

Touch™

3D stylus
Hands on design



User Guide

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FCC NOTICE

This equipment has been tested and found to comply with the limits for a class “B” digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense.

COMPLIANCE

This equipment conforms with International Electric Committee (IEC) 60950-1, EN 55022, EN55024, EN 61000-3-2, EN 61000-3-3, and EN 60950 and meets the requirements of the applicable EC directives.

WARRANTY

No warranties of any kind are created or extended by this publication. 3D Systems warrants that the Touch haptic device will be free from defects in materials and workmanship, during the applicable warranty period, when used under the normal conditions described in the documentation provided to you, including the respective User Guide. 3D Systems will promptly repair or replace the Touch, if required, to make it free of defects during the warranty period. This warranty excludes repairs required during the warranty period because of abnormal use or conditions (such as riots, floods, misuse, neglect or improper service by anyone except 3D Systems or its authorized service provider). The warranty period for the Touch is twelve (12) months and shall start the date your device is purchased. For consumers who are covered by consumer protection laws or regulations in their country of purchase or, if different, their country of residence, the benefits conferred by our standard warranty are in addition to, and operate concurrently with, all rights and remedies conveyed by such consumer protection laws and regulations, including but not limited to these additional rights.

THIS WARRANTY IS THE ONLY WARRANTY PROVIDED FOR THE TOUCH 3D DEVICE. TO THE MAXIMUM EXTENT PERMITTED BY LAW, 3D SYSTEMS EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES FOR THE TOUCH 3D DEVICE AND EACH OF ITS COMPONENTS, WHETHER THOSE WARRANTIES ARE EXPRESS, IMPLIED OR STATUTORY, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR INTENDED OR PARTICULAR PURPOSES.

LIMITATION OF LIABILITY

3D SYSTEMS WILL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, EXEMPLARY OR INCIDENTAL DAMAGES (SUCH AS LOSS OF PROFIT OR EMPLOYEE’S TIME) REGARDLESS OF THE REASON. IN NO EVENT SHALL THE LIABILITY AND/OR OBLIGATIONS OF 3D SYSTEMS ARISING OUT OF THE PURCHASE, LEASE, LICENSE AND/OR USE OF THE EQUIPMENT BY YOU OR OTHERS EXCEED THE PURCHASE PRICE OF THE TOUCH 3D DEVICE

The Touch 3D stylus is the first-ever haptic consumer 3D stylus for intuitive 3D sculpting and design, with instant force feedback that mimics the sense of physical touch. Touch works with 3Ds' Geomagic® Sculpt™, Freeform® and Cubify® Sculpt™, powerful virtual sculpting tools that transforms 3D modeling from a complex, skills-centric design experience to a simple, easy sculpting delight for students, designers, and hobbyists alike.

The Touch 3D stylus features, include:

- Ergonomic design and compact footprint
- 6-degree-of-freedom positional sensing
- 3-degree-of-freedom force feedback
- Two integrated momentary stylus switches
- Magnetic stylus-docking inkwell
- USB 2.0 full-speed interface plug-n-play
- Made of metal components and injection-molded plastics
- Instructional LEDs in base and gimbal

2 SAFETY



WARNING: INDICATES SOMETHING MAY HAPPEN THAT COULD CAUSE LOSS OF DATA, DAMAGE TO EQUIPMENT, OR COULD CAUSE PERSONAL INJURY.

SAFETY GUIDELINES

- Follow all safety rules and observe all cautions and warnings in this guide.
- Hardware usage guidelines are provided to assist you in protecting the effectiveness and life of the device. They are not intended as recommendations for the prevention of repetitive stress injury, carpal tunnel syndrome or any other conditions, injuries or disorders; users should consult their own physicians. By using the Touch device, you acknowledge and agree that 3D Systems shall have no liability for any disorder, condition or injury arising from any use of the device.
- Do not open the Touch device. Attempting to open or repair the device by anyone other than a certified authorized service center voids the manufacturer warranty and hardware maintenance contract. There are no serviceable components in the Touch device or power supply. Return to 3D for servicing.

In this section you will download and install device drivers, plug in the cables, then setup and calibrate the Touch device. The instructions below should be followed in the order they are presented.

Depending on the software (Cubify Sculpt, Geomagic Sculpt or Freeform) you purchased to use with the Touch device, the steps vary slightly. This is indicated by the product name below.

WHAT'S INCLUDED

Included in the box:

- Touch 3D stylus
- Power cord
- Power supply
- USB cable
- Touch 3D stylus Quick Start

INSTALLATION STEPS

1. [Get the Touch Activation Code \(Cubify Sculpt Only\)](#)
2. [Download and Install the Touch Device Drivers](#)
3. [Connect the Touch](#)
4. [Touch Setup](#)
5. [Calibrate the Touch](#)
6. [Download, Install, and Activate](#)

GET THE TOUCH ACTIVATION CODE (CUBIFY SCULPT ONLY)

1. Go to cubify.com/Touch/Activate.
2. Enter the Touch Serial number, then click Activate.

NOTE: The Touch Serial number is located on the bottom of the Touch device and on the Touch box.

The Touch activation code displays along with a license key for Cubify Sculpt. You will also receive an email with this information.

You will use the Touch activation code and the Cubify Sculpt license key later when you download, install and then start the Cubify Sculpt software for the first time.

DOWNLOAD AND INSTALL THE TOUCH DEVICE DRIVERS

You will need to download and install the most up-to-date Geomagic Touch Device Drivers (GTDD).

For Geomagic Sculpt and Freeform users: To download and install the Geomagic Touch Device Drivers, go to gettingstarted.geomagic.com then click on the 3D modeling product you purchased. Click the product download, then locate the Geomagic Touch Device Driver executable. Download and follow the Installation Wizard to install the device drivers.

For Cubify Sculpt users: To download and install the Geomagic Touch Device Drivers, go to cubify.com/Touch/Activate then click Device Drivers. Download and follow the Installation Wizard to install the device drivers.

In addition to installing the device drivers, the install also includes the Geomagic Touch Setup and the Geomagic Touch Diagnostic utilities.

NOTE: At this time, you can also download the 3D software from the same location, however, do not install the software yet.

CONNECT THE TOUCH

1. By grabbing the body of the device with both hands, carefully remove the **Touch** and **cables** from the box.
2. Position the Touch device in your workspace, using both hands to grasp the body or base of the device.

NOTE: See [“Handling the Touch Device” on page 12](#) for instructions on how to handle the device to reduce the risk of damage.

3. First, plug the **power cord** into the **power supply**.



4. Plug the **power cord** into an available **outlet** (for 110V the outlet must be rated for at least 2 Amps, for 220V: 1 Amp). The green status light on the power supply indicates that it is working correctly.



5. Plug the **power supply connector** into the **back of the Touch** device.



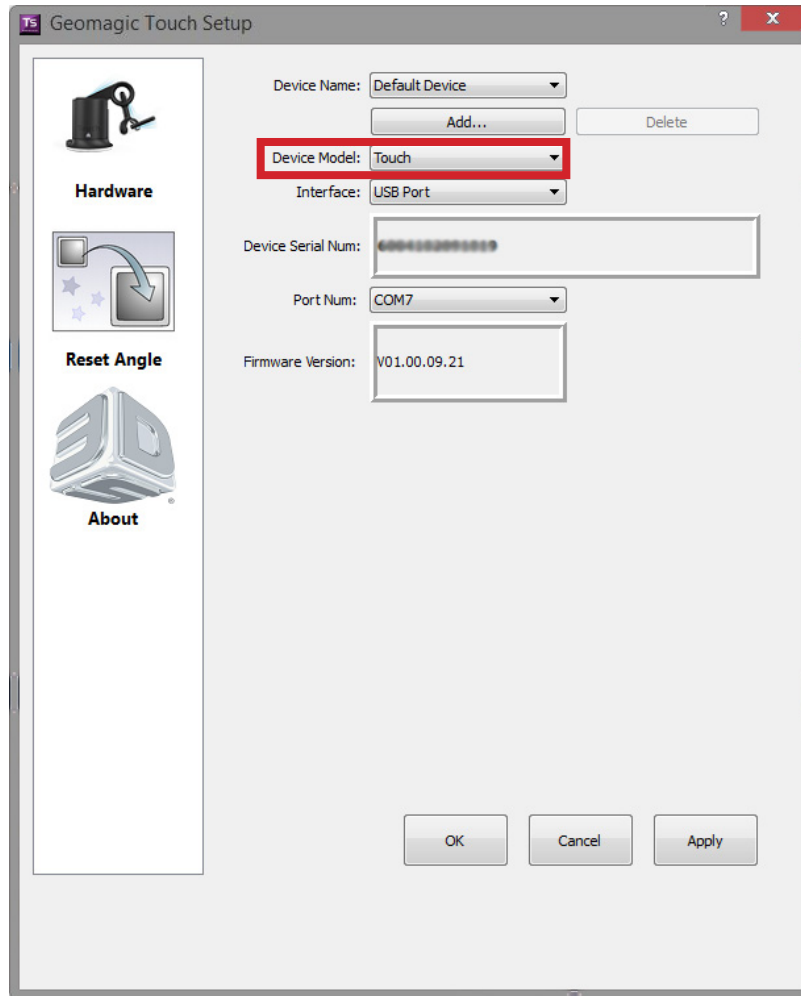
6. Make sure that the **LEDs ring** at the base is lit **blue**. Blue indicates the Touch has power. If it is not, check all of the connections. If the problem continues, contact 3D Systems customer support.
7. After all power has been connected properly, insert the smaller end of the USB cable into the Touch device, then connect the larger end of the USB cable into the USB port on your computer.



TOUCH SETUP

When you install the Geomagic Touch Device Driver (GTDD), it installs two helpful utilities: the Geomagic Touch Setup utility and the Geomagic Touch Diagnostic utility.

1. From your Desktop or from Start>All Programs>>3D Systems>Geomagic Touch>Geomagic Touch Setup, open the **Geomagic Touch Setup** utility.
2. Make sure that **Touch** is selected from Device Model in the Hardware tab.



3. Click **Apply**, then **OK**.

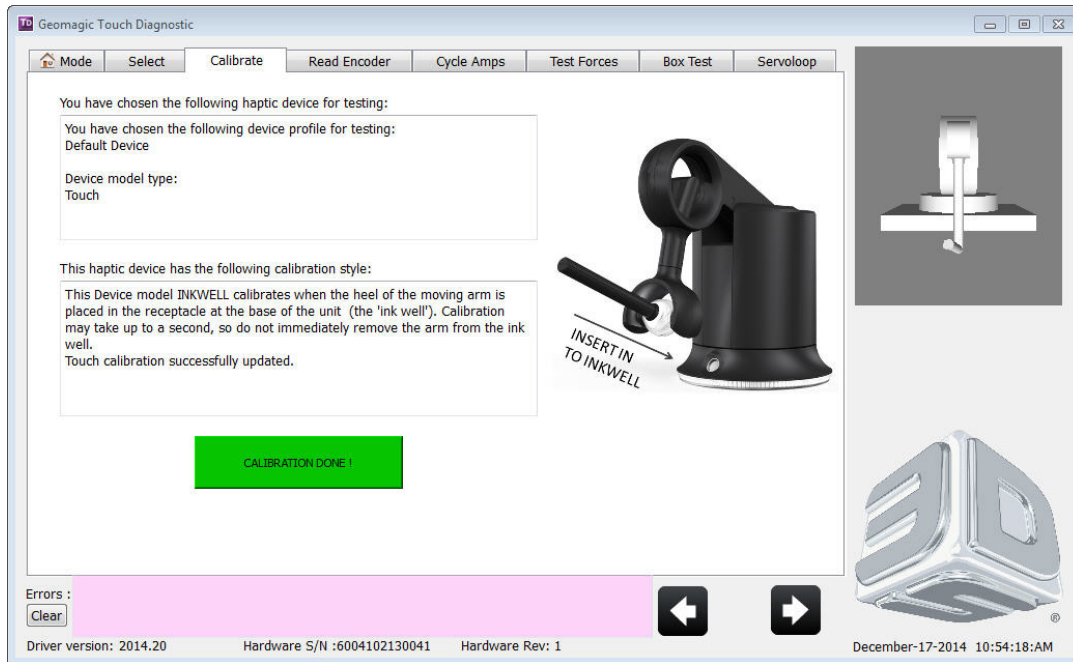
CALIBRATE THE TOUCH

In this section you will run the Geomagic Touch Diagnostic utility to confirm that the device is properly calibrated.

1. Click the Geomagic Touch Diagnostic icon on your desktop, or if you chose not to install desktop shortcuts click Start>All Programs>3D Systems>Geomagic Touch>Geomagic Touch Diagnostic.

The **Geomagic Touch Diagnostic** utility opens and you will be in the Mode tab, click the Next Arrow button.

2. Click the **Calibrate** tab.



3. Place the stylus in the inkwell to properly calibrate the device.
Calibration may take up to a second, so do not immediately remove the stylus from the inkwell.
The Calibrate box changes from red to green when the calibration is complete.
4. When calibration is complete, you can close the Geomagic Touch Diagnostic utility.
The LED lights on the base of the Touch device should be white.
You are now ready to install the 3D modeling software.

NOTE: The other tabs in the Geomagic Touch Diagnostic utility will be helpful for troubleshooting purposes.

DOWNLOAD, INSTALL, AND ACTIVATE

Depending on the 3D software you are installing to use with your Touch device, select from the products below.

For Geomagic Sculpt and Freeform: See the Installation Guide that is associated with the software.

For Cubify Sculpt: Follow the steps below.

1. Download and install the Cubify Sculpt software from cubify.com/Touch/Activate.
2. Launch Cubify Sculpt, and when asked if you would like to activate your Touch, click **Yes**.
Cubify Sculpt closes and opens a folder containing the TouchActivationWizard.exe.
3. Double-click the TouchActivationWizard.exe to open it.
4. Enter the **Touch activation code**, then click **Activate**.
5. Relaunch Cubify Sculpt and when prompted, enter the Cubify Sculpt **license key**.

IMPORTANT: Before you install and activate the 3D software, make sure the most up-to-date device drivers are installed, your Touch device is connected properly, and the Touch is calibrated. If you have installed a trial version, save all your work files and uninstall the trial version, then follow the steps below.

TOUCH COMPONENTS

The picture below labels the parts of the Touch device.



LED (LIGHT) RING INDICATORS

The LED ring at the base of the Touch will display a different color light depending on the status of the Touch.

- **Blue - Power is on, but not communicating with application**
 - Displays blue after the power supply is plugged in
 - Displays blue if GTDD (Geomagic Touch Device Driver) is not installed
 - Displays blue if Geomagic Touch Setup utility has not been run
 - Displays blue when no haptic enabled application is open
- **Blinking Blue - Communicating with application, Touch needs to be calibrated**
 - Displays blinking blue when the Touch needs to be calibrated by placing the stylus pen in the inkwell
 - Displays blinking blue when the Touch needs to be calibrated by opening the Geomagic Touch Diagnostic utility and calibrating
- **White - In inkwell for calibration, communicating with application, Force feedback inactive**
 - Displays white when the stylus is in the inkwell during and after calibration. The Touch is communicating with the open application, but force feedback is not being used.
- **Green - Calibrated, communicating with application, Force feedback is active**
 - Displays green when the Touch is calibrated and is communicating with an open application. The Touch is using force feedback.

NOTE: The orb stylus will always display white.

HANDLING THE TOUCH DEVICE



WARNING: LIFTING THE TOUCH DEVICE IMPROPERLY MAY DAMAGE IT. TO REDUCE THE RISK OF DAMAGE, PLEASE FOLLOW THE INSTRUCTIONS BELOW.

Lifting the device: To properly lift the device grasp the base of the Touch unit on both sides and lift as shown in the image below. DO NOT lift by grabbing the stylus or arm. Lifting the unit by the stylus or arm could result in severe damage to the device.



Position hands to securely lift the device.

Protecting the device from damage: It is best to place the device firmly on the desktop and away from edges to reduce the risk of damage from a direct, unintentional elbow hit.



To reduce the risk of damage, keep the device out of the way. Pay extra attention if the stylus is stored in the inkwell.

HANDLING THE STYLUS

The correct way to hold the stylus: Grasp the stylus as you would a pen or pencil. Holding the stylus at the bottom, closer to the orb.



Proper Handling



Improper Handling

Lifting the stylus out of the inkwell: Grasp the stylus and lift up to disengage as shown below in the image on the left. Do NOT attempt to pull the stylus straight out as shown on the right.



Proper Handling



Improper Handling

Calibrating the device: The Touch may need to be recalibrated from time to time, particularly if it has lost power or has been moved. To calibrate the device, place the stylus in the inkwell and start your application. Calibration may take up to a second, so do not immediately remove the stylus from the inkwell. The LED ring at the base of the Touch device will be lit white when the device is properly calibrated.

Storing the stylus: You can rest the stylus on either the desktop or in the inkwell.

NOTE: If you unplug the device or it becomes unresponsive at any point, place the stylus in the inkwell to calibrate the device.



The stylus does not need to be stored in the inkwell.

POSITIONING THE TOUCH DEVICE

The correct placement of the device will vary from one user to another. You may want to experiment to find a placement that feels right for you.

- The device should be positioned so that you are comfortable when working with it.
- You should not feel any strain on your wrist or forearm when working with the device.
- If you are using the device for long periods of time, it is important to keep your forearm or elbow supported so you do not strain your neck or shoulder. For example, resting your elbow on the desktop or your forearm on the edge of the desktop. You can also purchase an ergonomic arm support cradle from various 3rd party vendors online.
- If you are left-handed, you may find it easier to work with the Touch placed to the left of the keyboard.
- Remember to take breaks often to stretch your hands, wrists, and elbows.

This section introduces you to working with the Touch device and the physical limits of the device's range of motion. It is important to understand these physical limitations so that you do not inadvertently damage the device by forcing it past its designed limits.

WORKING IN 3D SPACE

We have become so accustomed to using a mouse to move around a computer screen that we don't think twice as we move our hand around a desk to move the cursor. But there was a time not long ago when this simple task was not second nature; some even found it challenging and were often frustrated as they learned. If you are new to working with a haptic and in a 3D digital space, it may take some time to feel comfortable. Understanding where objects are in 3D space may take some practice before you are able to move and manipulate objects with ease and certainty. Be patient with yourself.

PHYSICAL LIMITS OF THE DEVICE

The Touch device has physical limits. When you reach one of these limits you will feel a sudden stop; this is the mechanical stop designed into the device. Forcing the Touch past any of these stops will damage the device.

Take some time to become more familiar with the stops of the Touch before using the device by moving the device through its full range of motion.

MOVING WITH THE STYLUS

Using the steps below and the accompanying images, try moving the stylus through the different range of motions.

1. Hold the **stylus** as you would a pencil or pen, with the free end (the end not connected to the device) of the stylus (the eraser end of a pencil) pointing towards you.



2. Gently move the stylus to the left and then to the right.



Move the stylus to the right.



Move the stylus to the left.

3. Move the stylus up and down.



Move the stylus up.



Move the stylus down.

4. Move the stylus towards the device and then away from the device.



Move the stylus towards the device.



Move the stylus away from the device.

NOTE: When you reach a physical limit, you'll feel one of the device's mechanical stops. Don't force the device past any of these stops.

5. Next, perform smaller movements from the orb, moving your wrist:
- Rotate the stylus left and right.



Using your wrist, rotate the stylus to the left.



Using your wrist, rotate the stylus to the right.

- b. Next pivot the stylus up and down.



From the wrist, pivot the stylus up.



From the wrist, pivot the stylus down.

- c. Finally gently twist the stylus back and forth.



From the wrist, twist the stylus.



Now you should have an understanding of the range of motion of the Touch device and where its limits are.



WARNING: ALWAYS WORK WITH THE CONNECTED END OF THE STYLUS POINTING AWAY FROM YOU. NEVER ROTATE THE STYLUS WITH THE POINT FACING YOU.

Specification	Value
Supported operating systems	Windows® 7 (32-bit or 64-bit) Windows® 8 (64-bit)
Power consumption	100/240V 50/60 Hz 1 Amps (output DC 18V 2.2 A so 38 Watts max)
Workspace dimensions	10.45 x 9.5 x 3.5 in
Hardware recommendations	
• Intel Pentium or equivalent processor	• 2 GHz or faster
• RAM	• 2 GB minimum
• Screen resolution	• 1280 x 1024 minimum
• Available hard disk space	• 4 GB
Height	7" (arm at rest)
Base diameter	5.5" (round base)
Range of Motion	Hand motion pivoting at wrist
Nominal position resolution	Approx 0.084 mm
Max force (neutral position: when 4-bar links are orthogonal)	3.4 N
Force feedback	3° of freedom X, Y and Z
6-degree-of-freedom positional sensing	6° of freedom X, Y & Z (Digital Encoders) Roll, Pitch & Yaw (± 5% linearity potentiometers)
Interface	USB 2.0
USB cable length	6'



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