



# Custom Engineered Dampers/Rate Controls

With Innovative Design Features  
for All Motion Control Applications

FROM THE ENERGY ABSORPTION TECHNOLOGY LEADER

# Controlled Damping

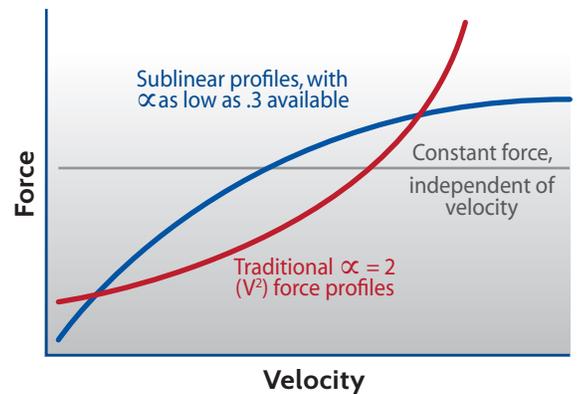
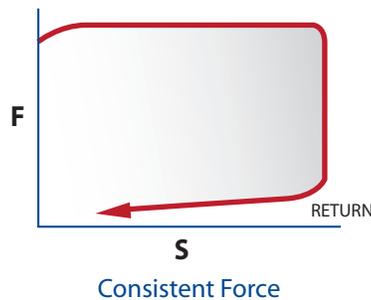
## Damping Modes:

✓ KYNTEC SOLUTIONS		DESIRED DAMPING			
		STEADY	INCREASING	DECREASING	INTERMITTENT
APPLIED LOAD	Extension	✓	✓	✓	✓
	Compression	✓	✓	✓	✓
	Both	✓	✓	✓	✓

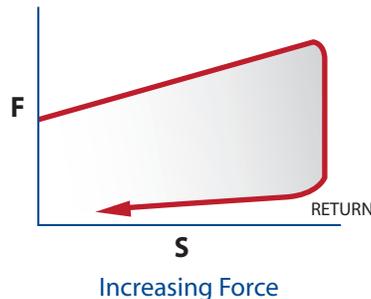
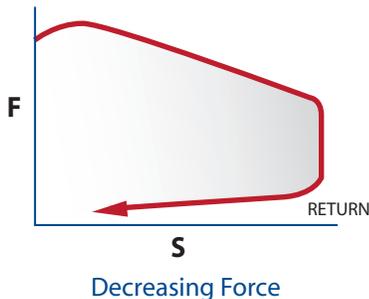
## Constant or Variable Load Damping

(Extension or Retraction Mode)

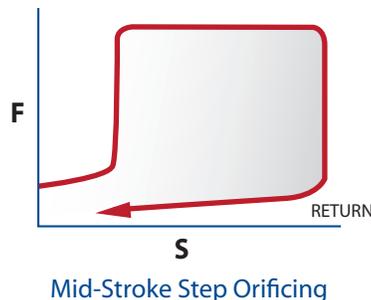
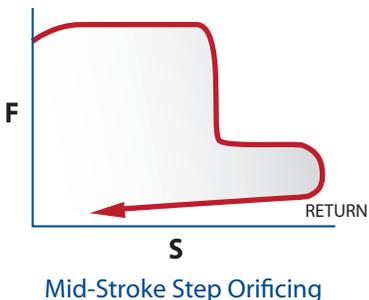
### CONSTANT DAMPING



### VARIABLE DAMPING



### INTERMITTENT DAMPING



Hydraulic dampers/rate controls are velocity sensitive devices, usually expressed as  $F = CV^\alpha$ . KYNTEC designs product to provide the exact force profile (or profiles) needed by carefully selecting fluids, orificing, and mechanical elements to perform over the design operating range.

## KYNTEC Engineered Performance

Using advanced structural and fluid dynamic computations, KYNTEC will design a damper/rate control using the exact fluid chemistry, viscosity, orificing and mechanical elements to engineer your exact solution.

- Damping that changes with stroke position.
- Tension Only, Compression Only, and bidirectional designs available.
- Fixed, Selectable, Adjustable and Self-Compensating configurations available.
- Predictable consistent performance over a wide range of loads and temperatures.

# Configurations

## Application or Environment Driven Design

AREA OF CONCERN	KYNTEC SOLUTION
Temperature	Constant Damping Rate
Weight	Polymer Configuration
Corrosion	Stainless Steel Option
Dirt/Dust	Wipers/Bellows
Vacuum	Out-Gassing Control



### Spring Actuators

*Integrated actuation options are available (shown), providing constant assist or resisting force independent of temperature.*



## Uniquely From KYNTEC

**Integrated actuation with speed regulation for industrial and aerospace.** Our integrated product can provide lift-assisting force, while simultaneously providing precise speed control for intended motion within the application. Examples include overhead storage bins in aircrafts, hideaway shelves in document storage, and swing-down shelves in fire apparatus.

## Versatility of Design

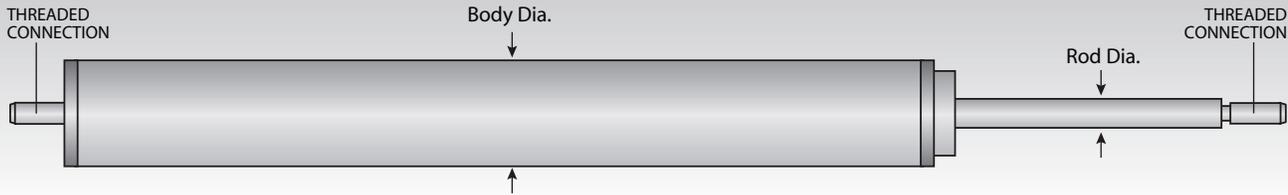
**KYNTEC Dampers/Rate Controls** are used in applications related to gas & oil production, pharmaceutical manufacturing, food processing, material handling, industrial automation, and much more.

- **Fully mechanical, gas-charged, or hydraulic** design options available to deliver precisely the performance desired in your application.
- **Low sensitivity to operating temperature extremes** – designed to work without modification from -30°F to 180°F, with an even more extended range possible with optional fluid and seal materials.
- **Integrated locking position control** and/or **lifting force assist** possible in all designs, providing a fully passive controlled actuator.
- **Self-Contained Passive Systems** provide years of reliable maintenance-free operation while providing protection for your valuable capital equipment and your people.
- **KYNTEC Quick Delivery** provides rapid turn-around times for your critical programs and projects saving you valuable time.

### Custom Design Models

**Contact KYNTEC at 1.855.652.6666 with your special requirements.**

# Comprehensive Product Range



Overall length and compressed length are dependent on the stroke and mounting options selected. Contact KYNTEC Engineering for your exact dimensions. Custom stroke lengths to fit your specific application are available.

## Technical Data

Model Number	Damping Direction*	Stroke (in)	Tension (lbs)	Max Propelling Force		Rod Dia. (in)	Body Dia. (in)	Mounting Options
				Compression (lbs)	Maximum in-lbs/hour			
CD45	T, C or T and C	2 - 10	450	125 - 450	700,000	0.31	1.25	Multiple Mounting Options available (see website for details)
CD250	T, C or T and C	2 - 32	2,500	700 - 2,500	1,100,000	0.55	1.78	
CD500	T, C or T and C	2 - 12	5,000	5,000	2,700,000	0.75	3.00	
CD1000	T and C	2 - 12	10,000	10,000	4,400,000	1.00	4.00	
CD2250	T and C	2 - 12	22,500	22,500	5,700,000	1.00	5.00	
CD3000	T and C	2 - 12	30,000	30,000	6,200,000	1.25	5.50	
CD4500	T and C	2 - 12	45,000	45,000	7,700,000	1.50	6.25	

Specifications subject to change without notice. Visit [www.kyntec.com](http://www.kyntec.com) for up-to-date info.

\*T-Tension, C-Compression.

### Vibration Damper ▶

Dampers are available standard in corrosion resistant 316, Suplex, or Duplex stainless steels, and in fixed (shown), adjustable, or self-compensating trim models.



### ◀ Crane Damper/ Rate Control

Large, high-capacity dampers shown with optional bellows for increased environmental protection in severe environments, including operating temperatures from -30°F to 180°F.



### ▲ Miniature Devices

Custom miniature tension, compression, or combined devices available, providing controlled motion in the smallest of packages and to fit every budget.



### Material Flexibility ▲

Multiple material options available, including aluminum, stainless steel, carbon steel and advanced high-strength engineered polymers which exceed aerospace industry smoke, toxicity and flammability requirements.

# Engineered for Air, Land, Sea and Space

**KYNTEC Custom Solutions** provide reliable and repeatable speed control, vibration isolation or lift assistance for applications in extreme environments, critical manufacturing processes, and miles above the earth. We will custom design our rate controls from any exotic material including All Stainless Steel Alloys, Duplex and Super Duplex Stainless Steels, and any special alloy your design requires. We stand by the belief that our product is an extension of ourselves and we produce the highest quality self-contained damping systems. When the situation requires special attention to detail, the solution is KYNTEC.



## Aircraft Interior

*KYNTEC dampers/rate controls perform many functions on board the world's commercial aircraft fleets. Our devices recline passenger seats, actuate stowage bins, engine cowlings and crew seats. When leaders in the aircraft industry need custom solutions they call KYNTEC.*



## Defense

*KYNTEC's world class patented Engineering Division has been involved in Defense projects ranging from protecting onboard ship systems to ensure safe delivery of high explosive armaments. Our focus on high quality stainless steel construction performs better on the world's oceans in the highly corrosive salt spray environments. KYNTEC's attention to detail provides the protection our armed forces personnel require for their weapon and detection systems.*



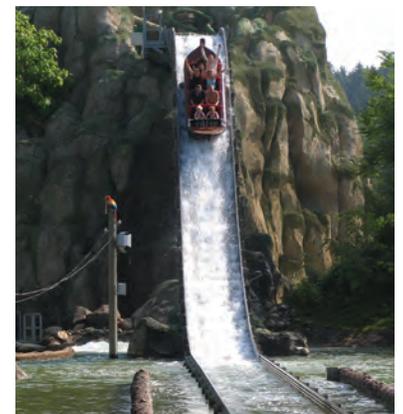
## Oil & Gas

*Upstream Oil and Gas professionals face the same extreme environment challenges as our military personnel. KYNTEC's rate controls work on oil rigs in the frozen North Sea to the Gulf of Mexico. Our passive and inert systems are especially well suited for the hazardous nature of work on ocean oil platforms.*



## Crane and Material Handling

*The movement of shipping containers at America's busy sea ports requires several components produced by KYNTEC Corporation. The amount of kinetic energy involved at altitude makes this application mission critical to our nation's supply chain. KYNTEC supplies fully stainless steel devices to manage the sway involved with swinging loads and rugged heavy duty shock absorbers to decelerate major masses in motion.*



## Amusement Park Rides

*KYNTEC's dampers/rate controls provide engineered solutions for theme park ride manufacturers with equal attention to detail. The safe and enjoyable operation of rides is top priority for KYNTEC.*

# KYNTEC Products & Capabilities



## Severe Service Shock Absorbers

Maximum flexibility with KynSHOC hydraulic shock absorbers. Each model adjusts easily to replace multiple individual shock absorber configurations. A turn of the adjustment knob is all that is required to deliver a variety of force vs. stroke profiles.



## High Capacity Shock Mounts

Extreme high energy absorption capabilities in small envelopes using hydraulic, viscoelastic, and hybrid technologies to deliver optimum performance for shock mounts, safety shock absorbers, and robust industrial applications. Available standard in stainless steel to survive the most extreme operating environments.



## Recoil Mitigation Buffers

KynSHOT hydraulic recoil dampers reduce wear and tear, cut down on shoulder fatigue and get and stay on target quicker. Visit us online at [www.kynshot.com](http://www.kynshot.com) to learn more.



## Engineered Protection

**KYNTEC:** Our personnel have decades of experience as leaders in the global kinetic energy management field. Solving shock, vibration and motion control problems is what we do best and we hold ourselves to the highest standards. Our company culture encourages engineering excellence and innovation in providing you with real world solutions. We embrace change, while adhering to core values of honesty and respect for others.



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