

KFT

National Aeronautics and
Space Administration

Kennedy Space Center Fixation Tube (KFT)

Experiments performed on the International Space Station (ISS) frequently require the experimental organisms to be preserved until they can be returned to earth for analysis in the appropriate laboratory facility. The Kennedy Fixation Tube (KFT) was developed to allow astronauts to apply fixative, chemical compounds that are often toxic, to biological samples without the use of a glovebox while maintaining three levels of containment (Fig. 1). KFTs have been used over 200 times on-orbit with no leaks of chemical fixative.

The KFT is composed of the following elements: a polycarbonate **main tube** where the fixative is loaded preflight, the **sample tube** where the plant or other biological specimens is placed during operations, the **expansion plug**, **actuator**, and **base plug** that provides fixative containment (Fig. 2). The main tube is pre-filled with 25 mL of fixative solution prior to flight. When actuated, the specimen contained within the sample tube is immersed with approximately 22 mL (± 2 mL) of the fixative solution. The KFT has been demonstrated to maintain its containment at ambient temperatures, 4°C refrigeration and -100°C freezing conditions.



Fig. 1 Astronaut Jeff Williams using KFTs to fix plants on ISS (left) and Astronaut Leland Melvin holding two KFTs after harvesting and fixing *Arabidopsis* plants on ISS (right).

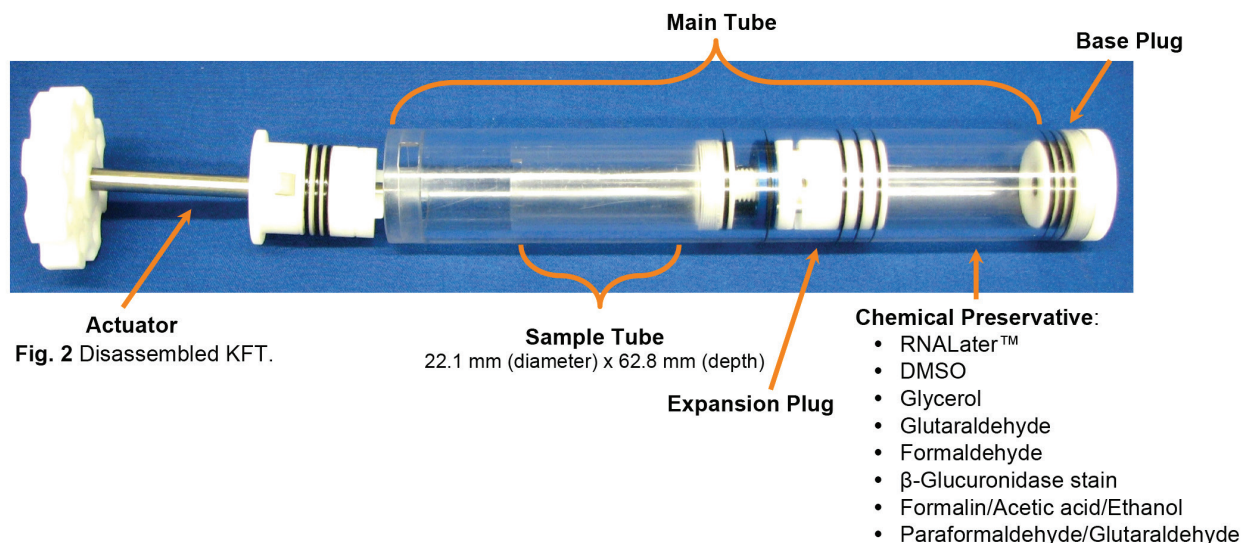


Fig. 2 Disassembled KFT.



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