

Elastomeric Isolation Mounts



ENIDINE



Industry Leading Quality and Value – On Time Every Time

With the newest innovations in technology, ITT Enidine Inc. offers the widest selection of energy absorption and vibration isolation products in the world. Protecting cabin interiors from noise and vibration to seat recline products, we are continually striving to improve the safety and comfort of passenger and crew.

As part of our strategy to make the customer central to everything we do, our core technologies, engineering strength and global scale offers greater value for customers in terms of quality, cost and delivery.

Our Vision

Enidine's vision is to provide the best in class, engineered elastomer solutions. We are recognized for our technical expertise and innovation for our products and applications.

Our goal is to deliver differentiated value to our customers. We strive for flawless execution, delivering quality work on time, every time.

Our vision statement below captures the essential elements of our approach:

This catalog describes engineered elastomer services and products that Enidine offers. We offer standard products and our Team is structured to rapidly provide value added, custom solutions such as:

- Isolators developed and qualified to detailed specifications
- Isolators molded directly to associated brackets to save cost
- Isolators designed with value added features such as torque resistance

Enidine is dedicated to conducting fundamental research to support a better understanding of your application, modeling, and simulation of elastomeric isolators and their associated systems. Our engineers regularly speak at and contribute papers to conferences and symposiums such as Internoise, Noise Con and SAVE.

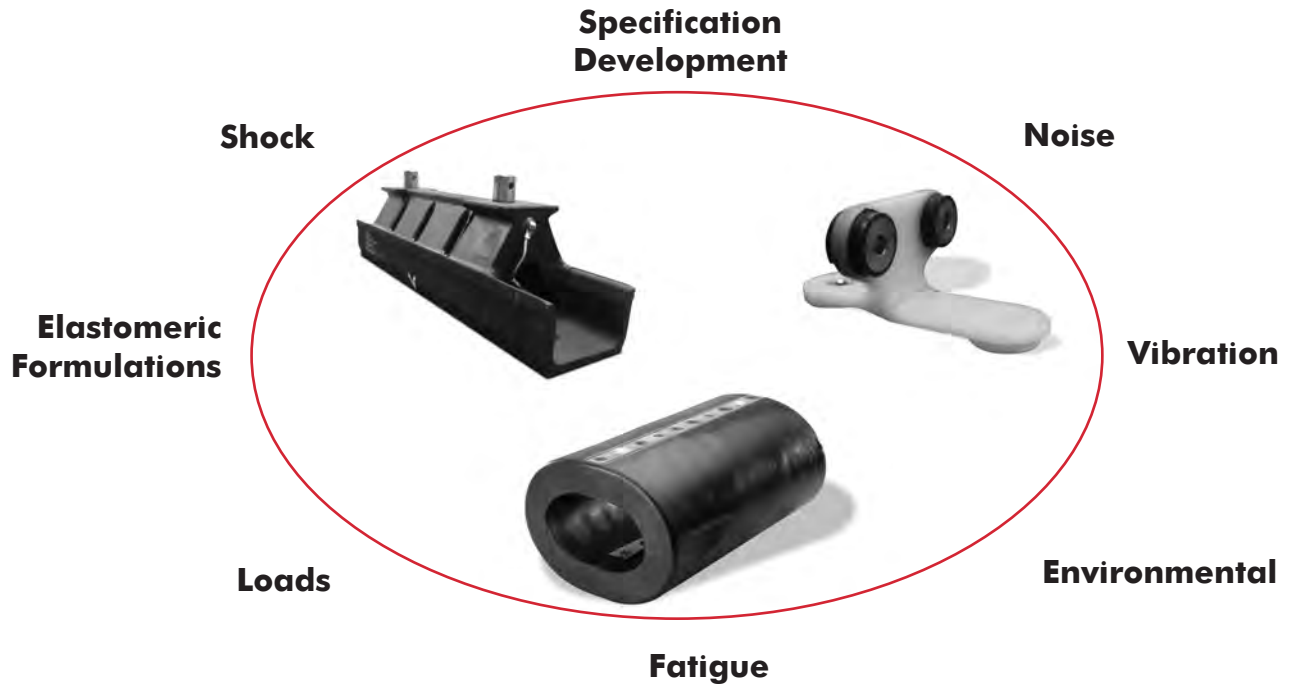


Our Goal is to deliver differentiated value to our customers. We strive for flawless execution, delivering quality work on time, every time.

Services

Enidine is dedicated to providing technical expertise, innovation and differentiated value to our customers. Our areas of expertise encompass the full range of capabilities required to successfully develop an elastomeric isolation system.

Areas of Expertise



With extensive capabilities in Analysis, Design, Qualification and Prototype Molding Cell resources, Enidine is structured to rapidly provide value added, custom solutions to our customers.

Analysis	Design	Prototype Molding Cell	Qualification and Testing

Services

Enidine is your partner for standard and custom elastomeric isolation systems for aircraft interior noise control. Successful isolation systems account for the properties of aircraft systems to which they attach. We have a proven engineering approach for high frequency noise attenuation, test capabilities, engineering capabilities and materials that allow us to develop and qualify your system.

As experts in the field of structure borne noise for aircraft interiors, Enidine provides the following services:

Prediction of In-situ Attenuation of Isolator –

Classical mass-spring-damper approach cannot be used to predict high frequency noise attenuation. Enidine uses the 4-pole method to capture the dynamic performance of the isolator and the attaching structure.

Elastomeric Material Development –

Proprietary compounds are formulated based on the requirement for the application. Desired noise attenuation, temperature extremes, loads, and fatigue life are important criteria when selecting and developing compounds for aircraft interior components.

Installation Requirements –

Installation requirements are extremely important. These isolators provide mechanical torque resistance to ensure that the elastomer does not tear during installation. Enidine has also developed a number of isolators mated with plastic brackets to provide low weight, cost effective customer solutions.

Fatigue Life –

Enidine understands the requirements to provide an isolation system with long life. Fatigue life for elastomeric isolators is directly related to frequency and amplitude. Enidine has the expertise to design and test your isolation systems to ensure longevity.

Temperature Extremes –

The dynamic performance of the isolator is very dependent on the temperature at which it performs. Enidine designs and tests the isolator at these specific temperature extremes.

Static and Ultimate Loads –

Enidine's isolators are designed to provide optimal performance at specified static loads. The isolators also incorporate a fail safe mechanism to ensure the ability of the isolator to resist ultimate loads.

Custom Solutions –

Enidine has a dedicated group of engineers, supported by the required analytical, manufacturing and testing resources focused on the design of aircraft interior isolators. We offer traditional metallic isolators and isolators using plastic materials. As a leader in this field, Enidine can also partner with you on specification development for these isolators.



Aerospace

Product Overview

The desire to control aircraft interior noise for enhanced passenger/crew comfort has presented significant challenges for aircraft designers. Industry standard mounts often fail to take advantage of improved features and materials to optimize noise attenuation. Noise testing based on the 4-Pole Test method demonstrates that significant gains in noise isolation are available without sacrificing

Product Selection

Enidine now offers a line of isolators to provide optimized noise/vibration attenuation for a variety of aircraft interior applications. These isolators provide significantly better noise attenuation compared to industry "standard" mounts.

Designed to accommodate a range of mounting configurations and load conditions, Enidine Panel Isolators can be used for sidewall and ceiling panels, as well as for mounting IFE and other equipment.

Typical Applications

- Sidewall Panels
- Dado Panels
- Ceiling Panels
- Interior Trim / Door Panels

Features and Benefits

- Exceptional Noise Attenuation Performance
- Fail Safe Low-Profile Design
- Improved Composite Frame Noise Attenuation
- Interchangeable with Existing Isolators
- Multiple Elastomer Stiffnesses available in the same Envelope Size



Defense

Product Overview

Enidine engineers remain at the forefront of new energy absorption and vibration isolation product development.

Our experienced team has designed custom solutions for a wide variety of challenging defense applications, including recoil buffer technologies and Counter I.E.D. Electronics Isolators, among others.

These custom application solutions have proven to be critical to our customers' success. Let Enidine engineers do the same for you.



Typical Defense Applications

- COTS Equipment
- Marine Electronics
- Mission Critical Systems
- Piping, Pumps and Motors
- Deck Isolation
- Cabinet Isolation
- Off Road
- Smooth Highway
- Rail Transport
- NBC Compatible
- Military Shelters
- Low Frequency Deck Applications
- Shipping Containers
- Engine Transport
- Missile Systems
- Computers and Electronics
- Industrial Vehicles
- Equipment Support
- Structural Elements
- Military Electronics
- Disk Drives
- Computer Consoles
- Flat Panel Displays
- Communications Equipment
- APU (Military Vehicles)
- Turbines
- Internal Combustion Engines
- Motor/Generator Sets
- Off-Highway Equipment



Strut Integrated Isolator

Enidine has developed a unique isolation solution for strut mounted equipment. The **Strut Integrated Isolator** incorporates an elastomeric isolator directly into the strut, eliminating the need for a large multi-axis isolator. This solution offers performance, weight and design flexibility advantages over traditional mounting systems.

Improved Performance –

Traditional mounting systems contain multiple struts converging at a large multi-axis isolator. These large multi-axis isolators must be sized to carry the complicated loads and moments associated with multiple struts. The **Strut Integrated Isolator** places the elastomeric working section directly into the strut where the isolator experiences only axial loading. The result is a simplified mounting system with a more linear stiffness.

Weight Savings –

The **Strut Integrated Isolator** system is 20 to 25% lighter than the traditional mounting due to the replacement of the strut material with the isolator and the reduced isolator size.

Improved Structural Reliability/Design Flexibility –

Isolator failure for a traditional mounting system will compromise multiple struts. This will require additional mounting points and isolation solutions for a redundant fail-safe system. With the **Strut Integrated Isolator**, the failure of a single isolator only compromises a single strut, possibly allowing the use of fewer struts to achieve a redundant, fail-safe system. Additionally, the elastomeric section can be located near the aircraft attachment point, as opposed to the component attachment, where there are more nominal temperatures and fewer fluid exposure issues, allowing for improved isolator performance and service life.

Fail-Safe Design –

The **Strut Integrated Isolator** has metal components that restrain the load in the event of elastomer failure, offering a fail-safe design.

With its inherent performance, weight and design flexibility advantages, the **Strut Integrated Isolator** is an excellent choice for all strut mounted equipment.

Typical Application –

- Shipboard
- Mobile Electronics
- Engine Isolation
- Transportation Shipping

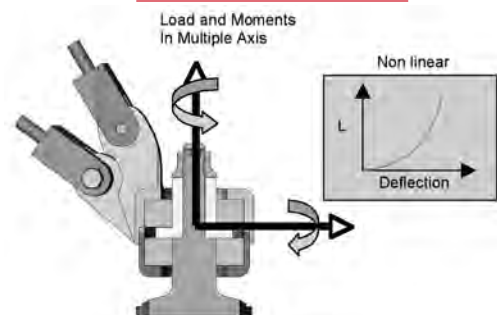
Traditional Mounting



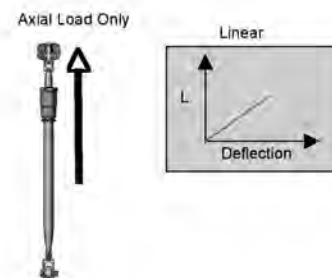
Strut Integrated Isolator











Traditional Mounting



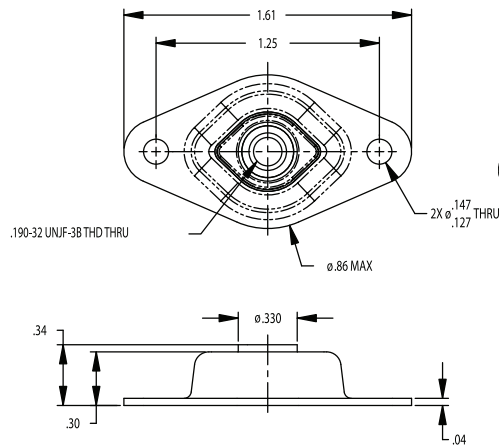
Strut Integrated Isolator



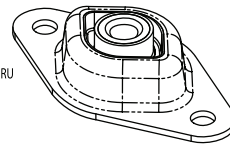
Panel Isolators

Product	Part Number	Thru Hole	Rated Load (lbs.)	Ultimate Load (lbs.)	Product	Part Number	Thru Hole	Rated Load (lbs.)	Ultimate Load (lbs.)
	EI11618	#10-32 UNJF-3B	4	100		EI11573	#10-32 UNF-2B Self Locking	9	200
	EI11619	#10-32 UNJF-3B	8	200		EI11588	#10-32 UNF-3B Self Locking	25	800
	EE11746	#10-32 UNJF-3B Self Locking	8	100		EI11589	#10-32 UNF-3B Self Locking	75	800
	EI11528	.209 Thru	9	200		EI11590	#10-32 UNF-3B Self Locking	150	800

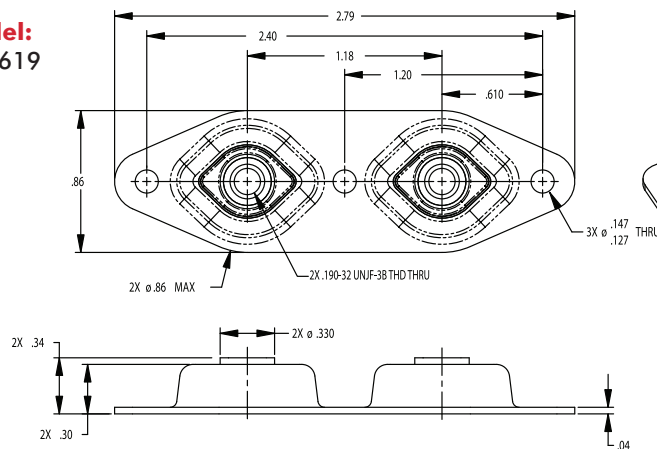
Model:
EI11618



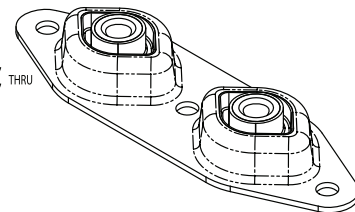
Materials:
Aluminum Alloy
Cres



Model:
EI11619



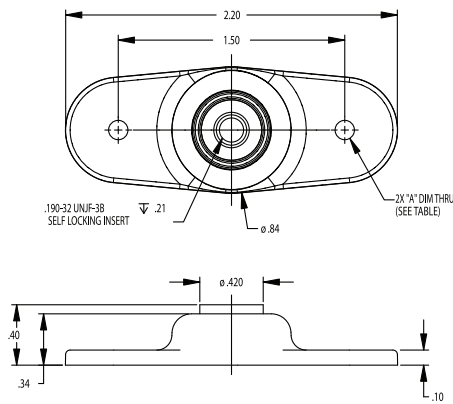
Materials:
Aluminum Alloy
Cres



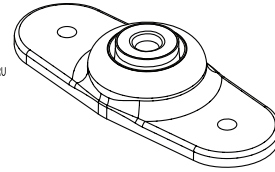
Panel Isolators

Model:
EE11746

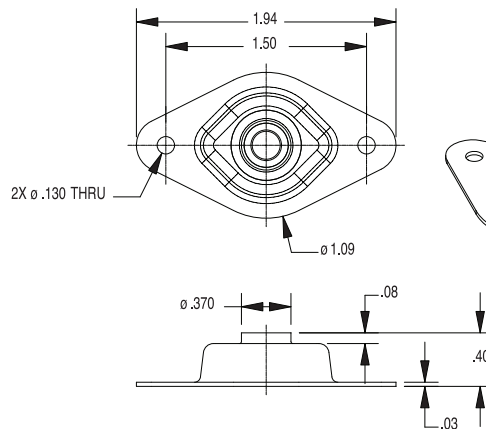
PART NUMBER	MTG HOLE ϕ ("A" DIM)
EE11746125	.125/.131
EE11746156	.156/.162
EE11746190	.190/.196
EE11746219	.219/.225
EE11746250	.250/.256



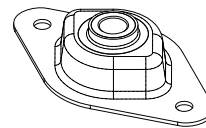
Materials:
Ultem
Cres



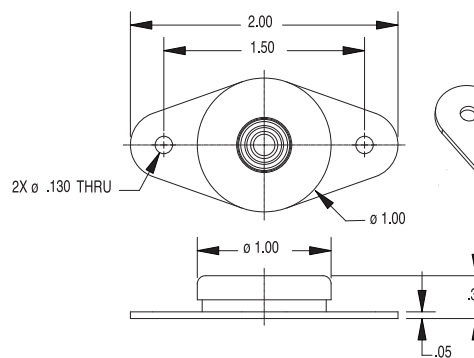
Models:
EI11528
EI11573



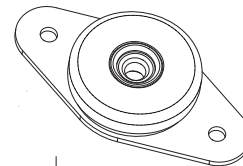
Materials:
Aluminum Alloy
Cres
Steel



Models:
EI11588
EI11589
EI11590



Materials:
Cres



Custom Solutions

Enidine offers a full range of custom solutions, including both traditional metal and plastic housings. Please contact Enidine to discuss your application.



Elastomeric Rod Ends

Commercial and defense aircraft manufacturers strive to build aircraft that offer durable support for interior service equipment. Overhead stowage bins and other structures need to accommodate changes in alignment while reducing in-flight structure-borne noise.



**Standard
Elastomeric Rod Ends**

To meet these and other application parameters, Enidine has developed a family of elastomeric rod ends. Their versatile design supports the load, offers alignment forgiveness, resists radial push-out forces and reduces the transmission of structure-borne noise.



**Advanced
Elastomeric Rod Ends**

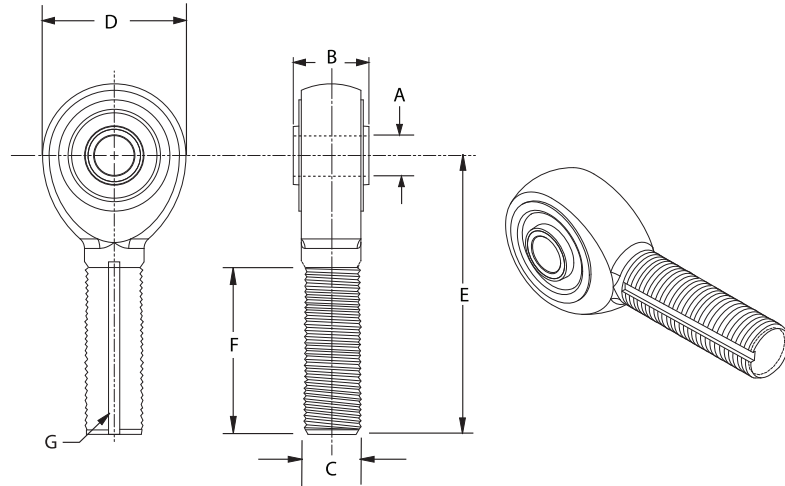
The Advanced Elastomeric Rod End offers a soft working section with a self-snubbing feature. This innovative patented design provides exceptional structure-borne noise attenuation and increased life.



**Optional
Configurations Available**

In addition to our standard product offerings, Enidine also provides custom elastomeric isolators, including elastomeric rod ends with female attachments. Additional sizes, materials, finishes, thread size/type and keyway options are available as standard options. Enidine's elastomeric rod ends can also be customized to meet specific application requirements. Please contact Enidine for additional information.

Elastomeric Rod Ends

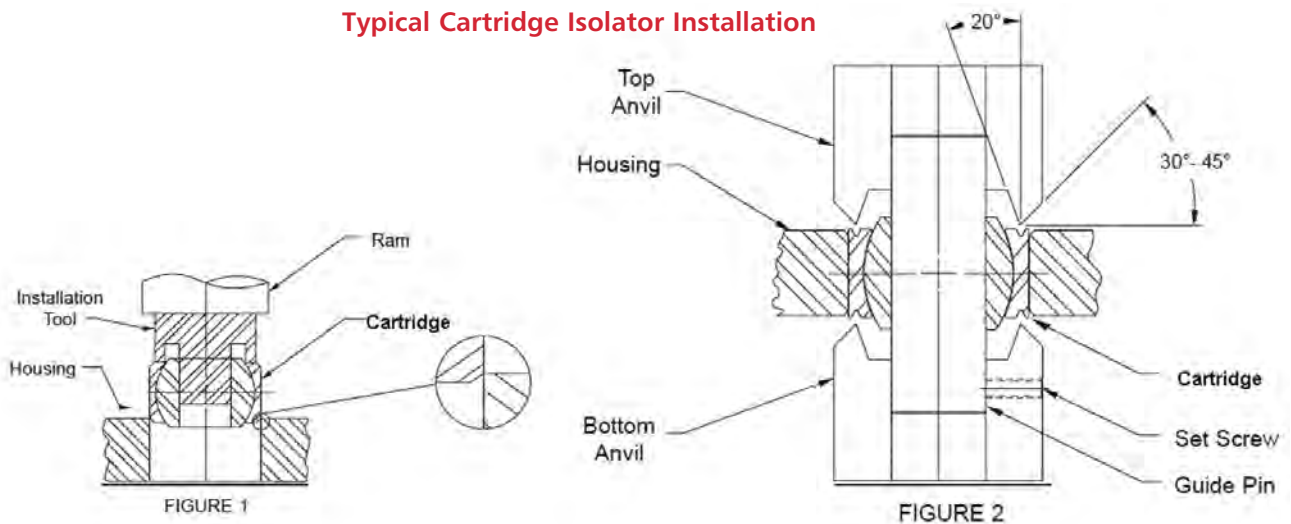


Base Number	A	B	C	D	E	F	Nominal Static Spring Rate (lbs./in.)	Max Static load (lbs.)	Min. Radial Ultimate Load (lbs.)	G
	Dia. (± .002 in.)	Width Max. (in.)	Thread UNJF - 3A	Dia. (in.)	Length Min. (in.)	Perfect Thread Min. (in.)				Keyway Feature
Advanced Elastomeric Rod Ends - Soft Working Section - Self Snubbing Design										
EI11662J	0.250	0.476	3/8-24	1.00	2.13	1.07	13,100	390	4,500	Yes
EI11662LJ	0.250	0.476	3/8-24L	1.00	2.13	1.07	13,100	390	4,500	Yes
EI11663J	0.250	0.476	3/8-24	1.00	2.13	1.07	6,600	165	4,500	Yes
EI11663LJ	0.250	0.476	3/8-24L	1.00	2.13	1.07	6,600	165	4,500	Yes
EI11664J	0.3125	0.571	3/8-24	1.13	2.22	1.07	18,000	550	8,000	Yes
EI11664LJ	0.3125	0.571	3/8-24L	1.13	2.22	1.07	18,000	550	8,000	Yes
EI11665J	0.3125	0.571	3/8-24	1.13	2.22	1.07	11,500	330	8,000	Yes
EI11665LJ	0.3125	0.571	3/8-24L	1.13	2.22	1.07	11,500	330	8,000	Yes
Standard Aluminum Elastomeric Rod Ends										
EI11352J	0.250	0.399	1/4-28	0.75	1.21	0.62	7,000	140	2,500	No
EI11353J	0.250	0.399	1/4-28L	0.75	1.21	0.62	7,000	140	2,500	No
EI11354J	0.250	0.399	1/4-28	0.75	1.49	0.85	4,000	80	2,200	No
EI11355J	0.250	0.399	1/4-28L	0.75	1.49	0.85	4,000	80	2,200	No
EI11356J	0.250	0.437	1/4-28	0.80	1.21	0.62	17,000	250	2,400	No
EI11357J	0.250	0.437	1/4-28L	0.80	1.21	0.62	17,000	250	2,400	No
EI11374J	0.250	0.476	3/8-24	0.90	1.74	1.05	4,000	80	5,600	No
EI11375J	0.250	0.476	3/8-24L	0.90	1.74	1.05	4,000	80	5,600	No
EI11376J	0.250	0.437	5/16-24	0.80	1.85	1.15	7,000	140	2,400	No
EI11377J	0.250	0.437	5/16-24L	0.80	1.85	1.15	7,000	140	2,400	No
EI11378J	0.250	0.476	5/16-24	0.90	2.01	1.30	7,000	140	3,600	No
EI11379J	0.250	0.476	5/16-24L	0.90	2.01	1.30	7,000	140	3,600	No
EI11380J	0.250	0.399	5/16-24	0.75	1.29	0.62	7,000	140	2,500	No
EI11395J	0.250	0.437	1/4-28	0.80	1.49	0.85	7,000	140	2,400	No
EI11396J	0.250	0.437	1/4-28L	0.80	1.49	0.85	7,000	140	2,400	No
EI11397J	0.312	0.476	3/8-24	0.90	2.14	1.30	4,000	80	4,800	No
EI11398J	0.312	0.476	3/8-24L	0.90	2.14	1.30	4,000	80	4,800	No
EI11399J	0.250	0.437	5/16-24	0.80	1.49	0.80	7,000	140	2,400	No
EI11401J	0.250	0.437	5/16-24L	0.80	1.49	0.80	7,000	140	2,400	No
EI11402J	0.250	0.476	5/16-24	0.90	1.49	0.80	7,000	140	3,600	No
EI11403J	0.250	0.476	5/16-24L	0.90	1.49	0.80	7,000	140	3,600	No
Standard CRES Elastomeric Rod Ends										
EI11495J	0.250	0.400	3/8-24	0.75	1.81	1.12	12,500	280	4,500	Yes
EI11497J	0.250	0.400	3/8-24	0.75	2.18	1.50	12,500	280	4,500	Yes
EI11503J	0.250	0.400	1/4-24	0.75	1.91	1.22	12,500	280	4,500	Yes
EI11540J	0.375	0.500	9/16-18	1.03	2.62	1.53	27,250	670	11,500	Yes
EI11541J	0.375	0.500	7/16-20	1.03	2.37	1.30	27,250	670	11,500	Yes

Elastomeric Cartridge Isolators



Typical Cartridge Isolator Installation



Proper installation of the cartridge is important to prevent cartridge failure as well as housing damage. Under no circumstances should a tool that induces shock or impact to the cartridge being used. The use of an arbor press or hydraulic press is recommended. A tool similar to the one shown in Figure 1 is advised. All force is to be applied on the cartridge face (not on elastomer or insert face). A lead chamfer or radius on the cartridge and/or housing is vital as seen below in Figure 3. The cartridges have grooves in each side of the cartridge face, leaving a small lip. Staking tools (as shown in Figure 2) are then used to stake the lip over the chamfer edges of the housing. A typical arrangement consists of two identical anvils and one guide pin which is secured by a set screw in the bottom anvil.

Supporting Housing Chamfer

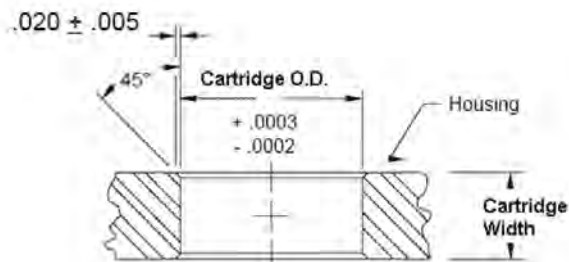
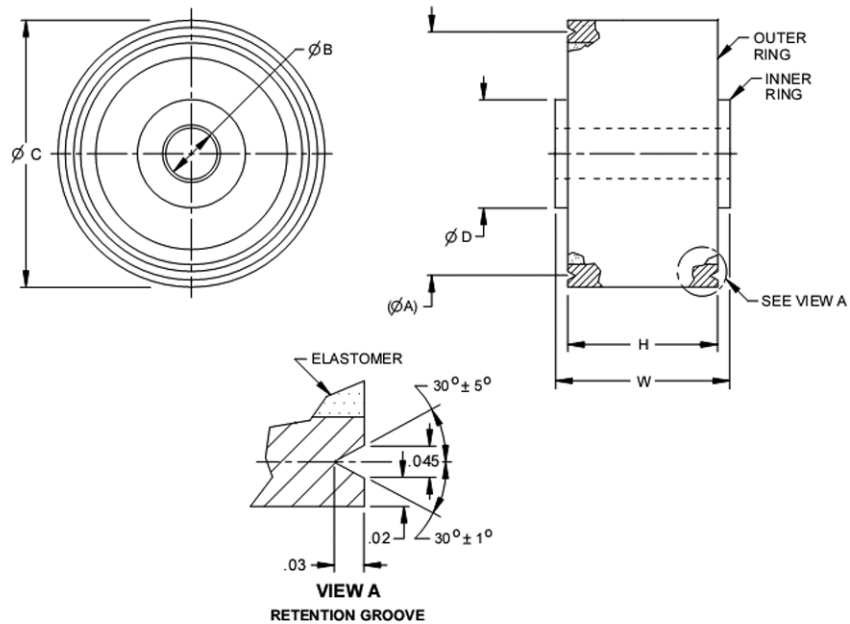


FIGURE 3

Elastomeric Cartridge Isolators



Part Number Ordering Code

For Material Options

EE12032 CP

Material [] - AL ALY
 [CP] - CRES
 Base Number Per Table

Base Number	A	B	C	D	H	W	Nominal Spring Rate (lbs./in.)	Min. Radial Ultimate Load (lbs.)	Max Static load (lbs.)
	Groove Dia. (in.) (Ref.)	Thru Hole Dia. (in.) + .0010 - .0000	Outer Dia. (in.) + .0000 - .0005	Inner Dia. (in.) ± .01	Outer Ring Max. Width (in.)	Inner Ring Max. Width (in.)			
EE12032	0.92	0.2500	1.0000	0.64	0.405	0.476	8,800	2,600	390
EE12033	0.92	0.2500	1.0000	0.64	0.405	0.476	3,800	1,100	165
EE12034	1.05	0.3125	1.1250	0.77	0.404	0.571	12,200	5,500	550
EE12035	1.05	0.3125	1.1250	0.77	0.404	0.571	7,300	3,300	330
EE12036	1.17	0.3750	1.2500*	0.80	0.655	0.755	52,000	10,800	1,200

*Note: Outer diameter tolerance is +.0000/-0.0010



We provide energy absorption and vibration isolation solutions to meet customers challenging application demands.

Our extensive knowledge and experience within multiple industries enable us to provide our customers with superior analysis, products, services and support.

Elastomeric Isolation Mounts Applications:

- Pump, Generator & Compressor Isolation
- Shipping Cases, Skids & Containers
- Chemical Processing Equipment
- Carts, Transporters & Gurneys
- Chimneys, Scrubbers & Vessels
- Power Plant Piping Suspension
- Over-the-road Transport
- Navigation Equipment
- Transportable Shelters
- Electronic Cabinets
- Seismic Isolation

Enidine

7 Centre Drive
Orchard Park, New York 14127 • USA
Phone: 716-662-1900
Fax: 716-667-1909
Email: industrialsales@enidine.com
www.enidine.com