

NEWSPACE MARKET · COMPANY PROFILE



Ensign-Bickford Aerospace & Defense (EBAD)

United States · ebad.com

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WITH DATASHEETS

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as of 25 August 2026



Ensign-Bickford Aerospace & Defense (EBAD)

Ensign-Bickford Aerospace & Defense (EBAD) is a US manufacturer of ordnance and release systems for spacecraft and launch vehicles, with heritage dating back to the Ensign-Bickford Company founded in the 19th century. For the small-satellite market EBAD produces the TiNi shape-memory-alloy family of non-explosive actuators — FrangiBolt bolt-release actuators, pin pullers and ejectors — widely used for solar-array, antenna and payload hold-down and release. The devices are resettable on the ground, contain no pyrotechnics and have extensive flight heritage.

This profile is generated from the live NewSpace Market catalogue. Specifications are as published by the manufacturer; every product links to a page where a request for quotation reaches the company directly.

SERVICES

Services

Custom Configurations for TiNi™ Products

EBAD offers custom modifications to their TiNi™ products, including mechanical interfaces, voltages, resistance, housing designs, lead wires, pressure capability, connector housings, and materials.

Design, Test and Analysis

EBAD provides extensive experience in design, test, and analysis for energetic solutions in aerospace and defense applications.

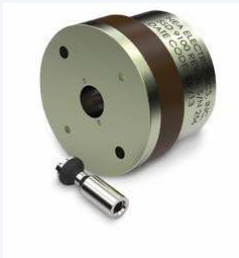
Factory Refurbishing

EBAD offers factory refurbishing services for its products when appropriate.

Integration of Technologies into Custom Assemblies

EBAD's in-house engineering expertise allows for the integration of its technologies into custom assemblies for customers.

Product catalogue



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
EBAD NEA® Model 2545 Pin Puller

The NEA® Model 2545 Pin Puller is a non-pyrotechnical mechanism that employs EBAD’s patented split-spool and bridge wire technology, similar to their Hold Down & Release

Pull force at beginning of stroke	45 lbf (200 N)
Pull force at end of stroke	25 lbf (111 N)
Fuse wire resistance	1.2 to 2.0 Ω @ 25°C
Actuation current	4 Amps for 25 ms
No-fire current (continuity)	250 mA
Release time	<50 ms
Qualification temperature range	-101°C to +172°C

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
EBAD NEA1120-05 Pin Puller

The EBAD NEA1120-05 Pin Puller is a non-pyrotechnic Hold Down & Release Mechanism (HDRM) designed for the spacecraft market. It employs EBAD’s patented split spool techno

Mass	1.66 oz [47 g] MAX
Number of wires	2 TOTAL (2 PRIMARY ONLY)
Cable length	30.0 in [STANDARD LENGTH]
Operational current	3 Amps FOR 50 ms
Resistance	0.95 to 1.6Ω @ 23°C
Insulation resistance	>100 MΩ @ 250 VDC
No fire limit	210 mA FOR 5 MIN @ AMBIENT

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
EBAD TiNi frangibolt

EBAD’s frangibolt actuators are designed to operate with an EBAD supplied Titanium notched Fastener (#4 to ½” size). Various sizes are available with a nominal tensile strength ran

Manufacturer	EBAD
Lead time	24 weeks

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
EBAD TiNi Micro Latch

The EBAD TiNi Micro Latch is designed for hold down and release applications, particularly for CubeSats in ‘New Space’ missions. It is characterized by its small size,

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
EBAD TiNi Microlatch ML50-1 Separation System

A non-pyrotechnic, field-resettable separation system for low preload dispensing, utilizing shape memory alloy technology.

Max release load	50 lbf (222 N)
Proof load	100 lbf (445 N)
Max torque	25 in-oz
Coupler kick-off force	7.5 lbf
Mass	.53 (15 g)
Voltage range	3 to 5.5 V
Operating current	1.5 to 3.75 A

[price on request](#) [datasheet](#)



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
EBAD TiNi™ ejector

The EBAD TiNi™ ejector, also known as the microlatch and ejector release mechanism (ERM), is designed to support and release spacecraft deployables. It can accommodate attaching sc

Attaching screw thread size	4-40 to 3/8"-24
Preload range	50 lbF (222 N) to 4000 lbF (17800 N)
Erm qualified life	minimum 50 cycles
Micro latch qualified life	minimum 100 cycles
Actuation pulse (TiNi™ ERMs)	25 milliseconds or less (standard pyro pulse)
Operating voltage (Micro Latch)	12Vdc (adjustable)

[price on request](#)

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
EBAD TiNi Microlatch ML50-2 Separation System

A non-pyrotechnic, field-resettable separation system for low preload dispensing, utilizing shape memory alloy technology, with a higher voltage range.

Max release load	50 lbf (222 N)
Proof load	100 lbf (445 N)
Max torque	25 in-oz
Coupler kick-off force	7.5 lbf
Mass	.53 (15 g)
Voltage range	10 to 18 V
Operating current	1.5 to 3.75 A

[price on request](#) [datasheet](#)



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
EBAD TiNi™ Pin Puller

The EBAD TiNi™ Pin Puller is a fast-acting device designed for a variety of Aerospace applications. It achieves pin retraction by combining the recovery characteristics of Shape Me

Pin puller pull force range	5 to 1000 lbf
Standard sizes offered	Five
Flight heritage	Mars Global Surveyor spacecraft (November 1996) and numerous other space applications
Minimum qualified life	100 cycles

[price on request](#)



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
Flight Termination Systems

EBAD Flight Termination Systems (FTS) provide range safety assurance for launch vehicles and missiles by delivering redundant explosive assemblies capable of terminating flight whe

Type	Flight Termination System (FTS)
Components	ESAD, FCDCA transfer lines, destruct charges (bulk, linear, bi-directional, conical)
Redundancy	Redundant explosive assemblies
Applications	Launch vehicles, tactical missiles, hypersonics, strategic missiles
System role	Range safety – vehicle destruction on wayward flight

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
IFD100 Plug Connector

The IFD100 is a plug connector offered in shell sizes 19 and 25, with insert arrangements including 35, 4, and 20. It is designed to mate with the IFD200 receptacle. This connector

Connector model	IFD100
Style	Plug
Shell size	19
Insert arrangement	35
Mates with	IFD200
Shell size (2)	25
Insert arrangement (2)	4, 20

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
IFD200 Receptacle Connector

The IFD200 is a receptacle connector offered in shell sizes 19 and 25, with insert arrangements including 35, 4, and 20. It is designed to mate with the IFD100 plug. This connector

Connector model	IFD200
Style	Receptacle
Shell size	19
Insert arrangement	35
Mates with	IFD100
Shell size (2)	25
Insert arrangement (2)	4, 20

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA 1120-05 Pin Puller

The EBAD NEA 1120-05 Pin Puller is a non-pyrotechnic Hold Down & Release Mechanism (HDRM) designed for spacecraft applications. It utilizes EBAD’s patented split spool te

Mass	47 g (1.66 oz) max
Side load	20 lbf (88.9 N)
Function time	50 ms max @ 3.0 A
Emitted shock	<1,000 g’s
Nominal actuation current	4 Amps for 25 ms
Resistance	.95 to 1.6 Ω @ 23°C
Insulation resistance	>100 M Ω @ 250 VDC

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA Hold Down Release Mechanisms

EBAD’s NEA Hold Down Release Mechanisms (HDRMs) are the industry-leading non-pyrotechnic release devices for mission-critical space applications. Utilizing a split-spool desi

Type	Non-Explosive Actuator (NEA) Hold-Down and Release Mechanisms
Actuation principle	Fusewire-activated split- spool release (non- pyrotechnic)
Shock level	Ultra-low shock
Variants	HDRM, pin pullers, cell bypass switches, isolation valves
Flight heritage	20+ years: A2100, Spacebus, Eurostar, LS-1300, JWST
Refurbishment	Factory resettable

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
**NEA IFD100 Plug In-Flight Disconnect Connector (Shell
Size 25)**

The NEA IFD100 Plug is part of EBAD’s Zero Separation Force (ZSF) and In-Flight Disconnect (IFD) connector series, providing reliable in-flight electrical disconnects for satellite

Shell size	25
Insert arrangement	4, 20
Mates with	IFD200
Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.030 in)

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA IFD100 Plug In-Flight Disconnect Connector

The NEA IFD100 Plug is part of EBAD’s Zero Separation Force (ZSF) and In-Flight Disconnect (IFD) connector series, providing reliable in-flight electrical disconnects for satellite

Shell size	19
Insert arrangement	35
Mates with	IFD200
Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.030 in)

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA IFD200 Receptacle In-Flight Disconnect Connector

The NEA IFD200 Receptacle is part of EBAD’s Zero Separation Force (ZSF) and In-Flight Disconnect (IFD) connector series, providing reliable in-flight electrical disconnects for sat

Shell size	19
Insert arrangement	35
Mates with	IFD100
Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.030 in)

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA IFD200 Receptacle In-Flight Disconnect Connector (Shell Size 25)

The NEA IFD200 Receptacle is part of EBAD’s Zero Separation Force (ZSF) and In-Flight Disconnect (IFD) connector series, providing reliable in-flight electrical disconnects for sat

Shell size	25
Insert arrangement	4, 20
Mates with	IFD100
Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.030 in)

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA Model 9040 Miniature Hold Down & Release Mechanism (HDRM)

A non-pyrotechnic Hold Down & Release Mechanism (HDRM) for spacecraft, supporting release loads up to 250 lbf with ultra-low shock.

Proof load rating	300 lbf (1,300 N)
Release load rating	250 lbf (1,100 N)
Output shock @ preload	<300 g's @ 250 lbf (1,112 N)
Fuse wire resistance	0.8 - 1.8 Ω
Actuation current	3.0 Amps for 50 ms
No-fire current	250 mA
Release time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA Model 9100 Hold Down & Release Mechanism

The NEA Model 9100 is an electrically initiated, one-shot non-pyrotechnic Hold Down & Release Mechanism (HDRM) designed to carry high tensile preloads until commanded to releas

Proof load rating	1,700 lbf (7,600 N)
Release load rating	1,360 lbf (6,000 N)
Shock @ preload	<300 g's @ 1,360 lbf (6,000 N)
Fuse wire resistance	1.2 to 2.0 Ω @ 25°C
Actuation current	4 Amps for 25 ms
No-fire current	250 mA at 10-5 Torr @ 110°C
Release time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA Model 9106B Hold Down & Release Mechanism (HDRM)

The NEA Model 9106B is a non-pyrotechnic, electrically initiated, one-shot Hold Down & Release Mechanism (HDRM) capable of supporting release loads up to 32,000 lbf (142,000 N)

Proof load rating	40,000 lbf (178,000 N)
Release load rating	32,000 lbf (142,000 N)
Shock @ preload	<1,000 g's @ 32,000 lbf (142,000 N)
Fuse wire resistance	1.2 to 2.0 Ω @ 25°C
Actuation current	4 Amps for 25 ms
No-fire current (continuity)	250 mA at 10-5 Torr @ 110°C
Release time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

NEA PRM 9103A Payload Release Module

The PRM 9103A is an ultra-low shock, electrically initiated, single-shot, and factory refurbishable release mechanism. It can carry a high tensile preload, which is applied through

Axial preload	Up to 15,000 lbf
Axial stiffness	9.28 E+5 lbf/in
Shear stiffness	5.98 E+6 lbf/in
Bending stiffness	2.38 E+6 in-lbf/rad
Shock output	<500 g's
Actuation current	6 Amps for 15 ms
Release time	<50 ms

[price on request](#)



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

NEA PRM 9104A Payload Release Module

The PRM 9104A is an ultra-low shock, electrically initiated, single-shot, and factory refurbishable release mechanism. It can carry a high tensile preload, which is applied through

Axial preload	Up to 8,500 lbf
Axial stiffness	2.02 E+6 lbf/in
Shear stiffness	9.0 E+5 lbf/in
Bending stiffness	7.5 E+5 in-lbf/rad
Shock output	<300 g's
Actuation current	6 Amps for 15 ms
Release time	<40 ms

[price on request](#)



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

NEA ZSF100 Plug Zero Separation Force Connector

The NEA ZSF100 Plug is part of EBAD's Zero Separation Force (ZSF) and In-Flight Disconnect (IFD) connector series, providing reliable in-flight electrical disconnects for satellite

Shell size	21
Insert arrangement	11, 16, 35, 41
Mates with	ZSF200
Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.030 in)

[price on request](#)



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

NEA ZSF100/200 Zero Separation Force & In-Flight Disconnect (IFD) Electrical Interconnect

Reliable in-flight electrical disconnects for satellite and spacecraft separation, missile staging, and umbilical separation, designed to provide precision zero, positive or negati

Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.03 in) min
Maximum angular misalignment	20° Cone
Qualification temperature range	-55°C to +200°C
Mass	117 g (0.29 lb)

[price on request](#)

[datasheet](#)



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA ZSF100P Plug Zero Separation Force Connector

The NEA ZSF100P Plug is part of EBAD's Zero Separation Force (ZSF) and In-Flight Disconnect (IFD) connector series, providing reliable in-flight electrical disconnects for satellit

Shell size	17
Insert arrangement	8 DF200SS2
Mates with	ZSF202S
Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.030 in)

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA ZSF200 Receptacle Zero Separation Force Connector

The NEA ZSF200 Receptacle is part of EBAD's Zero Separation Force (ZSF) and In-Flight Disconnect (IFD) connector series, providing reliable in-flight electrical disconnects for sat

Shell size	21
Insert arrangement	11, 16, 35, 41
Mates with	ZSF100
Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.030 in)

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA ZSF202S Receptacle Zero Separation Force Connector

The NEA ZSF202S Receptacle is part of EBAD's Zero Separation Force (ZSF) and In-Flight Disconnect (IFD) connector series, providing reliable in-flight electrical disconnects for sa

Shell size	25
Insert arrangement	62
Mates with	ZSF100P
Separation force	0 N (0 lbf) (or adjustable to customer spec)
Engagement force	90 N (20 lbf)
Linear misalignment	0.76 mm (0.030 in)

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® 15" Payload Release Ring (PRR-15)

The NEA® 15" Payload Release Ring (PRR-15) is a flight-proven mechanism designed to release payloads from a launch vehicle, utilizing four NEA® release mechanisms and separation sp

Payload capability	250 kg
Shock output	<300 g's
Release time	<40 ms
Total mass	6.4 lb (2.9 kg)
Fly away mass	2.2 lb (1 kg)
Operating temperature	-40°C to +102°C
Spring energy	3.57 J

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® 24" Payload Release Ring (PRR-24)

The NEA® 24" Payload Release Ring (PRR-24) is a payload release mechanism that utilizes the flight-proven technology of the NEA® mechanism product line to release payloads fr

Payload capability	500 kg
Shock output	<300 g's
Release time	<40 ms
Total mass	10.58 lb (4.8 kg)
Fly away mass	3.5 lb (1.6 kg)
Operating temperature	-90°C to +135°C
Spring energy, j	3.57

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® 8" Payload Release Ring (PRR-8)

The NEA® 8" Payload Release Ring (PRR-8) is a low-shock, low-mass mechanism designed to release payloads up to 100 kg from a launch vehicle, utilizing four NEA® release mechanisms

Payload capability	100 kg
Shock output	<300 g's
Release time	40 ms
Total mass	4.7 lb (2.1 kg)
Fly away mass	1.6 lb (0.7 kg)
Operating temperature	-90°C to +135°C
Maximum tip off	1° per sec

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® 8020 Series Battery Cell Bypass Switch

An electrically initiated, one-shot switch designed to bypass and isolate failed battery cells, featuring Make-Before-Break functionality and available in non-autonomous and autono

Continuous current ratings	100 A
Switch resistance	<200 $\mu\Omega$ @ 100 A
Fuse wire resistance	0.5 to 1.6 Ω @ 25°C
Minimum actuation current	1.2 A
Nominal actuation current	4 Amps for 25 ms
No-fire current (continuity)	250 mA
Actuation time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® 8030 Series Battery Cell Bypass Switch

An electrically initiated, one-shot switch designed to bypass and isolate failed battery cells, featuring Make-Before-Break functionality and available in non-autonomous and autono

Continuous current ratings	250 A
Switch resistance	<200 $\mu\Omega$ @ 250 A
Fuse wire resistance	0.5 to 1.6 Ω @ 25°C
Minimum actuation current	1.2 A
Nominal actuation current	4 Amps for 25 ms
No-fire current (continuity)	250 mA
Actuation time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® 8040 Series Battery Cell Bypass Switch

An electrically initiated, one-shot switch designed to bypass and isolate failed battery cells in battery assemblies, offering Make-Before-Break functionality.

Continuous current ratings	400 A
Switch resistance	<150 $\mu\Omega$ @ 400 A
Fuse wire resistance	0.95 to 1.6 Ω @ 25°C
Minimum actuation current	1.2 A
Nominal actuation current	4 Amps for 25 ms
No-fire current (continuity)	250 mA
Actuation time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® Model 2545 Pin Puller

A non-pyrotechnic pin puller for satellite applications, providing a pull force of 25 lbf (111 N) and actuated by a current of 4 Amps for 25 ms.

Pull force at end of stroke	25 lbf (111 N)
Fuse wire resistance	1.2 to 2.0 Ω @ 25°C
Actuation current	4 Amps for 25 ms
No-fire current (continuity)	250 mA
Release time	<50 ms
Qualification temperature range	-101°C to +172°C

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® Model 9102G Hold Down & Release Mechanism (HDRM)

The NEA® Model 9102G is an electrically initiated, one-shot, non-pyrotechnic Hold Down & Release Mechanism capable of supporting restrained preloads up to 4,000 lbf (17,800 N)

Proof load rating	5,000 lbf (22,200 N)
Release load rating	4,000 lbf (17,800 N)
Shock @ preload	4,000 lbf (17,800 N)
Fuse wire resistance	1.2 to 2.0 Ω @ 25°C
Actuation current	4 Amps for 25 ms
No-fire current	250 mA at 10-5 Torr @ 110°C
Release time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® Model 9103 Hold Down & Release Mechanism (HDRM)

The NEA® Model 9103 is an electrically initiated, one-shot non-pyrotechnic Hold Down & Release Mechanism (HDRM) capable of supporting release loads up to 7,868 lbf (35,000 N).

Proof load rating	9,217 lbf (41,000 N)
Release load rating	7,868 lbf (35,000 N)
Shock @ preload	<750 g's @ 7,868 (35,000 N)
Fuse wire resistance	1.2 to 2.0 Ω @ 25°C
Actuation current	4 Amps for 25 ms
No-fire current	250 mA at 10-5 Torr @ 110° C
Release time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® Model 9104 Hold Down & Release Mechanism (HDRM)

The NEA® Model 9104 is an electrically initiated, one-shot non-pyrotechnic Hold Down & Release Mechanism (HDRM) capable of supporting release loads up to 15,000 lbf (67,000 N).

Proof load rating	18,750 lbf (84,000 N)
Release load rating	15,000 lbf (67,000 N)
Shock @ preload	<750 g's @ 15,000 lbf (67,000 N)
Fuse wire resistance	1.2 to 2.0 Ω @ 25°C
Actuation current	4 Amps for 25 ms
No-fire current	250 mA at 10-5 Torr @ 110°C
Release time	<50 ms

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® Model 9107 Hold Down & Release Mechanism (HDRM)

The NEA® Model 9107 is an electrically initiated, one-shot hold down and release mechanism capable of carrying high tensile preload until commanded to release, offering extremely l

Proof load rating	58,500 lbf (260,000 N)
Release load rating	46,000 lbf (195,000 N)
Shock @ preload	<1,100 g's @ 46,000 lbf (195,000 N)
Fuse wire resistance	1.2 to 2.0 Ω @ 25°C
Actuation current	4 Amps for 60 ms
No-fire current	250 mA at 10-5 Torr @ 110°C
Release time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® Model 9108 Hold Down & Release Mechanism (HDRM)

The NEA® Model 9108 is an electrically initiated, one-shot hold down and release mechanism supporting release loads up to 72,000 lbf (320,000 N) with ultra-low shock.

Proof load rating	86,400 lbf (384,000 N)
Release load rating	72,000 lbf (320,000 N)
Shock @ preload	<1500 g peak at 76k lbf preload
Fuse wire resistance	0.75 Ω to 2.0 Ω @ 25°C
Actuation current	4 Amps for 60 ms
No-fire current	250 mAmps at 10-5 Torr @ 110°C
Release time	< 200 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
NEA® Payload Release Module PRM 9103A

The PRM 9103A is an ultra-low shock, electrically initiated, single-shot, and factory refurbishable release mechanism designed to carry a high tensile preload until commanded to re

Axial preload	Up to 15,000 lbf
Axial stiffness	9.28 E+5 lbf/in
Shear stiffness	5.98 E+6 lbf/in
Bending stiffness	2.38 E+6 in-lbf/rad
Shock output	<500 g's
Actuation current	6 Amps for 15 ms
Release time	<50 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD) NEA® Payload Release Module PRM 9104A

The PRM 9104A is an ultra-low shock, electrically initiated, single-shot, and factory refurbishable release mechanism designed to carry a high tensile preload until commanded to re

Axial preload	Up to 8,500 lbf
Axial stiffness	2.02 E+6 lbf/in
Shear stiffness	9.0 E+5 lbf/in
Bending stiffness	7.5 E+5 in-lbf/rad
Shock output	<300 g's
Actuation current	6 Amps for 15 ms
Release time	<40 ms

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD) Payload Separation and Release Systems

Complete separation and release technology portfolio including linear shaped charges, frangible joints, separation bolts and nuts for launch vehicles and spacecraft stages.

Products	Linear shaped charges, frangible joints, separation bolts/nuts, TiNi ejectors, NEA devices
Max static load	Up to 100,000 lbf
Technologies	Pyrotechnic and non-pyrotechnic (non-energetic) options
Applications	Launch vehicle staging, satellite separation, payload deployment
Flight heritage	50+ years, invention of the Linear Shaped Charge

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD) Spacecraft Dispensing Systems

Flight-proven separation and dispensing systems for single payloads, secondary payloads, and large satellite constellation deployment from rideshare launch vehicles.

Payload range	Small CubeSat to 40 metric ton primary payloads
Applications	Single payloads, secondary rideshare, constellation deployment
Technologies	Pyrotechnic and non-pyrotechnic separation systems
Flight record	Zero in-orbit failures across all dispensing systems
Flight heritage	60+ years serving satellite and launch vehicle markets

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD) TiNi ERM E1000 Ejector Release Mechanism

The EBAD TiNi™ Ejector Release Mechanism E1000 is a derivative of the TiNi™ Pin Pullers, employing a Shape Memory Alloy (SMA) wire threaded through a latch and attached to electric

Max release load	1,000 lbf (4,448 N)
Proof load	1,400 lbf (6,230 N)
Max torque	32 in-lb
Coupler kick off-force	9.5 lbf
Max misalignment capability	+/- 5° engagement and deployment
Mass	5.6 oz (160 g)
Operating current	2.25 A to 6.5 A

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi ERM E2000 Ejector Release Mechanism

The EBAD TiNi™ Ejector Release Mechanism E2000 is a derivative of the TiNi™ Pin Pullers, employing a Shape Memory Alloy (SMA) wire threaded through a latch and attached to electric

Max release load	2,000 lbf (8,900 N)
Proof load	2,500 lbf (11,125 N)
Max torque	70 in-lb
Coupler kick off-force	8.5 lbf
Max misalignment capability	+/- 5° engagement and deployment
Mass	10.6 oz (300 g)
Resistance	2.2±.3 Ω

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi ERM E250 Ejector Release Mechanism

The EBAD TiNi™ Ejector Release Mechanism E250 is a derivative of the TiNi™ Pin Pullers, employing a Shape Memory Alloy (SMA) wire threaded through a latch and attached to electrica

Max release load	250 lbf (1,112 N)
Proof load	350 lbf (1,557 N)
Max torque	92 in-oz
Coupler kick off-force	1.5 lbf
Max misalignment capability	+/- 5° engagement and deployment
Mass	2.7 oz (75 g)
Operating current	.75 to 2.5 A

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi ERM E4000 Ejector Release Mechanism

The EBAD TiNi™ Ejector Release Mechanism E4000 is a derivative of the TiNi™ Pin Pullers, employing a Shape Memory Alloy (SMA) wire threaded through a latch and attached to electric

Max release load	4,000 lbf (17,800 N)
Proof load	5,000 lbf (22,400 N)
Max torque	250 in-lb
Coupler kick off-force	18 lbf
Max misalignment capability	+/- 5° engagement and deployment
Mass	18.7 oz (530 g)
Resistance	2.5±.3 Ω

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi ERM E500 Ejector Release Mechanism

The EBAD TiNi™ Ejector Release Mechanism E500 is a derivative of the TiNi™ Pin Pullers, employing a Shape Memory Alloy (SMA) wire threaded through a latch and attached to electrica

Max release load	500 lbf (2,224 N)
Proof load	700 lbf (3,114 N)
Max torque	14 in-lb
Coupler kick off-force	6.5 lbf
Max misalignment capability	+/- 5° engagement and deployment
Mass	3.6 oz (100 g)
Operating current	1.25 to 4 A

price on request

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi Flat Pack FP50 Frangibolt Actuator

The EBAD TiNi™ Frangibolt® Actuator is a simple and effective way to support and release loads. The FP50 is a specific model within this product line. The principle of operation in

Mass	1.17 oz (33 g) max
Power	1.25 W @ .75 A
Operational current	.4 A to 1.5 A
Resistance	3.3±.3 Ω @ 23°C
Max release load	50 lbf (222.4 N)
Proof load	100 lbf (444.8 N)
Function time	130 mSec @ .5 A (23°C) typical

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi Flat Pack FP50 Miniature Hold-Down Release Mechanism

The TiNi Flat Pack FP50 is a miniature, non-pyrotechnic, and field-resettable hold-down release mechanism utilizing shape memory alloy for low-load applications.

Mass	1.17 oz (33 g) max
Power	1.25 W @ .75 A
Operational current	.4 A to 1.5 A
Resistance	3.3±.3 Ω @ 23°C
Max release load	50 lbf (222.4 N)
Proof load	100 lbf (444.8 N)
Function time	130 mSec @ .5 A (23°C) typical

price on request

[datasheet](#)

ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi Frangibolt Actuator FB12

The EBAD Frangibolt® Actuator is a simple and effective non-pyrotechnic separation system for satellite applications. The FB12 model utilizes a Shape Memory Alloy (SMA) cylinder th

Ti fastener size	1"
Mass	350 g
Power	143 W @ 100 V
Operational voltage*	95-105 V
Current draw	1.4 A @ 100 V
Resistance	70±7 Ω
Max load support	26,200 lbf (116,543 N)

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi Frangibolt Actuator FC2

The EBAD Frangibolt® Actuator is a simple and effective non-pyrotechnic separation system for satellite applications. The FC2 model utilizes a Shape Memory Alloy (SMA) cylinder tha

Ti fastener size	#8
Mass	25 g
Power	25 W @ 28 V
Operational voltage*	22-36 V
Current draw	.9 A @ 28 V
Resistance	31±3 Ω
Max load support	850 lbf (3,781 N)

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi Frangibolt Actuator FC3

The EBAD Frangibolt® Actuator is a simple and effective non-pyrotechnic separation system for satellite applications. The FC3 model utilizes a Shape Memory Alloy (SMA) cylinder tha

Ti fastener size	#10
Mass	40 g
Power	49 W @ 28 V
Operational voltage*	22-36 V
Current draw	1.75 A @ 28 V
Resistance	16±1.6 Ω
Max load support	1,400 lbf (6,227 N)

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi Frangibolt Actuator FC4

The EBAD Frangibolt® Actuator is a simple and effective non-pyrotechnic separation system for satellite applications. The FC4 model utilizes a Shape Memory Alloy (SMA) cylinder tha

Ti fastener size	1/4"
Mass	55 g
Power	80 W @ 28 V
Operational voltage*	22-36 V
Current draw	2.9 A @ 28 V
Resistance	9.7±1.5 Ω
Max load support	3,400 lbf (15,123 N)

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi Frangibolt Actuator FC6

The EBAD Frangibolt® Actuator is a simple and effective non-pyrotechnic separation system for satellite applications. The FC6 model utilizes a Shape Memory Alloy (SMA) cylinder tha

Ti fastener size	3/8"
Mass	110 g
Power	111 W @ 100 V
Operational voltage*	95-105 V
Current draw	1.1 A @ 100 V
Resistance	90±9 Ω
Max load support	6,000 lbf (26,689 N)

price on request

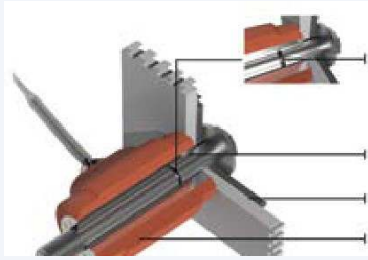
ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)

TiNi Frangibolt Actuator FC8

The EBAD Frangibolt® Actuator is a simple and effective non-pyrotechnic separation system for satellite applications. The FC8 model utilizes a Shape Memory Alloy (SMA) cylinder tha

Ti fastener size	1/2"
Mass	175 g
Power	112 W @ 28 V
Operational voltage*	22-36 V
Current draw	4 A @ 28 V
Resistance	7±1 Ω
Max load support	9,600 lbf (42,702 N)

price on request

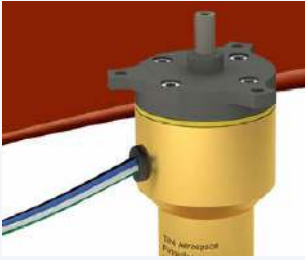


ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
TiNi MINI Frangibolt FD04 Actuator

EBAD's Mini-Frangibolt® Actuators are utilized in satellite applications to provide a simple and effective non-pyro separation system between two components. With the ability to cut

Ti fastener size	#4
Mass	10 g
Power	9 W @ 7 V
Operational voltage	6-8 V
Current draw	1.25 A @ 7 V
Resistance	5.5±.5 Ω
Max load support	150 lbf (667 N)

price on request

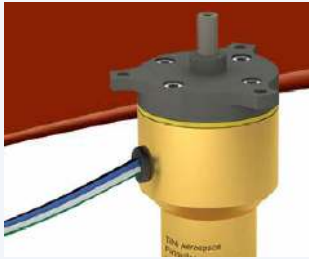


ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
TiNi Pin Puller P10

EBAD's TiNi Pin Pullers are utilized in satellite applications to provide a simple and effective non-pyro separation system between two components where a pull force is required. T

Pull force	10 lbf (44 N)
Side load (actuation)	10 lbf (44.5 N)
Side load (non-actuation)	100 lbf (444.8 N)
Mass	1.06 oz (30 g)
Operating current	.4 to 1.5 A
Resistance	7.7±.5 Ω
Function time @ 23°C	100 ms max @ 1 A

price on request

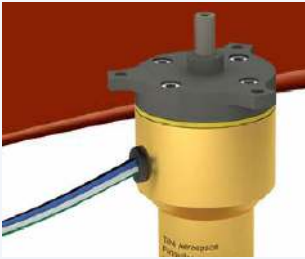


ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
TiNi Pin Puller P100

EBAD's TiNi Pin Pullers are utilized in satellite applications to provide a simple and effective non-pyro separation system between two components where a pull force is required. T

Pull force	100 lbf (445 N)
Side load (actuation)	100 lbf (445 N)
Side load (non-actuation)	490 lbf (2,180 N)
Mass	5.3 oz (150 g)
Operating current	2.25 A to 6.5 A
Resistance	2.7±.3 Ω
Function time @ 23°C	100 ms max @ 4 A

price on request



ENSIGN-BICKFORD AEROSPACE & DEFENSE (EBAD)
TiNi Pin Puller P1000

EBAD's TiNi Pin Pullers are utilized in satellite applications to provide a simple and effective non-pyro separation system between two components where a pull force is required. T

Pull force	1,000 lbf (4,450 N)
Side load (actuation)	200 lbf (890 N)
Side load (non-actuation)	600 lbf (2,670 N)
Mass	12.7 oz (360 g)
Operating current	2.25 A to 6.5 A
Resistance	3.1±.3 Ω
Function time @ 23°C	75 ms max @ 4 A

price on request

Contact Ensign-Bickford Aerospace & Defense (EBAD)

Open the company profile on NewSpace Market to see full specifications and datasheets, and to send a request for quotation that reaches the manufacturer directly.

<https://newspacemarket.com/companies/ebad/>

<https://www.ebad.com/>

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