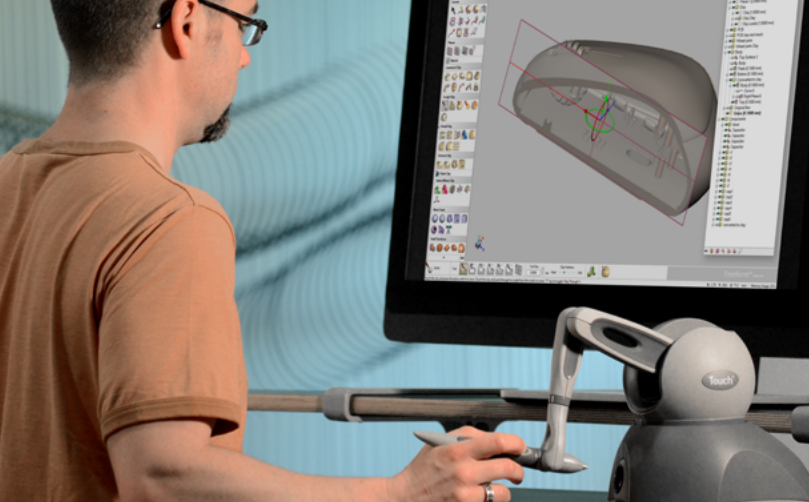# Haptic Devices

Add the sense of Touch
to your digital world

Touch X

Touch

Add the sense of Touch to your digital world

3D Systems haptic devices provide true three-dimensional navigation and force feedback, integrating a sense of touch into the Geomagic Freeform® and Geomagic® Sculpt™ 3D modeling software solutions as well as research and commercial applications. The 3D Systems haptic devices can accurately measure the 3D spatial position (along the x-, y- and z-axis) and the orientation (roll, pitch and yaw) of its handheld stylus.

Intuitive Interaction

When haptics are used in design and virtual sculpting environments, designers can interact and feel the shape of the 3D model as if they were designing in physical clay. Interactive clay sculpting tools that perform just like the real world allow for a far more intuitive 3D design. These patented 3D Systems haptic devices ingeniously use motors to create forces that push back on the designer's hand to simulate touch when the cursor interacts with the 3D model in virtual space. Depending on the model, 3D Systems haptic devices provide either 3 or 6 Degrees of Freedom (DOF) force feedback.

Touch to Create and Simulate

3D Systems haptic devices are used in every industry that requires accurate organic designs, using the sense of touch to build 3D models faster and with precision.

Designers turn to Geomagic software and haptic devices to successfully create their designs for the following applications:

- 3D Modeling and Manufacturing
- Jewelry, Automotive, Toy, and Shoe Design
- Medical Surgery and Rehabilitation Simulations
- Artwork and Sculpting
- Forensic Reconstruction
- Training, Simulations, and Skills Assessment
- Gaming, Entertainment, and Virtual Reality
- Bakewear and Cookery Molds and Dies
- Teleoperation and Robotic Control
- Virtual Assembly and Collision Detection
- Applications for the Visually Impaired
- Molecular Modeling
- Nano Manipulation

Touch™

The 3D Systems Touch offers the ability to precisely sculpt inside the Geomagic organic design software solutions. This haptic device offers robustness and stability for complex projects and designs.
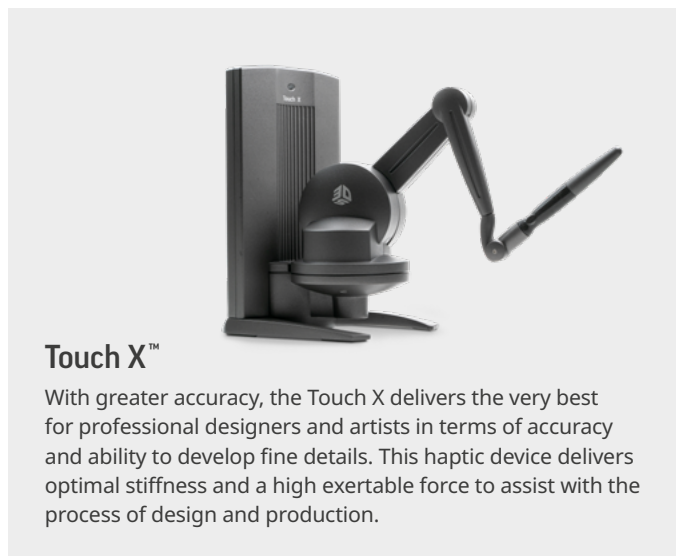
Touch X™

With greater accuracy, the Touch X delivers the very best for professional designers and artists in terms of accuracy and ability to develop fine details. This haptic device delivers optimal stiffness and a high exertable force to assist with the process of design and production.
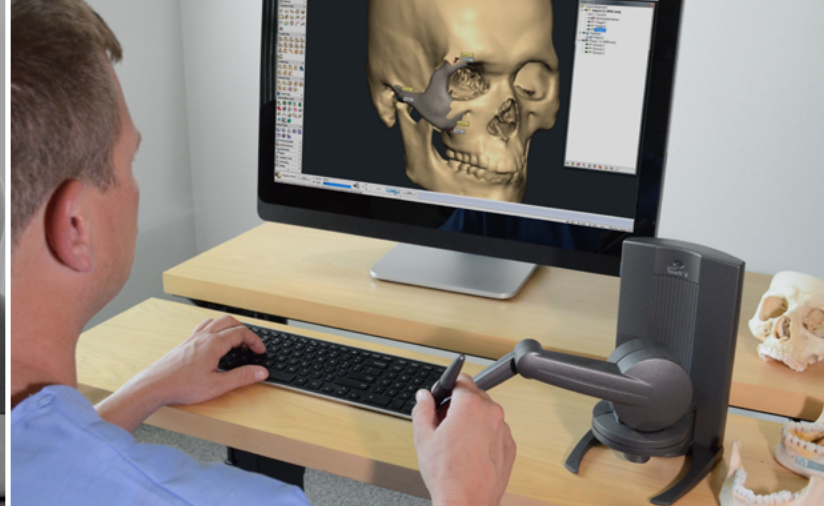
Haptic Based Software

Ff Geomagic Freeform®

The industry's most comprehensive organic 3D engineering tools combine touch-based 3D sculpting, surfacing, design intent modeling, 3D scan processing, CAD interoperability and mold making. These features enable the creation of complex, sculptural, production-ready 3D models and quickly prepare them for additive or subtractive manufacturing. The software comes in 2 packages - Geomagic Freeform and Geomagic Freeform Plus and works exclusively with any 3D systems haptic device.

Sc Geomagic® Sculpt™

Geomagic Sculpt is an entry-level, fast, accurate virtual sculpting software platform that enables the creation of free-flowing organic designs for products, sculptures, jewelry and artwork that can simply not be achieved in CAD. Geomagic Sculpt operates with both a standard mouse or with a 3D Systems haptic device for a true sense of touch, while working as the most intuitive way to create functional and beautiful products for 3D printing and manufacturing.

OpenHaptics™

3D Systems Open Haptics Software toolkit

From 3D game developers to molecular researchers, developing a new software product with a sense of touch is made straightforward with the 3D Systems haptic devices plus the OpenHaptics Software toolkit. This toolkit delivers the ability to integrate any 3D Systems haptic device into a 3D application with tools such as 3D navigation, material properties, polygonal object support, device control, sensor readings and more.
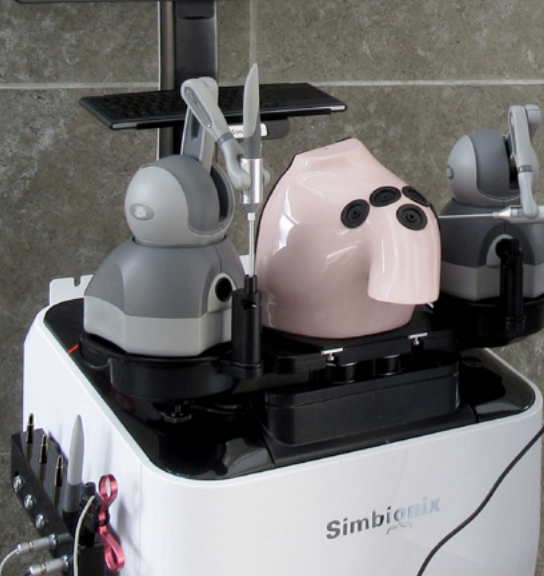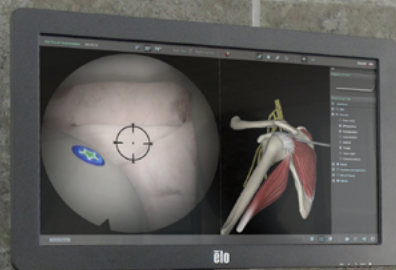
Haptic Devices

Add the sense of Touch to your digital world

SPECIFICATIONS	TOUCH™	TOUCH X™
Workspace	~6.4 W x 4.8 H x 2.8 D in > 160 W x 120 H x 70 D mm	~6.4 W x 4.8 H x 4.8 D in > 160 W x 120 H x 120 D mm
Range of motion	Hand movement pivoting at wrist	Hand movement pivoting at wrist
Nominal position resolution	> 450 dpi ~0.055 mm	> 1100 dpi ~0.023 mm
Maximum exertable force and torque at nominal position (orthogonal arms)	0.75 lbf/3.3 N	1.8 lbf/7.9 N
Stiffness	x-axis > 7.3 lb/in (1.26 N/mm) y-axis > 13.4 lb/in (2.31 N/mm) z-axis > 5.9 lb/in (1.02 N/mm)	x-axis > 10.8 lb/in (1.86 N/mm) y-axis > 13.6 lb/in (2.35 N/mm) z-axis > 8.6 lb/in (1.48 N/mm)
Force feedback (6 Degrees of Freedom)	x, y, z	x, y, z
Position sensing/input (6 Degrees of Freedom) [Stylus gimbal]	x, y, z (digital encoders) [Roll, pitch, yaw (± 5% linearity potentiometers)]	x, y, z (digital encoders) [Roll, pitch, yaw (magnetic absolute position sensor, 14-bit precision)]
Interface	USB 2.0	USB 2.0