



# Razor Edge Durability and Sharpness Tester

for **RAZORS** | **SCALPELS** | other **FINE BLADES**

Designed and manufactured by  
**Cutlery and Allied Trades Research Association**



- Quickly and accurately produces sharpness and edge retention data.
- Uses CATRA standardised test parameters or users own custom test parameters.
- Automatic operation.
- Can be used for quality control, R&D and product evaluation.
- Tests coating adhesion and application.



## Machine Overview

The REDS (Razor Edge Durability and Sharpness tester) is a specially developed machine utilising cutting force measurement that gives accurate and realistic sharpness results along with life determinations for both quality control and R&D purposes.

A typical sharpness test takes only 2 minutes, from setting up the blade to results being produced. A sharpness and wear test takes longer, approximately 20 minutes if using the CATRA Standard parameters.

The cutting test mechanism consists of a test media feed unit which unloads and loads the 8mm or 3mm square test media section from the test media reels. The test media is driven around a radius former to ensure a controlled and consistent bend for the cutting zone. The test media feed is located on a horizontal linear slide, which oscillates to replicate the wear on a blade.

The blade-mounting unit consists of replaceable locking blade clamps, which can allow the blades to be tensioned to a pre-determined level. These replaceable clamps can be changed for optional clamps to accommodate various blade cross sections or surgical blade shapes, thereby giving accurate and repeatable blade positioning.

The cutting force measurement is monitored by the PC software, identifying peak loads and collating all the readings to create peak force curves and life curves

The machine is provided in addition to the following:

- Aluminium table and frame for mounting the machine and housing the control system.
- Fixed monitor and tabletop space for PC peripherals
- Computer (Windows Operating System)
- Clear guard for machine with interlocks
- Control and test software installed and configured by CATRA
- Full calibration and commissioning at our works
- One printed instruction manual & Electronic version on supplied PC
- One 20m hank of test media (8mm or 3mm dependent on blades being tested)

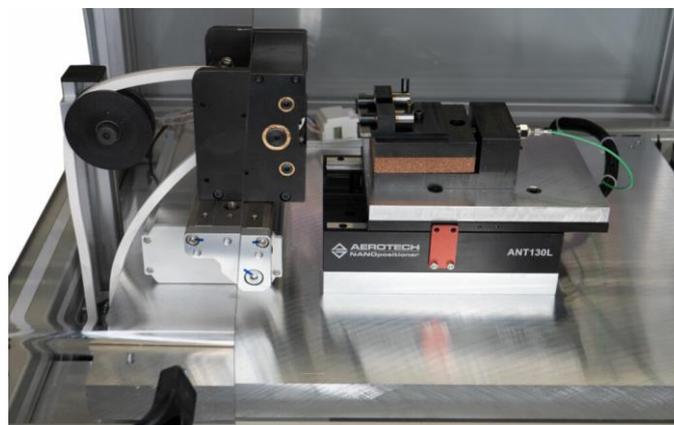


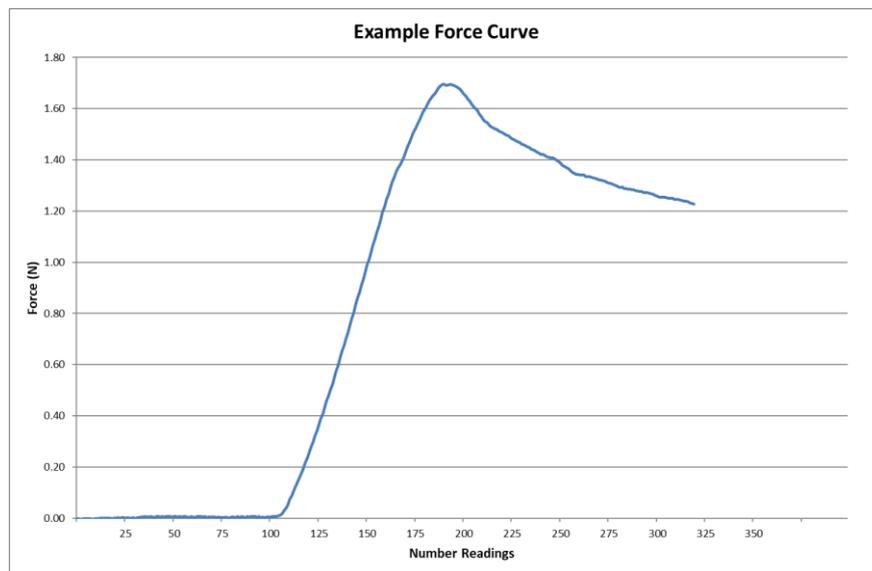
Figure showing the feed assembly and standard blade holder

# Testing Overview

## Sharpness

The test utilises the constant cut depth method, in which the blade is pushed normally without longitudinal travel into the test media. The cutting force is recorded as a measure of the sharpness in Newtons. The lower the force levels, the sharper the blade. The test media is driven around a radius former with the cut being made into the outer periphery of this bend.

As the blade contacts the test media, the force gradually increases to a maximum peak level. The peak force level is the point which the blade cuts the test media. This is recorded as the sharpness value. After the peak the force declines, producing a chart similar to the one below:



## Wear

To induce wear to the blade tip, a series of subsequent cuts are made into the test media. The blade is oscillated over a short stroke with no cutting force readings being taken. The sharpness is then re-measured at set intervals (dependent on the parameters selected). At these intervals, a wear curve is produced for the blade under test. We have developed a specific test parameter for razors and scalpels but can be easily programmed to the operators own test requirements.