

FRANGIBOLT®

Non-Explosive Actuators (NEA)



TiNi Aerospace's Frangibolt family of actuators are designed for deployment of a wide variety of stowed appendages including solar panels, antennae, cover doors, and various experimental payloads. The principle of operation is simple: a Shape Memory Alloy (SMA) cylinder elongates to fracture a bolt element thereby achieving separation of two or more components. The Frangibolt actuator comprises of a cylinder of Nitinol (Nickel-Titanium) SMA and a specially designed (integrated) heater. The family of actuators shown are designed to release loads up to 5,000 lbf.

Advantages of the Frangibolt release mechanism include the following:

Flight Qualified

Since its outer space debut aboard the spacecraft Clementine (1994), the Frangibolt has been qualified and used on numerous other space applications.

Safe to Handle and Operate

The Frangibolt emits significantly less shock than comparable explosive devices and as a result requires no special handling and safety precautions.

Simple to Use

The actuator is simply incorporated in the releasable joint using the specially notched fastener and pre-loaded to the prescribed torque.

Re-Usable & Reliable

The actuator may be used numerous times during acceptance and system level testing.

Redundant

Each Frangibolt incorporates a redundant heater which is capable of independently functioning the actuator.

Reduced Cost

Due to its relative simplicity, TiNi Aerospace is able to provide the Frangibolt at a significantly lower price than comparable devices.

Detailed Specification

See spec sheet for each model or contact TiNi Aerospace at the address below.

