Non-Explosive Separation Nut/Release Mechanism

PRODUCT TECHNICAL DATA SHEET

DESCRIPTION:

NEA® Electronics, Inc. (NEA) designs a variety of Non-Explosive Separation Nuts/Release Mechanisms for a wide range of requirements, allowing customers to select specific nut size, redundancy and materials without affecting firing characteristics. Our products can support a static load of up to 100,000 pounds (approx. 45,000 kgs).

NEA's Non-Explosive Separation Nuts/Release Mechanisms are electromechanical and based upon patented split-spool and fuse wire technologies. The principle of operation involves a tensile load reacting against a wire-wound split-spool. Upon electrical command, a fuse wire breaks in tension and the restraining wire unwinds, allowing the spools to separate and release the load.

Structurally robust, NEA's Non-Explosive Separation Nuts/Release Mechanisms quickly and reliably release stored strain energy.

APPLICATION:

Typical applications include:

- Antennas
- Scientific instruments
- Solar arrays
- Reflectors
- Satellite, spacecraft and payloads
- Booms and masts
- Launch locks for gimbles, nozzles and thrusters

PROPERTIES:

- Extremely low release shock (<500G's)
- Redundant or non-redundant actuation circuit
- Near simultaneous release of multiple hold-down points (<10ms)
- Factory refurbishment
- Internal torque containment
- Allows angular misalignment of hold down bolt or rod (6°)
- Extended operating temperature range
- Operates using pyrotechnic initiation circuitry as a drop-in replacement
- Range safety-friendly
- Space-rated materials
Non-Explosive Separation Nut/Release Mechanism

SPECIFICATIONS:

<table>
<thead>
<tr>
<th>MODEL NAME</th>
<th>ULTIMATE LOAD</th>
<th>SOURCE SHOCK (PRELOADED)</th>
<th>ACTUATION CIRCUIT (AMPS)</th>
<th>ACTUATION TIME</th>
<th>TESTED TEMPERATURE RANGE</th>
<th>WEIGHT (APPROX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Explosive Release Mechanism</td>
<td>&gt;50,000</td>
<td>&lt;500 g's @ 30,000 lbs</td>
<td>1.5 minimum</td>
<td>Request Actuation Curve</td>
<td>-410 to +737.6</td>
<td>700 lbs</td>
</tr>
<tr>
<td>(16 mm thread)</td>
<td>222,411</td>
<td></td>
<td></td>
<td></td>
<td>-120 to +130</td>
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<tr>
<td>Non-Explosive Release Mechanism</td>
<td>&gt;8,500</td>
<td>&lt;500 g's @ 5,000 lbs</td>
<td>1.5 minimum</td>
<td>Request Actuation Curve</td>
<td>-410 to +737.6</td>
<td>220 lbs</td>
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<tr>
<td>(6 mm thread)</td>
<td>37,809</td>
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<td></td>
<td>-245 to +392</td>
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<tr>
<td>Non-Explosive Release Mechanism</td>
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<td>&lt;300 g's @ 2,500 lbs</td>
<td>1.5 minimum</td>
<td>Request Actuation Curve</td>
<td>-410 to +737.6</td>
<td>227 lbs</td>
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<tr>
<td>(.250&quot; thread)</td>
<td>22,241</td>
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<td></td>
<td></td>
<td>-245 to +392</td>
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</tr>
</tbody>
</table>

Mounting configurations and release rods can be tailored per customer requirements. Space-flown pin pullers or pushers and cable cutters are also available by applying the same technologies used in hold-down and release mechanisms.