

## HI-SHEAR MISSION

Design, develop, and manufacture Cartridge Actuated Devices (CAD), Propellant Actuated Devices (PAD), Safe Arm Devices, Fuzes, Electronic Sequencers, CAD/PAD Firing Units & Connecting Cables for both low and high rate production.

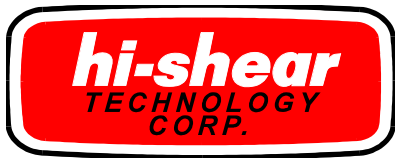
*"Quality parts on time, first time, every time"*

George W. Trahan  
President & Chief Executive Officer

Hi-Shear produces the entire ordnance train:  
Safe Arm Device ⇒ Firing Unit ⇒ Connecting cable assembly ⇒ CAD/PAD

To stay on the leading edge of technology, extensive resources are committed to advance the state-of-the-art for:

- ❑ CAD/PAD product concepts of today and tomorrow  
Conventional Hotwire, Exploding Bridgewire, Exploding Foil, Laser
- ❑ Firing/Connecting Cable Assemblies
- ❑ Firing & Destruct Units, Safe-Arm-Devices  
Electronics, Laser, Electro-Mechanical
- ❑ Electronic Recovery Sequencers for the Advanced Concept Ejection Seat (ACES)
- ❑ Built-to-print  
CAD/PAD and Electronic Subsystems
- ❑ Custom & One-of-a-kind Designs
- ❑ Environmental Testing
- ❑ Precision Machining Center



## HISTORY

- ❑ 40 YEARS AS A LEADING SUPPLIER OF AEROSPACE, DEFENSE, AND COMMERCIAL ORDNANCE PRODUCTS
- ❑ INDUSTRY LEADER IN ORDNANCE LOW OUTPUT SHOCK DEVICES
- ❑ INTEGRATED DESIGN AND MANUFACTURING THROUGH CAD/CAM
- ❑ IN-HOUSE EXPLOSIVE BLENDING, MACHINING, ASSEMBLY, AND ENVIRONMENTAL & FUNCTIONAL TESTING



### Facilities

|                                 |        |
|---------------------------------|--------|
| • Engineering & Manufacturing   | 32,000 |
| • Machine Center                | 20,000 |
| • Test Laboratory & Loading     | 13,000 |
| • Pyrotechnic Mixing & Blending | 3,000  |
| • Administration                | 11,000 |

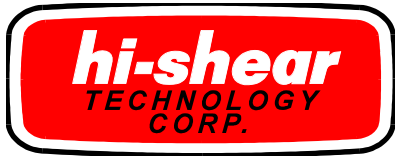
79,000 Square feet

### Energetic Powder Storage

- ❑ Security Clearance **Secret**
- ❑ Quality System **ISO 9001 / AS 9000 / MIL-Q-9858A**

12 Acres



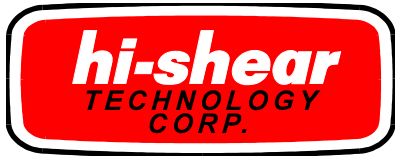


## ***PRODUCT LINE - ORDNANCE DEVICES***

**PC** SERIES Power Cartridges, Squibs & Initiators  
**SN** SERIES Separation Nuts {re-settable}  
**SH** SERIES Bolt Catchers & Bolt Retractors  
**SL** SERIES Cutters {cable, rod, and reefing line}  
**SF** SERIES Thrusters  
**SP** SERIES Pin Pullers and Pin Pushers  
**TBI** SERIES Thru Bulkhead Initiators  
**SB** SERIES Shear Bolts & Explosive Bolts  
**SJ** SERIES Gas Generators  
**SAD** SERIES Safe Arm Devices

## ***PRODUCT LINE - ELECTRONIC SUBSYSTEMS***

**PE** SERIES Exploding Bridgewire Initiators & Detonators  
**LID** SERIES Laser Detonators  
**LI** SERIES Laser Initiators  
**LASER** Firing Units  
**ESAF** SERIES Electronic Safe Arm Fire and Flight Termination Systems  
**EFI** SERIES Exploding Foil Initiators  
**ACES II** SERIES Advanced Recovery Sequencers



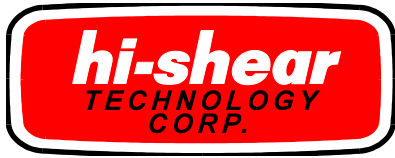
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## ***PRODUCT LINE - REQUEST FOR INFORMATION***

Descriptive product brochures about the listed operationally proven products are available upon request.

Because of variables in requirements for our ordnance and electronic products, we request that you submit your specific product needs. If available, specific end use application and operational performance details will assure that our product functions as intended. A Request For Quotation (RFQ) with your accompanying specifications will receive prompt and thorough study and consideration. We will reply to the RFQ promptly and will include recommendations considered pertinent.

Hi-Shear Technology Corp. Engineering Staff is actively engaged in custom designs and one-of-a-kind designs. We would appreciate the opportunity to apply our engineering talents, laboratory facilities and manufacturing capability to the design and production of your specialized requirements.



## PC SERIES Power Cartridges, Squibs & Initiators

Hi-Shear is the qualified primary source for the NASA Standard Initiator (NSI) used for virtually all ordnance functions of the Space Shuttle. The NSI performs from an incredible low temperature of  $-420^{\circ}\text{F}$  to a high of  $+320^{\circ}\text{F}$ . Only NASA can supply the NSI. However, the NSI "equivalent" our PC-23 initiator, is basically utilized in all major space and defense programs where the NSI was previously used. Our PC series meet Range Safety Standards for RF & EMI hazards, and 5 minutes 1 Amp/1 Watt No-Fire test. Our PCs are used to actuate:

- Separation systems
- Electrical disconnects
- Explosive switches and valves
- Parachute and data package ejection systems
- Rocket motor ignition systems
- Any application requiring rapid gas & heat generation

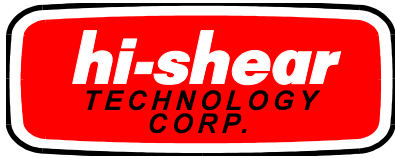
## SN SERIES Separation Nuts {re-settable}

The general features are lightweight, extremely low shock output with complete gas and particle containment. These nuts actuate on very low pressure with large bolt insertion tolerance. The devices are used in:

- Separation or release of structure or components such as multi-stage launch vehicles
- Separation of Nose Cones and Capsules
- Separation of Underwater devices and ejection seats
- Release of booster rockets, tanks, and other jettison equipment

## SH SERIES Bolt Catchers & Bolt Retractors

These devices are specifically designed for use in conjunction with Hi-Shear Separation Nuts as standard hardware for separation systems. The bolt catchers and improved bolt retractors are designed to retain (extract) a tension bolt after separation. They prevent potential structural damage or component malfunction due to bolt ejection.



## **SL SERIES Cutters {cable, rod, and reefing line}**

Hi-Shear cutters designed for robustness can be used in space as well as deep submergence applications. Uses include rapid severance of:

- Electrical cables
- Steel cables
- Aluminum, Titanium and Steel bolts
- Aluminum, Titanium and Steel rods
- Wire bundles
- Reefing lines

## **SF SERIES Thrusters**

Hi-Shear thrusters range from miniature type measuring less than 1/4 inch diameter & 1 inch long to over 2 inch diameter and 9.5 inches long. These devices are capable of exerting forces from less than 1 pound to more than 12,000 pounds. Applications include:

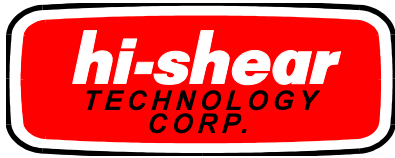
- Eject, jettison or separate structures
- Pilot ejection capsules
- Remove missile launch covers or radar lens protectors
- Eject instrument packages and parachute canisters from re-entry vehicles

## **SP SERIES Pin Pullers and Pin Pushers**

Pin-Pullers are controlled release mechanisms for instant detachment of structural fittings, mechanisms, packages, rods, cables or parachutes

## **TBI SERIES Thru Bulkhead Initiators**

These devices transfer detonating energy from linear explosive lines through the bulkhead to heat and gas output. Typical applications are similar to PC Series initiators.



## **SB SERIES Shear Bolts & Explosive Bolts**

Shear Bolts series are designed for mechanical and pyrotechnic redundancy. The sizes range from 1.0 to 5.0 inches diameter with lengths up to 25 inches. Tension loads capability are in excess of 500,000 pounds.

## **SJ SERIES Gas Generators**

Gas generators drive many functions on missiles, fighter aircraft, launch vehicles and satellites. Hi-Shear PC series initiators are used to function these devices.

## **SAD SERIES Safe Arm Devices**

This electro-mechanical Safe Arm Device provides dual explosive output for remote safing/arming and subsequent initiation of ordnance items. Hi-Shear SAFD505 is fully qualified for system use, target drone applications. The approximate weight is 2.9 pounds.

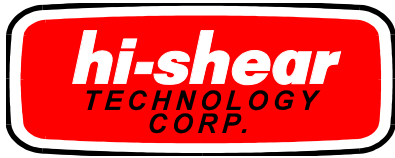
### **Features:**

- Warhead or motor safe arm function
- Redundancy (two outputs)
- Hermetic seal assembly
- Rugged design for environmental resistance

## **PE SERIES Exploding Bridgewire (EBW) Initiators & Detonators**

EBW initiators & detonators are used with our EBW firing units and cable assemblies. These type of devices typically actuate:

- Separation systems
- Explosive switches and valves
- Parachute and data package ejection systems
- Rocket motor & warhead ignition
- Any application requiring gas generating or detonating output



## **LID & LI SERIES Laser Detonators & Laser Initiators**

LID & LI Laser detonators & laser initiators are used with our Laser firing units and fiber optic cable assemblies. These type of devices typically actuate:

- Separation systems
- Explosive switches and valves
- Parachute and data package ejection systems
- Rocket motor & warhead ignition
- Any application requiring gas generating or detonating output

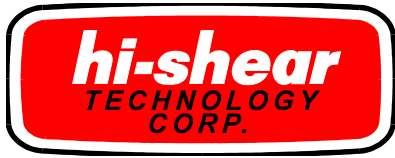
## **LASER SERIES Firing Units**

Flash-tube pumped laser rod systems that use high power light to initiate LID and LI. The laser firing unit features:

- Up to 48 ordnance functions per firing unit
- Immune to EMI/EMP
- Built-in test check for continuity
- Light weight (< 6.0 pounds), small size (6x4x4 inches)
- Long (1,000 ft) fiber optic cables may be used

## **ESAF SERIES Electronic Safe Arm Fire and Flight Termination Systems**

This in-line system MIL-STD-1316 qualified Electronic Safe Arm Fuze (ESAF) is a dual mode, single channel, fully electronic safe arm fuze with a removable keylock assembly. Its function is to preclude premature arming and consequent initiation of the detonator during transportation, handling, pre-launch and launch conditions. It also functions, when commanded, as flight termination (missile destruct) during missile fly out.



## **EFI SERIES Exploding Foil Initiators**

EFI is similar to EBW except that an exploding foil bridge is used to accelerate a flyer down the barrel to impact an insensitive secondary explosive. Features:

- ❑ Meets MIL-STD-1316
- ❑ Functioned by the Hi-Shear ESAF

## **ACES II SERIES Advanced Recovery Sequencers**

The electronic recovery sequencer is part of the Advanced Concept Ejection Seat (ACES) that time sequence the airman ejection during flight emergency. The sequencer typical events are:

- ❑ Rocket catapult firing
- ❑ Mortar-deployed main chute
- ❑ Auto sensing of egress conditions
- ❑ Parachute reefing to control opening at all speeds
- ❑ Multi-mode operation for optimum recovery of the crewman

## ***PRECISION MACHINING CENTER***

Hi-Shear is a leading supplier of precision machined parts and components to the aerospace, defense, optical and medical industries. Please contact Hi-Shear for competitive price quotation and rapid turn around time. Our Precision Machining Center Brochure is available upon request.