



Tools for data recovery experts

Guide for using HddSurgery™ head change tools:

- ***HDDS Sea 2.5"Ramp set 2***

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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 get 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 which 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 when 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.

These tools do not solve the head compatibility problem. They 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

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™ Sea 2.5" Ramp set 2 head replacement tools

HddSurgery™ **HDDS Sea 2.5" Ramp set 2** represents a pair of head replacement tools which can be used to safely and easily replace heads on the Seagate 2.5" ramp hard drives with 3 and 5 platters which “park their read/write heads” on a ramp.

The set contains:

- **p3 tool**

This head replacement tool can be used on 2.5" Seagate ramp hard drive models which have 3 platters and with their heads parked on a ramp.

- **p5 tool**

This head replacement tool can be used on 2.5" Seagate ramp hard drive models which have 5 platters and with their heads parked on a ramp.

3. Supported models

HDDS Sea 2.5" Ramp set 2 Supported models	
List of <u>Seagate</u> families and models on which process of head replacement could be performed by using the ramp tools from HDDS Sea 2.5" Ramp set 2.	
P3 tool	P5 tool
ST1750LM000 ST2000LM005 ST2000LM003	ST3000LM016 ST3000LM024 ST4000LM016 ST4000LM024

* The list of tools may be updated as we get information from the market. HddSurgery isn't responsible if the producer changes the architecture of a drive from the list above.

4. Handling the tools

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

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



Picture 4.1. HDDS Sea 2.5" Ramp set 2

5. Head replacement process on Sea 2.5”

Ramp set p5 tool

Step 1 – Dismounting the heads

Remove all labels from the drive. Carefully remove the PCB from the drive. Remove all screws which are holding the lid. Use pentalobe and torx screwdrivers for the screw which is securing the head stack assembly.



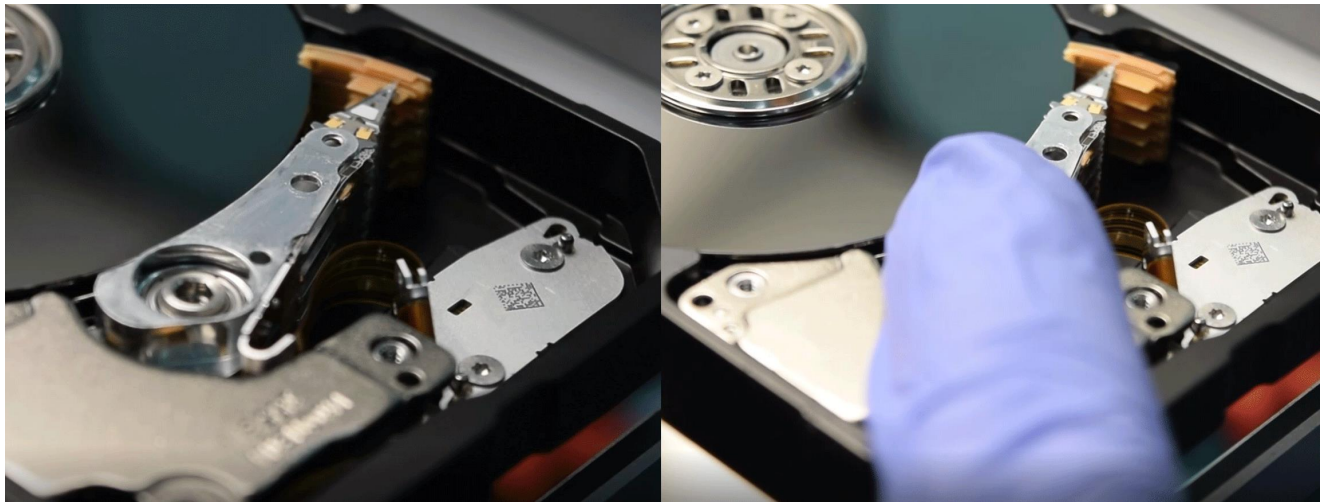
Picture 5.1. Preparing the drive

Remove the screw which is holding the security brake. The screw is positioned below the PCB, closer to the side edge of the casing.



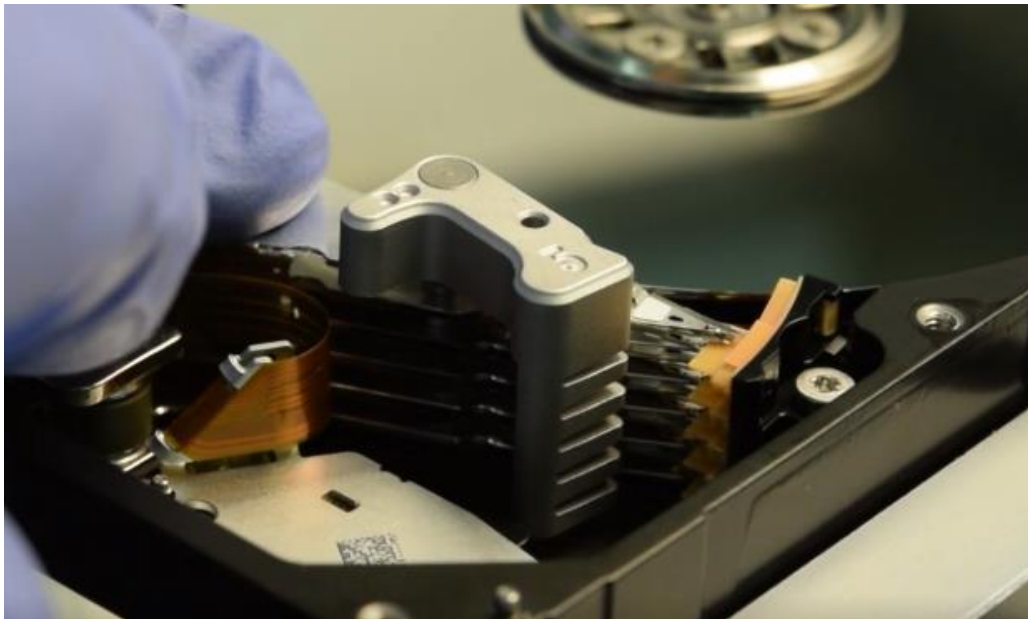
Picture 5.2. Removing the bottom screw

Carefully move the heads towards the platters to ensure enough space for mounting the p5 tool. Take additional precautions with this step as heads may accidentally be pushed to the platters. Recommended position should be the middle of the ramp.



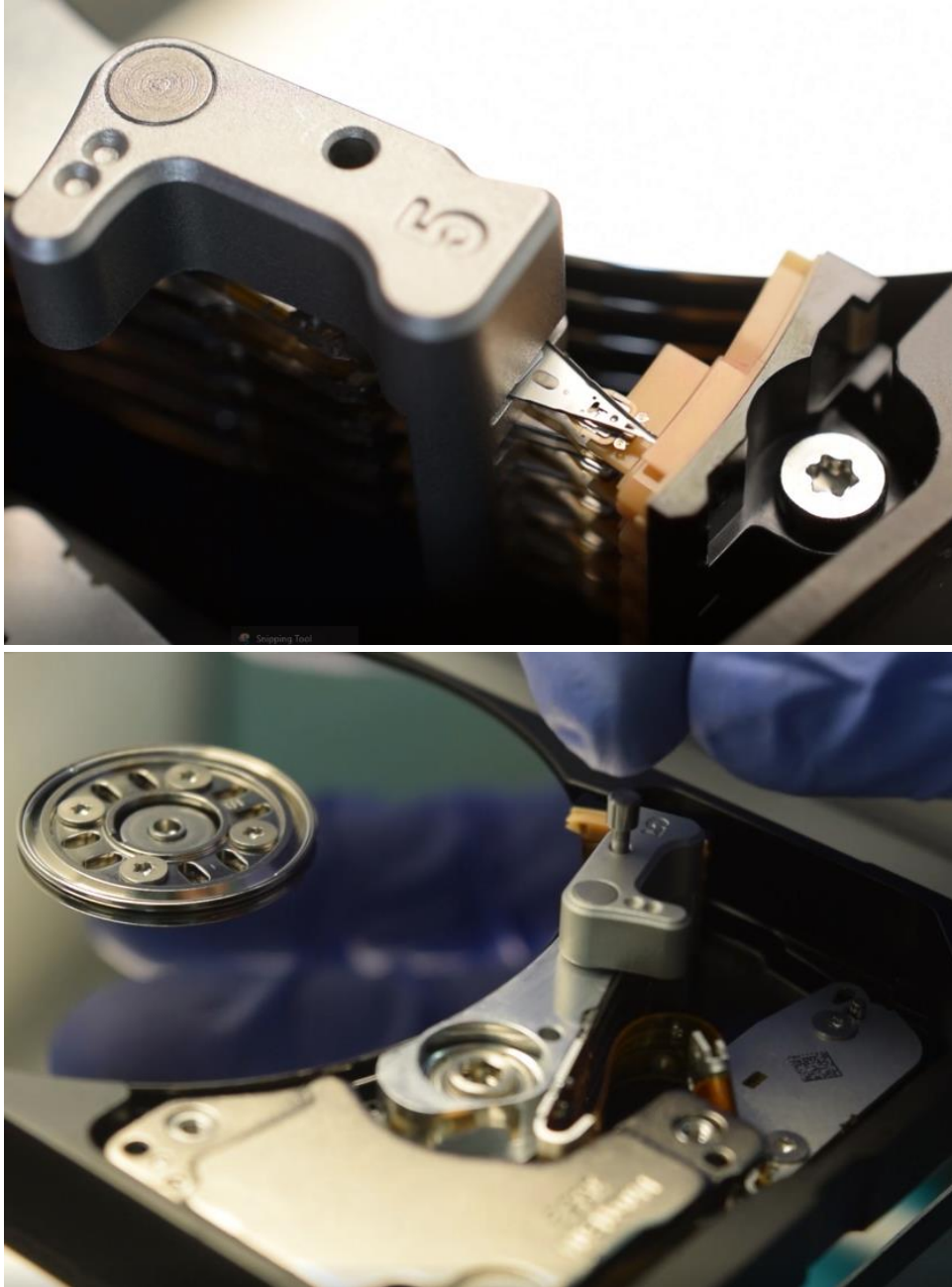
Picture 5.3. Moving the heads

Use the hole on the actuator arm to mount the tool carefully. When the tool is mounted, release the finger in order to return the heads to their position on the ramp.



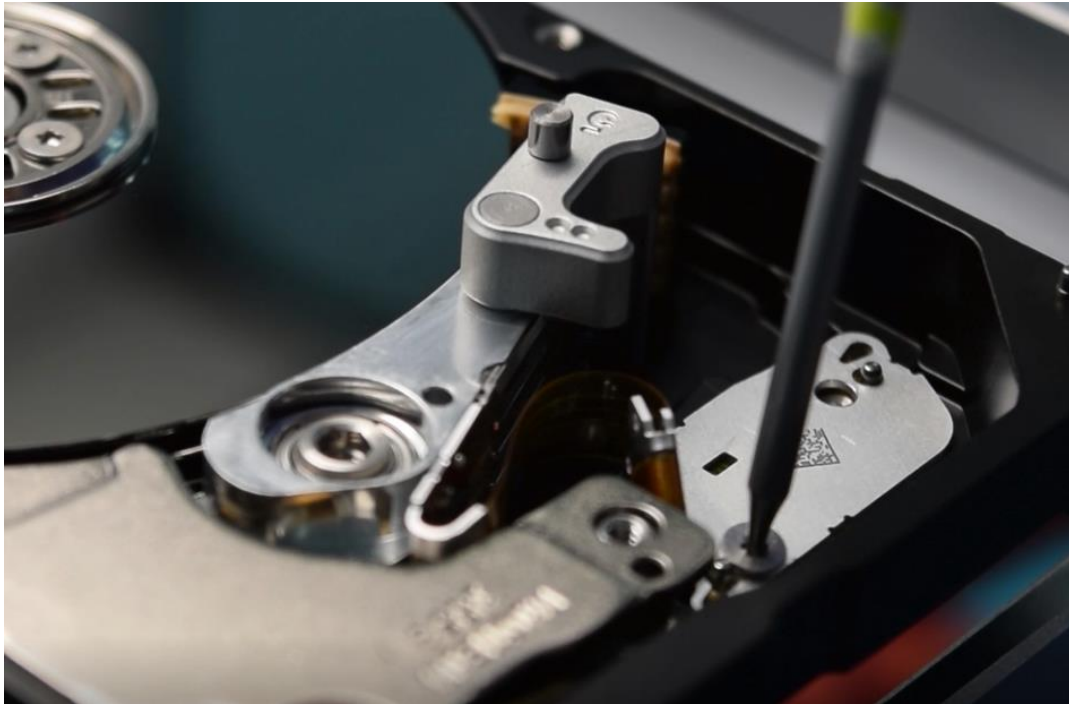
Picture 5.4. Mounting the tool

Slide the tool so the carriers (snouts) can go between the heads. Secure the tool with a safety pin.



Picture 5.5. Placing the safety pin

Remove the flat cable.



Picture 5.6. Removing the flat cable

Dismount and remove the upper magnet carefully. The upper magnet contains the security brakes (white plastic part and dark cylinder) which keeps the heads from sliding off the ramp. Be very careful while removing the magnet as it can damage the brake, as well as the heads.

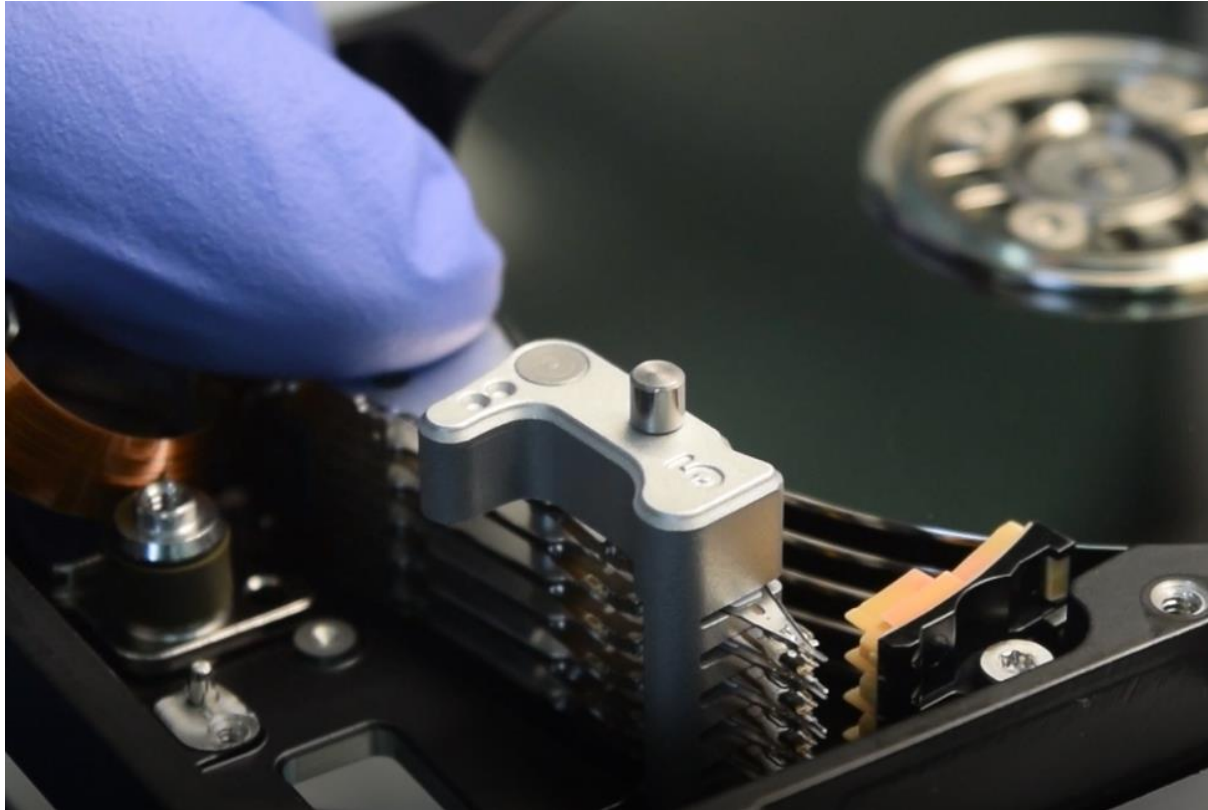
We recommend usage of a screwdriver and needle-nose pliers.



Picture 5.7. Dismounting the upper magnet

Slide the heads off the platters.

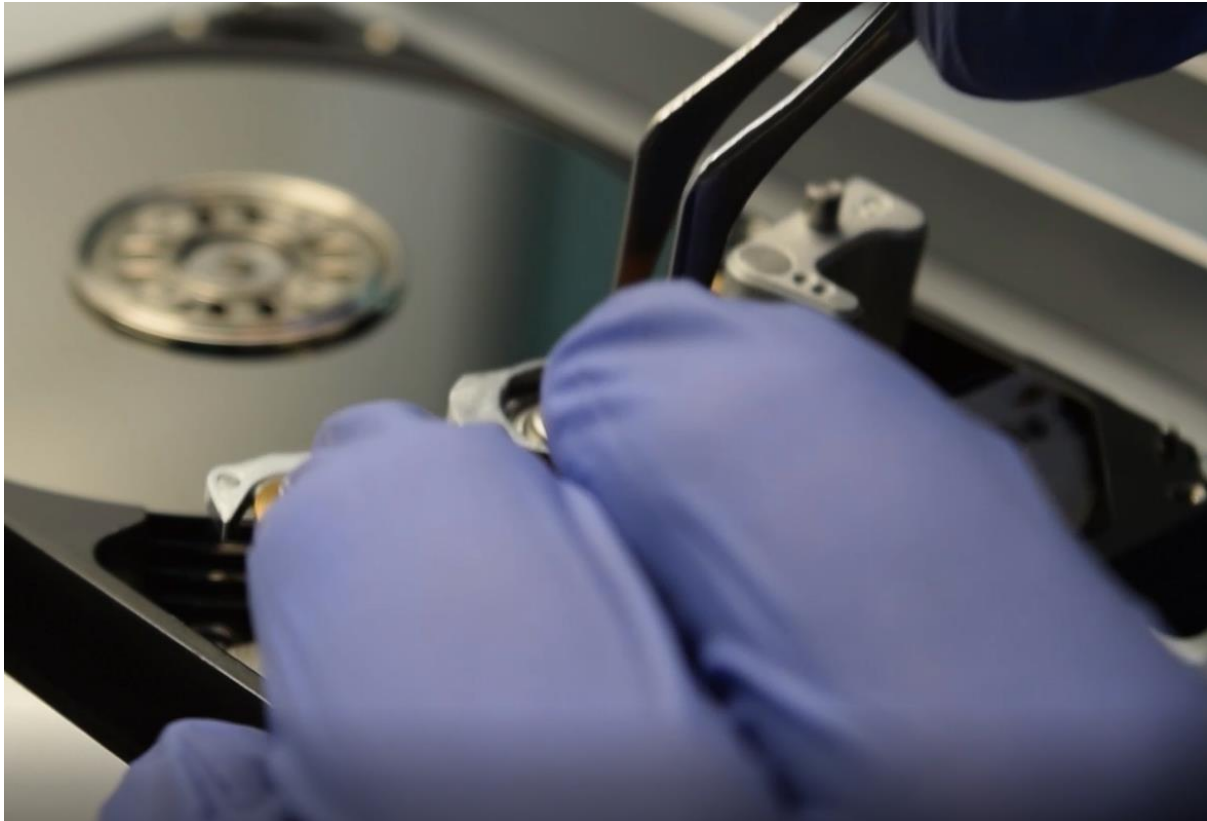
Unscrew and remove the screw which is holding the head arm connected to the hard drive casing (placed under the PCB). While unscrewing this screw, hold the head arm with your other hand to prevent the heads from going back to the ramp area.



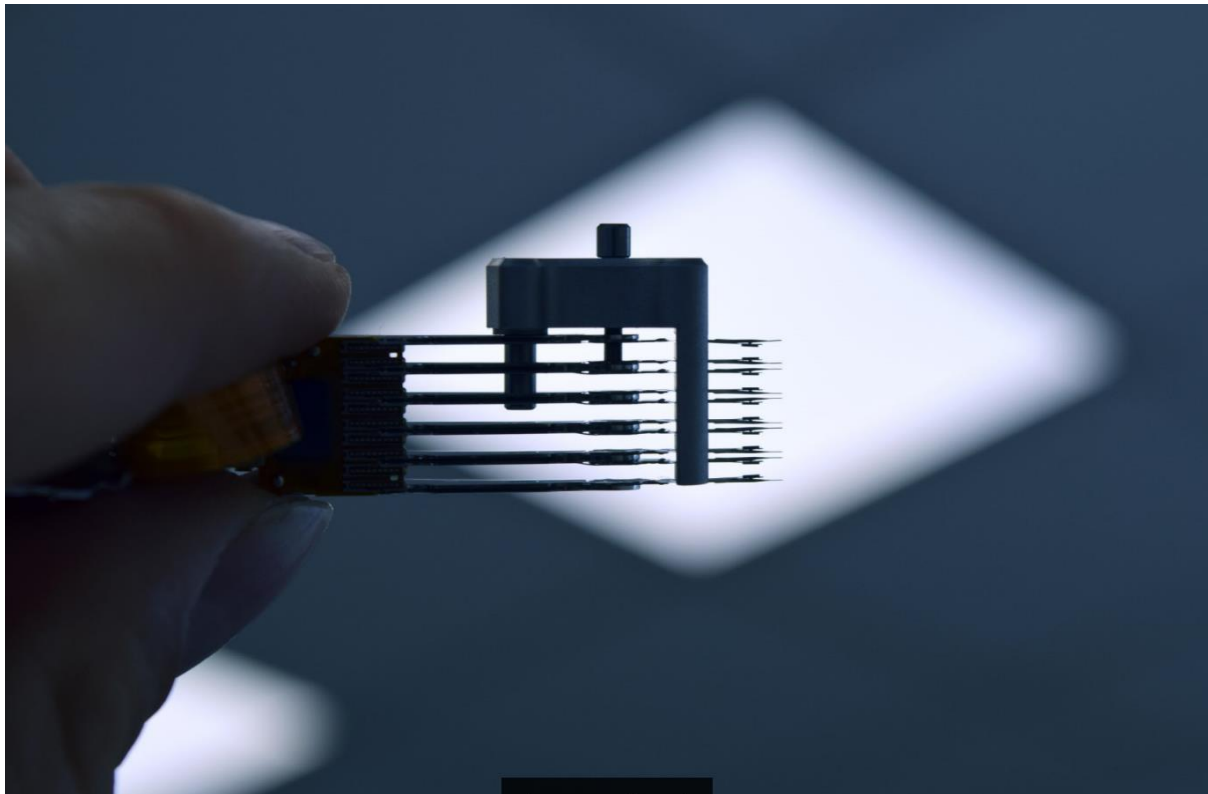
Picture 5.8. Sliding the heads off the platters

To lift the head assembly, tweezers are needed. Use the tweezers to grab the head assembly through some 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.



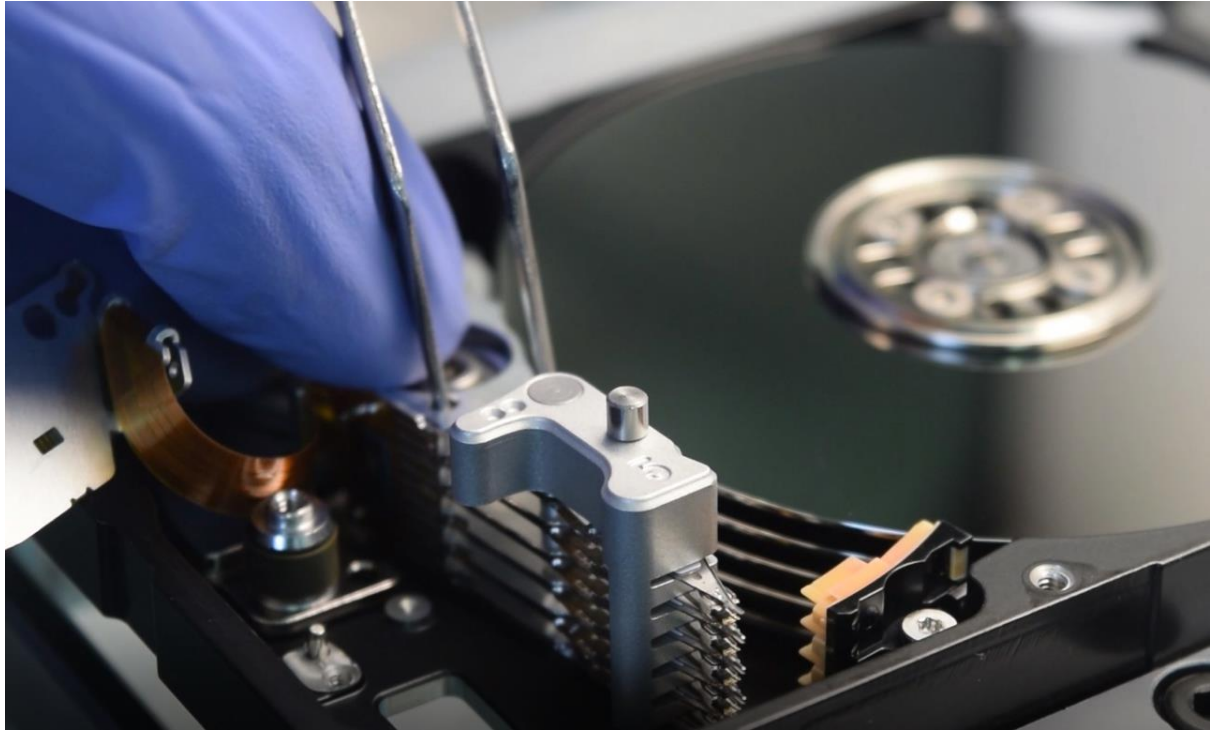
Picture 5.9. Lifting the heads



Picture 5.10. Dismounted heads

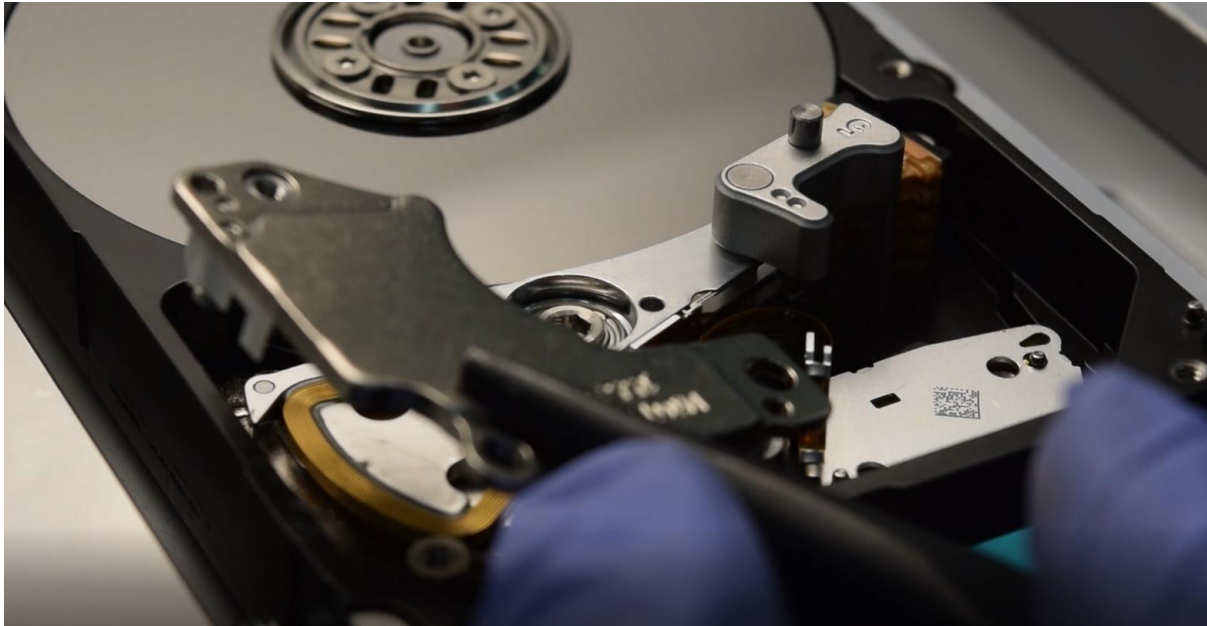
Step 2 – Returning the heads

Place the head stack assembly to its position. Tighten it with a screw in order to connect the actuator arm with the casing.



Picture 5.11. Positioning the head stack assembly

Slide the heads over the ramp. Return the upper magnet.



Picture 5.12. Returning the upper magnet

Scroll the tool away from the heads. Move the heads toward the platter a little in order to dismount the tool. While holding the head arm with one hand, pull the axle of the tool out of the hole to dismount the tool.



Picture 5.13. Dismounting the tool

6. Head replacement process on Sea 2.5"

Ramp set 2 p3 tool

Head replacement procedure with this tool is the same as with the tools from Sea 2.5" ramp set ([PDF Manual](#) and [Video guide](#) for this tool).



Picture 6.1. P3 tool

7. Conclusion

This guide was written by HDDSurgery™ team and it is based on our experience acquired during the process of development, design and testing.

HddSurgery™ is not responsible for any possible consequential damage, including the loss or recovery of data or any other damage made by using or working with HddSurgery™ tools.

You can find more information about these tools and many other tools used for data recovery on our website:

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

Also you can watch the videos that show how these tool work on our YouTube channel:

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

If you have any doubts or questions regarding use of HDDS Sea 3.5" Ramp 4A, you can contact our support team any time:

support@hddsurgery.com