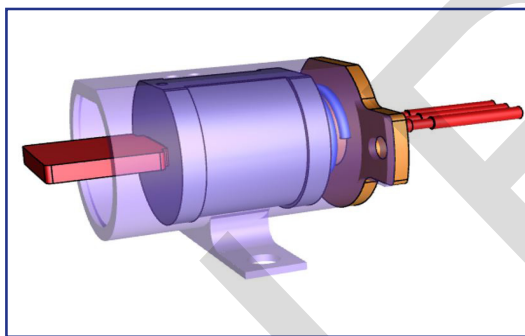


Thermal cutter - Polymer rope based Hold Down-Release Unit

U R Rao Satellite Centre (URSC) of Indian Space Research Organisation (ISRO) has developed Thermal cutter-Polymer rope based hold down-release unit. It is a simple, effective device used for cutting a pre-tensioned polymer restraint rope, through degradation of the rope at elevated temperature. The electrically heated ceramic cutter gradually melts through the rope fibers, reducing its cross section and thus causing degraded rope to fail. Residual tensile failure of the rope results in a low energy release, leading to low functional shock. The total cutting time is typically less than 60 seconds. The concept is simple and the main advantage lies in the testability of the product before launch. The system has less number of components. Polymer cable is the consumable & hence the cutter can be re-used and thus well suited for repeated cutting operations.



Salient Features

- ✦ Ceramic heater (with thermocouple & lead wires) to cut the Polymer rope.
- ✦ Mandrel to accommodate the heater and the compression spring.
- ✦ Compression spring to provide energy for the forward movement of the heater and the mandrel.
- ✦ Housing to accommodate the heater, mandrel and spring.
- ✦ Back cover to constrain the backward motion of the heater and mandrel.
- ✦ Accommodates provisions for hold down preload measurement & contact switch assemblies for first motion indication.

Major Specifications

Salient System Specifications	
Size of Thermal cutter unit (approx.)	100 x 50 x 50 mm ³
Mass of Thermal cutter unit (approx.)	0.1 kg
Typical length of spliced polymer rope	100 mm
Typical holddown preload	200 kgf

Technology Transfer

URSC-ISRO offers to transfer this technology of Thermal cutter -Polymer rope based hold down-release unit developed by URSC to industries in India with adequate experience and facilities. Industries interested in obtaining knowhow may write giving details of their present activities, infrastructure and facilities.

Technology Transfer & Industry Coordination Division (TTID),
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🌐 <https://www.ursc.gov.in/industry/index.jsp>