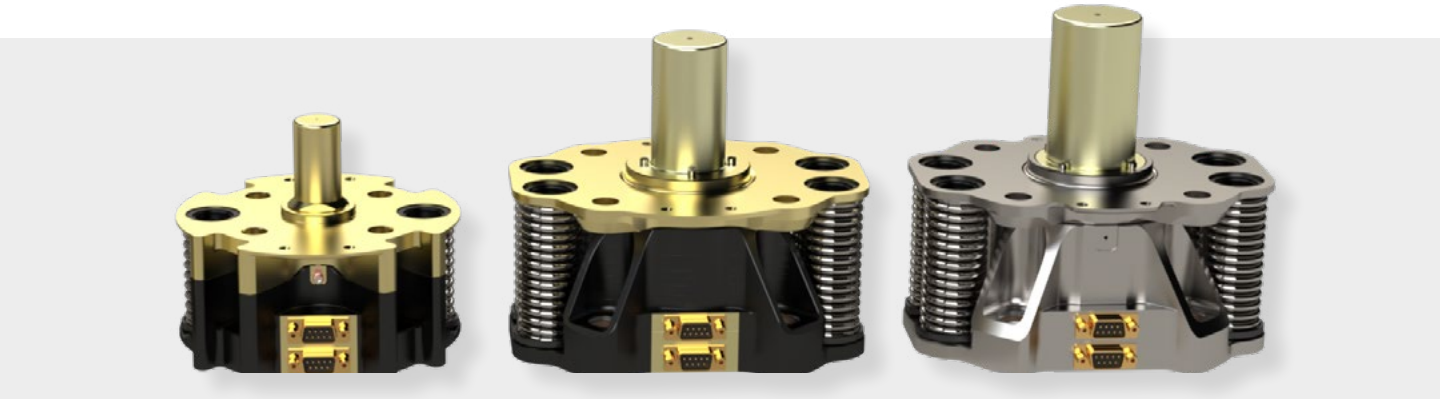
NEA® Payload Release Module

PRM 9103B, PRM 9104A, and PRM 9106A



The NEA® Payload Release Module (PRM) is designed to mount, hold, and release a spacecraft from the launch vehicle upper stage, or from another carrying spacecraft (OTV for instance). The PRM is designed to be used in a multi-point release system for spacecrafts up to 2,000 kg in mass.

The PRM utilizes the flight proven NEA® 9103 or 9104 as the primary release mechanism, integrating a load carrying interface, separation springs, a bolt extractor, and optional separation switch or separation connector to offer a turnkey dispensing mechanism that is ideal for multi-point satellite release. In a 4-point mount configuration, the PRM is designed to dispense payloads separating laterally or axially from a central dispensing structure with high simultaneity. The PRM is delivered fully preloaded, and no custom tools nor on-site training are required for assembly, making integration into space platforms simple and efficient. The PRM utilizes our low shock NEA® hold down and release mechanism (HDRM) with over 25 years of 100% flight success and over 15,000 actuations in space.

Principle of Operation

The PRM is an ultra-low shock, electrically initiated, single-shot, and factory refurbishable release mechanism that has the ability to carry a high tensile preload until commanded to release. The preload is applied through a release rod held in place by two separable spool halves which are in turn held together by tight winding of restraining wire. 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 unwinds allowing the spool halves to separate releasing the release rod and the associated preload. The tunable separation springs provide the push off force to achieve the required separation velocity.

The PRM has a location to hold either a telemetry separation switch or 37 pin separation connector. The telemetry switch is commonly used to verify spacecraft separation from the launch vehicle, and the separation connector can be used for separation detection, ground power delivery or communications from the launch vehicle to the spacecraft.

Key Features

- Ultra-low release shock
- Can be operated with standard launch vehicle firing circuitry
- No debris generation
- High simultaneity of multiple hold-down points
- Customizable separation velocity
- Wide operating temperature range
- Factory refurbishment available
- NEA® HDRM with more than 25 years of flight heritage

Scan to view the PRM 9103A animation.

9103A Released

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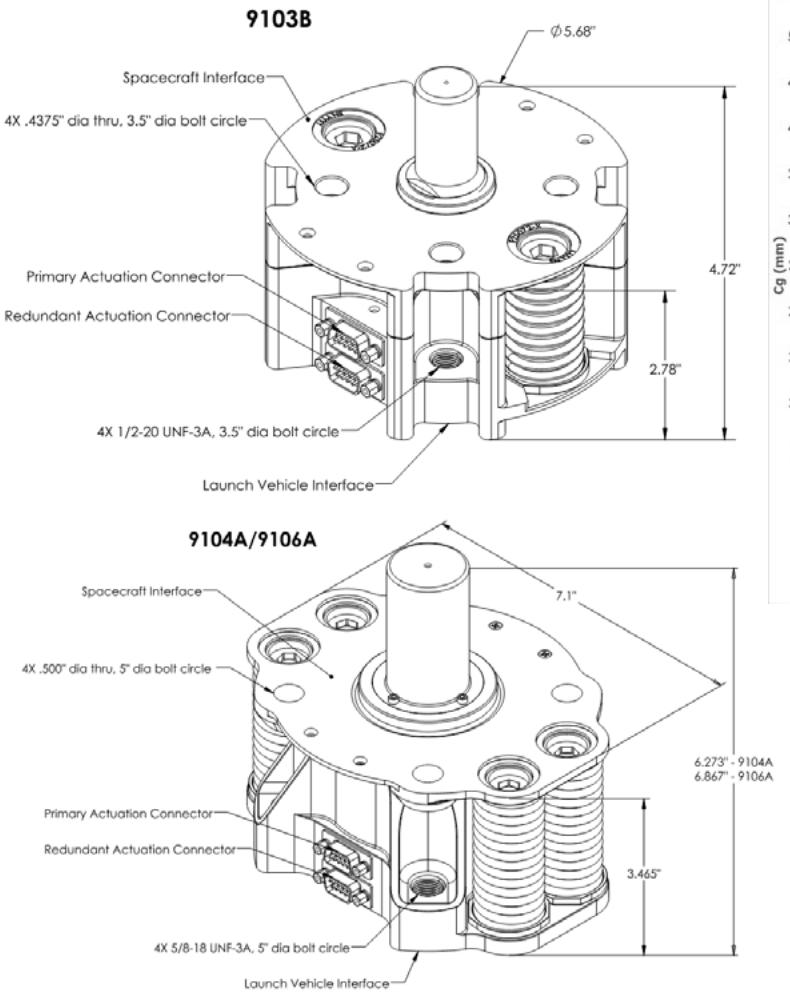
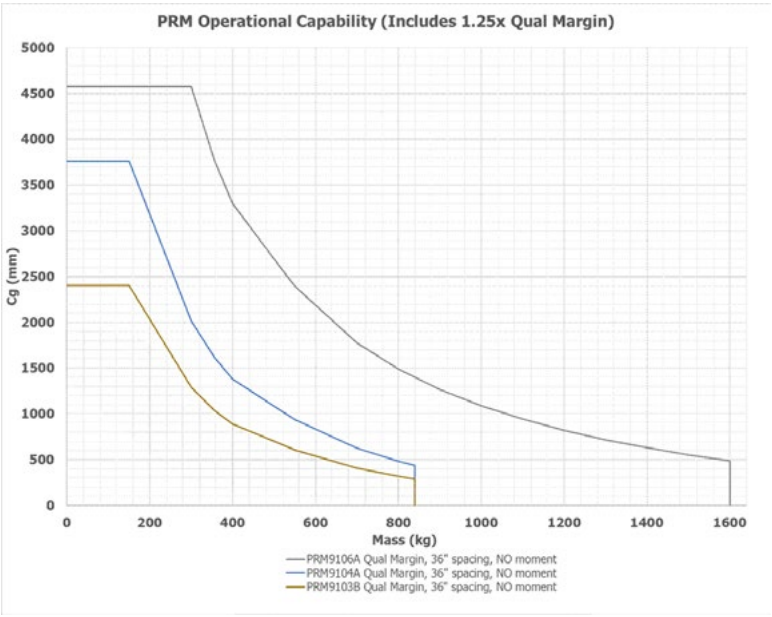
NEA® Payload Release Module – Technical Specifications

Parameter	PRM 9103B	PRM 9104A	PRM 9106A
Axial Preload	Up to 12,000 lbf	Up to 15,000 lbf	Up to 32,000 lbf
Axial Stiffness	1.84 E+6 lbf/in	8.8 E+5 lbf/in	3.16 E+6 lbf/in
Shear Stiffness	1.59E+06 lbf/in	1.34 E+6 lbf/in	1.06 E+6 lbf/in
Bending Stiffness	5.0 E+6 in-lbf/rad	1.61 E+6 in-lbf/rad	4.29 E+6 in-lbf/rad
Shock Output for Payload	< 350g's	< 500g's	< 750g's
Firing Current	≥ 6 or ≥ 3 amps	≥ 6 or ≥ 3 amps	≥ 6 or ≥ 3 amps
Firing Duration	35 or 50 ms	35 or 50 ms	35 or 50 ms
Release Time	< 60 ms	< 80 ms	< 80 ms
Simultaneity	< 6 ms	< 10 ms	< 15 ms
Total Mass	< 3.3 lbm (w/ 2 springs)	< 6.5 lbm (w/ 2 springs)	< 11.8 lbm (w/ 4 springs)
Flyaway Mass	< 1.17 lbm	< 1.8 lbm	< 5.2 lbm
Temperature Range	-40°C to +101°C	-40°C to +101°C	-40°C to +101°C
Nominal Spring Energy(J) (Configurable)	2.8 to 16.2 Joules	3.3 to 40.0 Joules	3.3 to 40.0 Joules

Mechanical Interface Drawings





*Includes 1.25x qual margin to F9 RPUG environments margin to SpaceX Falcon 9 Rideshare Payload User Guide Environments. Contact EBAD for cabalilities on other launch vehicle provider environments.

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