tools for datarecovery experts

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Guide for using HddSurgery™ head change tools:

- ▪ *HDDS Sea 7200.10/.9/.8/ES p2-3 (2 or 3 platters)*
- ▪ *HDDS Sea 7200.10/.9/ES p4 (4 platters)*
- ▪ *HDDS Sea 7200.9 p1 (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^{TM} tools. In many cases, the known processes of hard drive head replacement are effective and sufficient. The general idea behind HddSurgery^{TM} tools was to make sure that the process of replacing damaged hard drive heads goes with no errors. The use of HddSurgery^{TM} 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^{TM} 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^{TM} support team on support@hddsurgery.com

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

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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, heads are located on the surface that has no sensitive magnetic material. This allows drive to spin-up the motor to the required speed.

Purpose of HddSurgery^{TM} head change tools is to enable safe heads passage over the "data" area above platters surface, and to provide non-contact transfer to the patient disk.

▪ HDDS Sea 7200.10/.9/.8/ES p2-3 (2 or 3 platters)

This tool is made for safe and easy head replacement on **Seagate 7200.10**, **7200.9**, **7200.8,** Seagate ES and **Maxtor DiamondMax 21** drives with 2 or 3 platters.

▪ HDDS Sea 7200.10/.9/ES p4 (4 platters)

This head change tool is made to safely and easily replace heads on **Seagate 7200.10** and **7200.9** drives with 4 platters.

▪ HDDS Sea 7200.9 p1 (1 platter)

This head replacement tool is made for safe and easy head replacement on **Seagate 7200.9** and **Maxtor DiamondMax 20** hard drives with 1 platter. These hard drives have a similar casing as other 7200.9 hard drives with 2 or 3 platters, but the height on which the platter rests is different. This is why a new tool was needed to support these specific hard drives.

As there is no conceptual difference between these three tools, we will explain only the functioning of **HDDS Sea 7200.10/.9/.8/ES p2-3** tool. In the case of **HDDS Sea 7200.10/.9/ES p4** and **HDDS Sea 7200.9 p1**, apply the same procedure.

During the whole procedure of head replacement, heads and platters have no physical contact. Heads are lifted over NON-data area and safely guided over the platters. In process of installing back the donor heads, same procedure needs to be done. Heads are guided over the platters with no contact and safely deployed in non-data area.

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3. Supported models

HDDS Sea 7200.10/.9/.8/ES p2-3 (2 or 3 platters)

PATA		SATA			ES SATA
ST3500630A	ST3300820A	ST3500630AS	ST3300820AS	STM3500630AS	ST3500630NS
ST3500830A	ST3300822A	ST3500830AS	ST3300822AS	STM3320620AS	ST3500830NS
ST3400620A	ST3300831A	ST3400620AS	ST3300831AS	STM3320820AS	ST3400620NS
ST3400632A	ST3250823A	ST3400632AS	ST3250620AS	STM3250824AS	ST3400820NS
ST3400633A	ST3250824A	ST3400633AS	ST3250623AS	STM3250820AS	ST3320620NS
ST3400820A	ST3250820A	ST3400820AS	ST3250624AS		ST3320820NS
ST3400832A	ST3200820A	ST3400832AS	ST3250820AS		ST3250620NS
ST3400833A	ST3200826A	ST3400833AS	ST3250823AS		ST3250820NS
ST3320620A	ST3200827A	ST3320620AS	ST3250824AS		
ST3320820A		ST3320820AS	ST3200820AS		
ST3300620A	STM3320820A	ST3300620AS	ST3200826AS		
ST3300622A	STM3300620A	ST3300622AS	ST3200827AS		
ST3300631A	STM3250620A	ST3300631AS			
ST3250623A	STM3250820A				
ST3250624A	STM3200820A				

HDDS Sea 7200.10/.9/ES p4 (4 platters)

PATA		SATA		ES SATA
ST3750640A	ST3500641A	ST3750640AS	ST3500641AS	ST3750640NS
ST3750840A	ST3500841A	ST3750840AS	ST3500841AS	ST3750840NS

HDDS Sea 7200.9 p1 (1 platter)

PATA			SATA	
ST3160812A	ST3802110A	STM3160812A	ST3160812AS	ST3808110AS
ST3160212A	ST3402111A	STM3160212A	ST3160212AS	ST3802110AS
ST3120814A		STM3802110A	ST3120813AS	ST3402111AS
ST3120213A		STM3402111A	ST3120213AS	

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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 if 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.
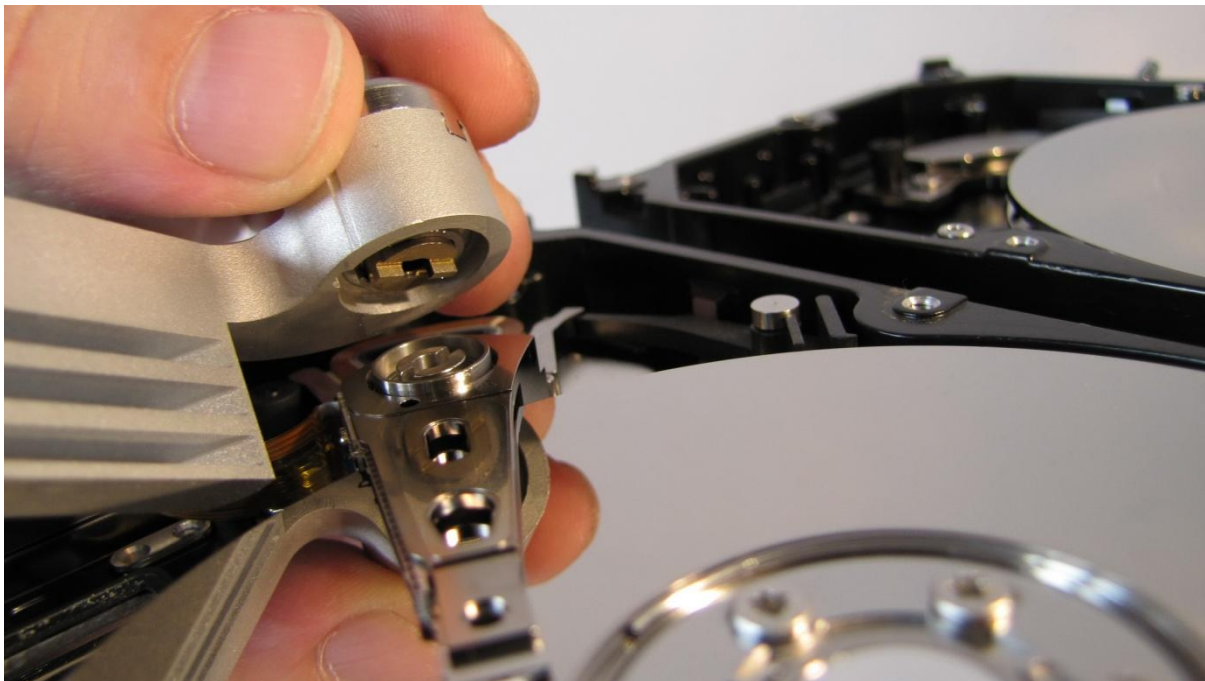

Picture 1. (handling the tool)

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Step 2 - Mounting the tool on actuator arms

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 tool over the center hole of the hard disc head. Take care that the notch on the bottom of the tool coincides with the commas in the actuator arm base. Tighten the screw to perform tool installation.

Picture 2. (mounting the tool)

With your right hand make sure that the tool shank with snouts remains in the area outside of the platters.

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

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Step 3 - Lifting the heads

By horizontally moving tool shank we slide the tool over platters. Construction of tools enables heads to lift on tool snouts by relatively small force. If you feel that the necessary force is greater than the expected, check tool positions and possible damage to the HDA assembly. Push the tool as far as limiter is allowing.

Picture 3. (lifting the heads)

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Step 4 - Securing the tool

The tool has a hole at its edge, which coincides with the hole in the head. The leftmost position is necessary to ensure the bound between tool and actuator arm. Securing is being done with the securing pin.
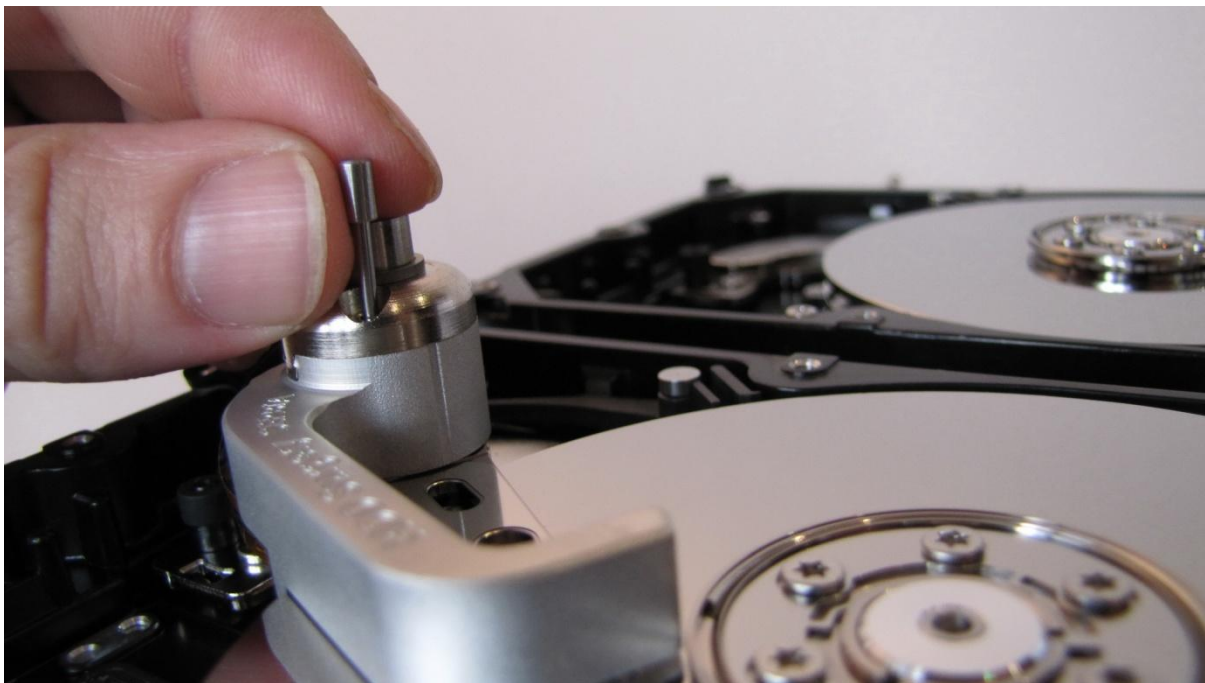
Picture 4. (securing the tool)

When using **HDDS Sea 7200.9 p1** tool on hard disks with one head, this step is skipped because these drives don't have a hole in the arm through which a pin could be placed. Since this tool is not secured with a pin, be carefull in the next few steps that the head doesn't slide off the tool in the process.

!!!IMPORTANT!!!
If the connection of the tool and actuator arms is not properly engaged, heads slipping is possible during disassembling.

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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)

When using **HDDS Sea 7200.9 p1** tool on hard drives with one head, push the back side of the head arm to move the heads off the platters. This is important because the heads could slip off the tool as they are not secured with a pin.

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Step 6 - Dismounting the heads

With the help of a standard flat screwdriver unscrew the tool together with the heads. Hold the tool with one hand because of the possibly contact with the platters. Turn screw driver 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.
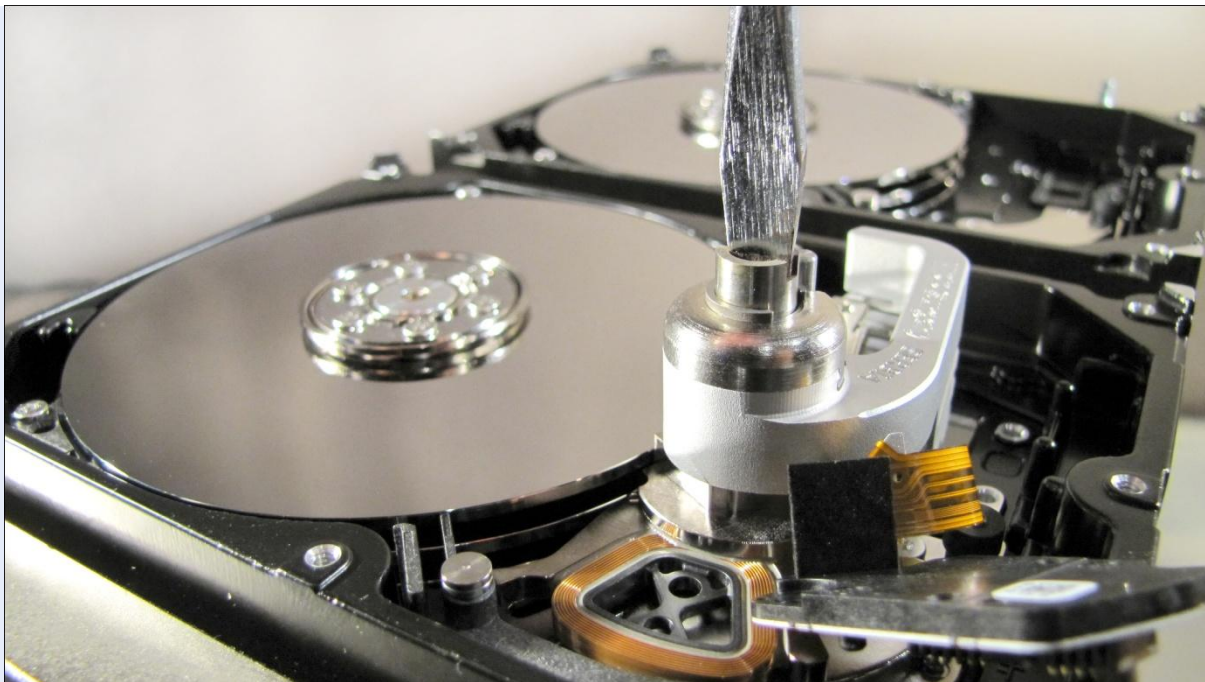

Picture 6. (dismounting the heads)

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Step 7 - Mounting the heads in a new drive

Use the same screwdriver to screw the heads on new hard drive. When screwing the heads tighten the screw too, just in case it got loosen up during the manipulation. This operation is necessary because of possible changes in height! Turn the screw driver 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 force return the head back towards the central section of the platters.

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Step 8 - Removing the pin

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

Picture 8. (remove the securing pin)

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Step 9 - Removing the tool outside of platters

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

> **!!! 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 loosening 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 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