NEA® Model 9103CC
Hold Down & Release Mechanism (HDRM)

Model 9103CC Hold Down & Release Mechanism

The NEA® Model 9103CC is an electrically initiated, one-shot mechanism that carries very high mechanical loads until commanded to release. The preload is applied through a release bolt that tightly restrains a cup/cone sheath load interface. The bolt is held in place by two separable spool halves which are in turn held together by tight winding of fuse wires; actuation of either circuit allows release, assuring maximum reliability. When sufficient electrical current is applied, the restraint wire is held in place by redundant electrical fuse wires; actuation of either circuit allows release, assuring maximum reliability. When sufficient electrical current is applied, the restraint wire is held in place by redundant electrical fuse wires; actuation of either circuit allows release, assuring maximum reliability.

Key Features

- Non-explosive hold down & release function
- Very high restraining preload
- Extremely low release shock
- High simultaneity of multiple hold-down points
- Wide operating temperature range
- Can be operated with pyrotechnic initiation circuitry
- Space-rated materials
- Factory refurbishments
- More than 20 years of flight heritage
- Extremely low release shock
- High simultaneity of multiple hold-down points
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- Factory refurbishments
- More than 20 years of flight heritage

Applications

Typical applications include retention and release of:
- Antennas, reflectors, solar arrays, and deployable radiators
- Satellites and spacecraft deployment
- Launch vehicle and missile stage and fairing separation
- Mission payload separation

Model 9103CC Technical Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Capability</th>
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<tbody>
<tr>
<td>Preload (as Delivered)</td>
<td>37.8 to 38.2 kN (8,500 to 8,600 lbf)</td>
</tr>
<tr>
<td>Shear Load</td>
<td>55.4 kN (12,450 lb)</td>
</tr>
<tr>
<td>Export Shock (Satellite Interface)</td>
<td>20G @ 2kHz, 180G @ 9kHz</td>
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<tr>
<td>Export Shock (Dispenser Interface)</td>
<td>30G @ 2kHz, 390G @ 9kHz</td>
</tr>
<tr>
<td>Fuse Wire Resistance</td>
<td>1.2 Ω to 2.0 Ω @ 25°C</td>
</tr>
<tr>
<td>Actuation Current</td>
<td>4 Amps for 25ms</td>
</tr>
<tr>
<td>No-Fire Current</td>
<td>250 mVamps at 10-5 Torr @ 110°C</td>
</tr>
<tr>
<td>Release Time @ Actuation Current</td>
<td>&lt;15 mSec @ 7 Amps for 10 mSec</td>
</tr>
<tr>
<td>Release Simultaneity @ Actuation Current</td>
<td>+/- 2.5 mSec @ 7 Amps for 10 mSec</td>
</tr>
<tr>
<td>Total Mass</td>
<td>1380 grams (3.04 lbm)</td>
</tr>
<tr>
<td>Fly Away Mass (Satellite Interface)</td>
<td>450 grams (0.99 lbm)</td>
</tr>
<tr>
<td>Operational Temperature Range</td>
<td>-130°C to +135°C</td>
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</tbody>
</table>

Notes:

1. Export shock measurement uses HDRM preload of 37.8 kN, NASA standard aluminum test plate, and accelerometers adjacent to the HDRM.
2. Load can be achieved using a wide range of current.
3. No-fire current for 5 minutes.
4. Release time is dependent on actuation current.
5. The values for operational temperature range are not the limits of the device.

Model 9103CC Hold Down & Release Mechanism (HDRM) Mechanical Interface Drawing

DISPENSER INTERFACE

PAYLOAD INTERFACE

Note: Model 9103CC HDRM shown. Different configurations available with alternate mounting features and connectors. Smaller and larger configurations available to accommodate different payloads.

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