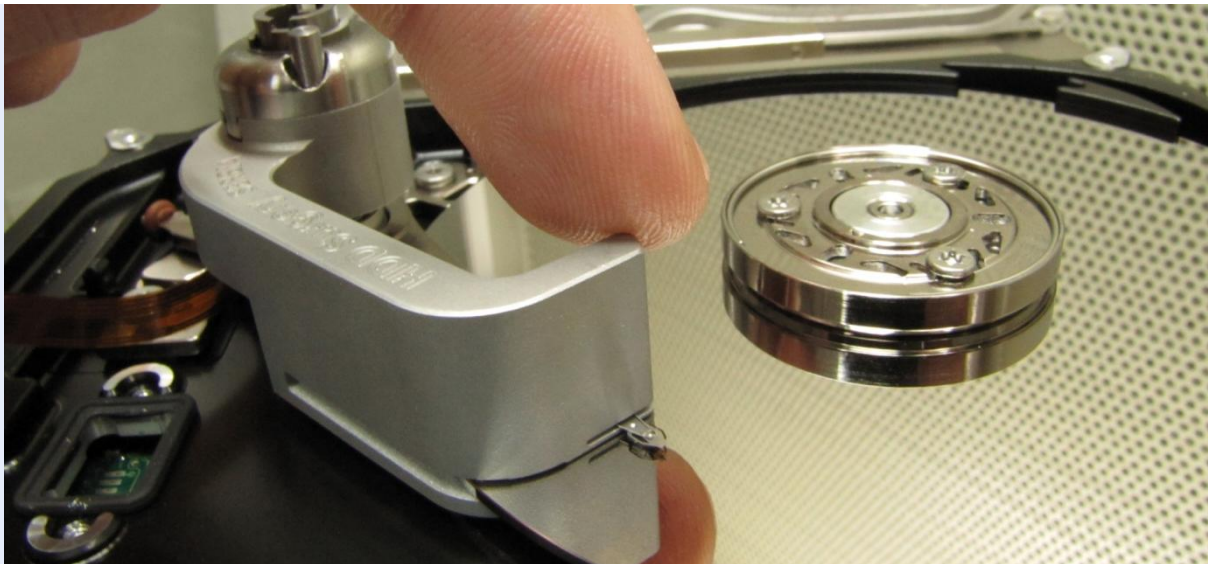
Picture 4. (Securing the tool)

!!!!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 5a. (Moving secured tool with heads outside of platters area)

On hard drives with one head push the back side of the head arm to move the heads off the platters.



Picture 5b. (Moving the tool with heads outside of platters area)

Step 6 - Dismounting the heads

Use a standard flat head screwdriver to unscrew the tool together with the heads. 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.

While performing this step on hard drives with one head make sure that the head stays on the tool and that it doesn't slide off.



Picture 6. (Dismounting the heads)

Step 7 - Mounting the heads in a patient drive

Use the same screwdriver to screw the heads on new hard drive. When screwing the heads, 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! Turn the screwdriver clockwise.

Again, on hard drives with one head be carefull that the head doesn't slide off the tool during this procedure.

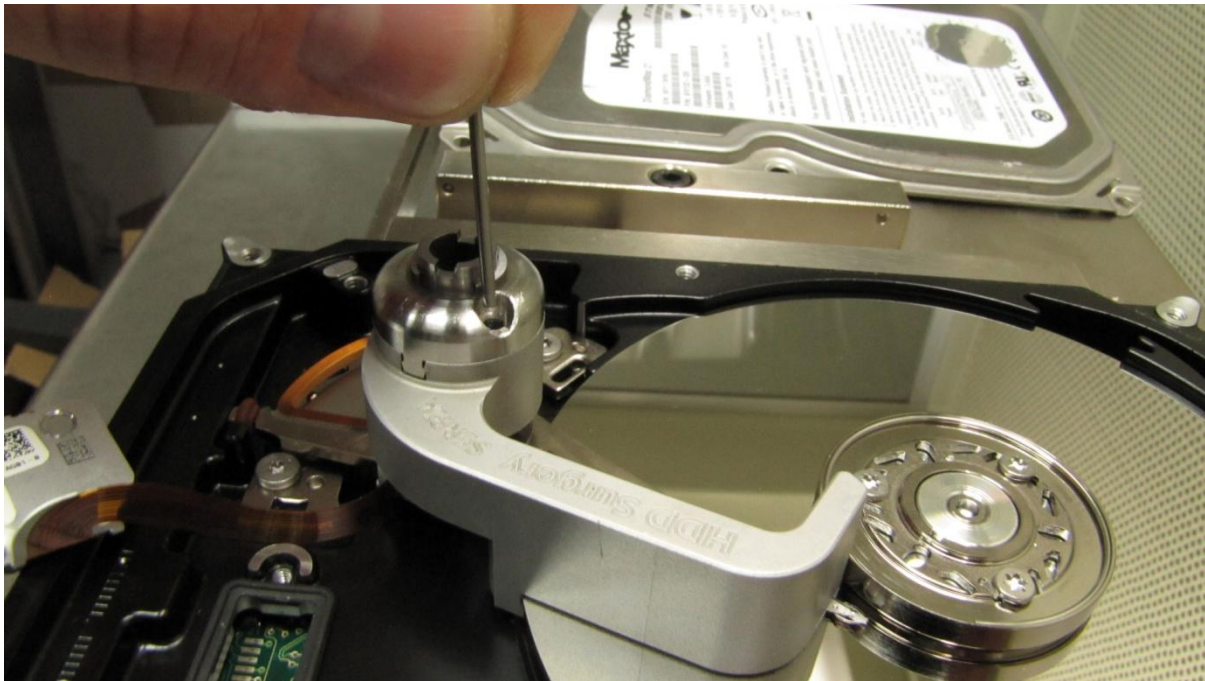


Picture 7. (Mounting the heads on a patient drive)

By horizontal scrolling 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 !!!

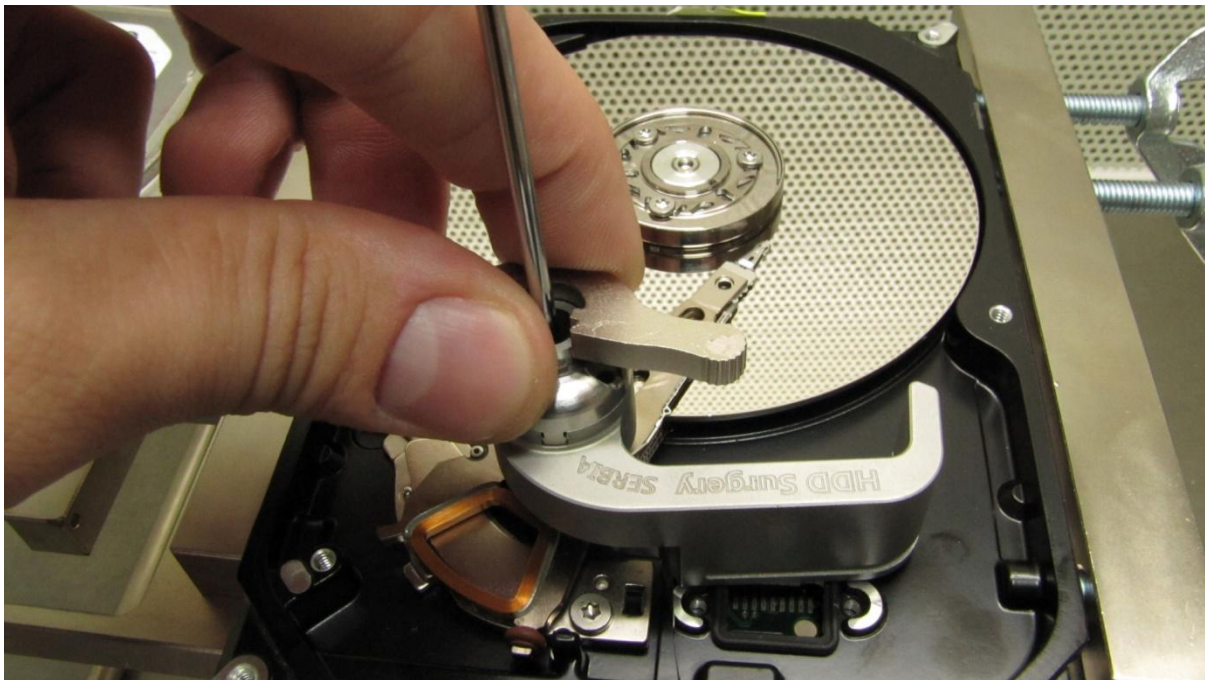
With your other hand, hold back side of the head arm (magnetic coil) to prevent heads from moving.



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>