

Mission Success

Ensign-Bickford Aerospace & Defense Company (EBAD) is dedicated to supporting our customers in the aerospace and defense industry through on-time delivery of innovative products that exceed expectations and assure mission success.

### Model 1120-05 Pin Puller

EBAD is the global leader in non-pyrotechnic Hold Down & Release Mechanisms (HDRM) for the spacecraft market. Our patented split spool technology that has made our HDRMs the industry standard for non-pyrotechnic release mechanisms is also available in Pin Puller configurations.

### Principle of Operation

EBAD Pin Pullers consist of a spring loaded plunger that is restrained using the same patented split-spool and fuse wire technology used in our Hold Down & Release Mechanisms. The spool subassembly includes two spool halves which are held together by a tight winding of a restraining wire that terminates in a fuse wire connecting two electrical terminals at the electrical interface to the device. The spool assembly, by virtue of the restraining wire winding, can prevent axial motion of the plunger. When sufficient electrical current is passed through the terminals and the fuse wire, the fuse wire heats up and breaks under the applied tension load. This allows the restraining wire to unwind, separating the spool halves and releasing the spring preloaded plunger.

The actuation method is simple and reliable and forms the basis of actuation for many of EBAD's other products including; Battery Cell Bypass Switches and Non-Pyrotechnic Valves.

### Applications

- Typical applications include:
- Antennas
  - Scientific instruments
  - Solar arrays
  - Reflectors
  - Satellite and spacecraft payloads
  - Booms and masts
  - Stage separation
  - Caging mechanisms

### Key Features

- Extremely low release shock
- Extended operating temperature range
- Can be operated with pyrotechnic initiation circuitry
- Range safety friendly
- Space-rated materials
- Field refurbishable with spare initiators and reset tool

## NEA® Model 1120-05 Pin Puller



## NEA® Model 1120-05 Pin Puller

### Model 1120-05 Technical Specifications

Parameter	Specification
Mass	47 g (1.66 oz) max
Side Load	35 lbf (155 N)
Function Time <sup>1</sup>	35 ms max @ 3.0 A

### Electrical

Nominal Actuation Current	4 Amps for 25 ms
Resistance	.95 to 1.6 $\Omega$ @ 23°C
Insulation Resistance	>100 M $\Omega$ @ 250 VDC
No-Fire Limit	210 mA for 5 min @ Ambient

### Performance

Pull Force (Beginning of Travel)	Beginning: 63.51 N (14.27 lbf)
Pull Force (End of Travel)	End: 27.49 N (6.29 lbf)
Pull Stroke	8.0 mm (0.315 in)
Field-Refurbishable	With additional fuse wire assemblies (max 10 times)

### Temperature<sup>3</sup>

Non-Operational Pre-Actuation	-60°C to +110°C (-76°F to +230°F)
Operational	-60°C to +110°C (-76°F to +230°F)
Non-Operational Post-Actuation	-60°C to +110°C (-76°F to +230°F)

Notes:

<sup>1</sup> Function time is dependent on actuation current and temperature. Contact EBAD for more information.

<sup>2</sup> Shock is setup dependent, contact EBAD for details.

<sup>3</sup> The values presented are for qualification temperature range and not a measure of the limits of the device.

### Model 1120-05 Pin Puller Mechanical Interface Drawing (for reference)

