

# KINETICS™

## Seismic Control Spring Isolators Model FHS

- All-directional restraint with vertical limit stops.
- Field-interchangeable spring coils.
- Galvanized housing and epoxy powder-coated coils.
- Constant free height & operating height.
- Equipment motion limited to 0.2" ( 5 mm) in all directions, at the isolator.
- California Pre-Approval Number R-0433

### Description

Model FHS Seismic Control Spring Isolators meet specifications for Kinetics Model FDS isolators and include a steel housing assembly to limit both lateral and vertical movement of the supported equipment during an earthquake without degrading the vibration isolation of the spring during normal equipment operating conditions.

Standard FHS isolators incorporate a steel housing which encloses a neoprene snubber. Depending on the load and seismic zone, an optional steel load spreader plate may be applied to distribute the load among concrete anchors. A neoprene pad fitted in series with the spring is provided. Equipment attachment is by way of a bolt screwed downward through the equipment foot. Removal of the isolator for servicing can be easily accomplished as the isolator is not fitted with a protruding stud. In conformance with all current building code standards, the restraining system is designed to withstand a minimum 1.0 g acceleration force. Equipment motion is limited to approximately 0.2" (5 mm) in any direction, at the isolator.



### Application

Kinetics Model FHS Seismic Control Spring Isolators are recommended for noise and vibration isolation for mechanical equipment located near critically quiet areas when there is a possibility that the equipment to be isolated will be subjected to the external forces associated with an earthquake. Model FHS isolators are used to reduce the transmission of noise and vibration into supporting structures from supported mechanical equipment. Motion during an earthquake which would otherwise displace life support and emergency equipment is limited, and the equipment remains in position. Anchorage of Model FHS isolators should be designed by a professional engineer and isolators selected based on calculated anticipated forces.

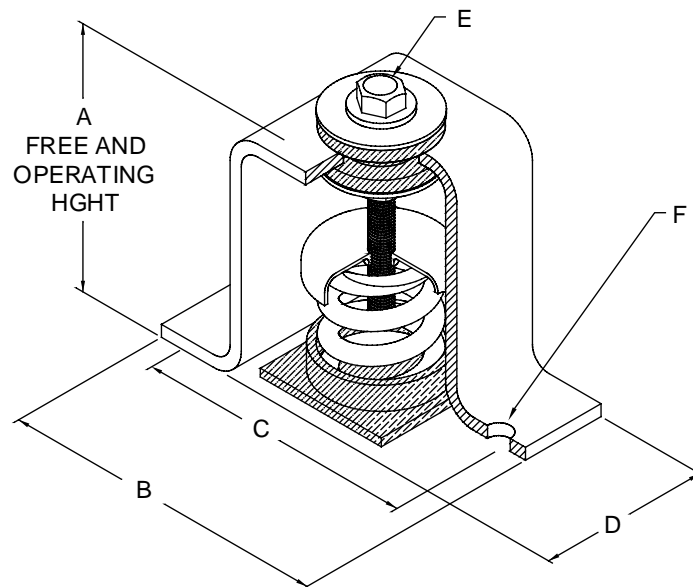
### Specifications:

Spring isolators shall be seismic control restrained spring isolators, incorporating a single vibration isolator, having all the characteristics of Model FDS open spring isolators as previously specified. Springs shall be restrained using a housing engineered to limit both lateral and vertical movement of the supported equipment during an earthquake without degrading the vibration isolation of the spring during normal equipment operating conditions.

Vibration isolators shall incorporate a steel housing and snubbing grommet system designed to limit motion to approximately 0.2" (5 mm) in any direction and to prevent any direct metal-to-metal contact between the supported member and the fixed housing. The restraining system shall be designed to withstand a force equivalent to 1.0 g in any lateral or vertical direction without yield or failure. Where the capacity of the anchorage hardware in concrete is inadequate for the required seismic loadings, an adapter plate to allow the addition of more or larger anchors will be fitted to fulfill these requirements. In addition to the primary isolation spring, the load path will include a minimum 0.25" (6 mm) thick neoprene pad.

To facilitate servicing, the isolator will be designed in such a way that it can be removed without the requirement to lift or otherwise disturb the supported equipment.

Spring isolators shall be Model FHS as manufactured by Kinetics Noise Control.



Isolator Type	Spring Color	Rated Capacity Lbs (kg)	Rated Deflection In (mm)	Spring OD In (mm)	A In (mm)	B In (mm)	C In (mm)	D In (mm)	E In (mm)	F In (mm)
FHS-1-35	Blue	35 (16)	1.52 (39)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-70	Green	70 (32)	1.36 (35)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-120	Gray	120 (54)	1.18 (30)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-220	Brown	220 (100)	1.07 (27)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-370	Orange	370 (168)	0.96 (24)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-500*	Beige	500 (227)	1.00 (25)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-600*	Chrome	600 (272)	1.00 (25)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-700*	Bge/Wht	700 (318)	1.00 (25)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-805*	Chr/Wht	805 (365)	1.01 (26)	1.75 (44)	6.00 (152)	7.31 (186)	5.93 (152)	3.00 (76)	0.50 (13)	0.44 (11)
FHS-1-250	Blue	250 (113)	1.79 (45)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-450	Green	450 (204)	1.54 (39)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-625	Black	625 (283)	1.44 (37)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-800	Gray	800 (363)	1.31 (33)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-1000	Red	1000 (454)	1.15 (29)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-1250	Brown	1250 (567)	1.09 (28)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-1700*	Orange	1700 (771)	0.95 (24)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-2200*	Org/Gry	2200 (998)	1.00 (25)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-2465*	Blue	2465 (1118)	1.00 (25)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-2865*	Blue/Gry	2865 (1300)	1.00 (25)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-1-3500*	Blu/Brn	3500 (1588)	1.00 (25)	3.00 (76)	7.56 (192)	9.53 (242)	7.77 (198)	5.00 (127)	0.63 (16)	0.81 (21)
FHS-2-100	Gray	100 (45)	2.00 (51)	3.50 (89)	9.31 (237)	10.38 (264)	8.88 (226)	5.00 (127)	0.50 (13)	0.69 (16)
FHS-2-250	Blue	250 (113)	2.00 (51)	3.50 (89)	9.31 (237)	10.38 (264)	8.88 (226)	5.00 (127)	0.50 (13)	0.69 (16)
FHS-2-500	Green	500 (227)	2.00 (51)	3.50 (89)	9.31 (237)	10.38 (264)	8.88 (226)	5.00 (127)	0.50 (13)	0.69 (16)
FHS-2-750	Black	750 (340)	2.00 (51)	3.50 (89)	9.31 (237)	10.38 (264)	8.88 (226)	5.00 (127)	0.50 (13)	0.69 (16)
FHS-2-995*	Orange	995 (451)	2.00 (51)	3.50 (89)	9.31 (237)	10.38 (264)	8.88 (226)	5.00 (127)	0.50 (13)	0.69 (16)
FHS-2-1400*	Org/Grn	1400 (635)	2.01 (51)	3.50 (89)	9.31 (237)	10.38 (264)	8.88 (226)	5.00 (127)	0.50 (13)	0.69 (16)
FHS-2-1600*	Red	1600 (726)	2.00 (51)	3.50 (89)	9.31 (237)	10.38 (264)	8.88 (226)	5.00 (127)	0.50 (13)	0.69 (16)
FHS-2-1975*	Red/Grn	1975 (896)	1.98 (50)	3.50 (89)	9.31 (237)	10.38 (264)	8.88 (226)	5.00 (127)	0.50 (13)	0.69 (16)
FHS-2-2000	Orange	2000 (907)	2.00 (51)	5.00 (127)	11.38 (289)	11.50 (292)	9.74 (248)	6.00 (152)	0.75 (19)	1.06 (22)
FHS-2-2500	Blue	2500 (1134)	2.00 (51)	5.00 (127)	11.38 (289)	11.50 (292)	9.74 (248)	6.00 (152)	0.75 (19)	1.06 (22)
FHS-2-2750	Blue/Blu	2750 (1247)	2.00 (51)	5.00 (127)	11.38 (289)	11.50 (292)	9.74 (248)	6.00 (152)	0.75 (19)	1.06 (22)
FHS-2-3025	Blu/Grn	3000 (1372)	2.02 (51)	5.00 (127)	11.38 (289)	11.50 (292)	9.74 (248)	6.00 (152)	0.75 (19)	1.06 (22)
FHS-2-3500*	Blu/Org	3500 (1588)	2.00 (51)	5.00 (127)	11.38 (289)	11.50 (292)	9.74 (248)	6.00 (152)	0.75 (19)	1.06 (22)
FHS-2-3900*	Blu/Org/Grn	3900 (1769)	2.00 (51)	5.00 (127)	11.38 (289)	11.50 (292)	9.74 (248)	6.00 (152)	0.75 (19)	1.06 (22)
FHS-2-4100*	Blu/Red	4100 (1860)	2.00 (51)	5.00 (127)	11.38 (289)	11.50 (292)	9.74 (248)	6.00 (152)	0.75 (19)	1.06 (22)
FHS-2-4500*	Blu/Red/Grn	4500 (2041)	2.00 (51)	5.00 (127)	11.38 (289)	11.50 (292)	9.74 (248)	6.00 (152)	0.75 (19)	1.06 (22)
FHS-4-100	Gray	100 (45)	4.00 (102)	5.63 (143)	14.13 (359)	12.25 (311)	10.63 (269)	7.00 (178)	0.63 (16)	0.69 (16)
FHS-4-250	Blue	250 (113)	4.00 (102)	5.63 (143)	14.13 (359)	12.25 (311)	10.63 (269)	7.00 (178)	0.63 (16)	0.69 (16)
FHS-4-500	Green	500 (227)	4.00 (102)	5.63 (143)	14.13 (359)	12.25 (311)	10.63 (269)	7.00 (178)	0.63 (16)	0.69 (16)
FHS-4-750	Black	750 (340)	4.00 (102)	5.63 (143)	14.13 (359)	12.25 (311)	10.63 (269)	7.00 (178)	0.63 (16)	0.69 (16)
FHS-4-1000*	Red	1000 (454)	4.00 (102)	5.63 (143)	14.13 (359)	12.25 (311)	10.63 (269)	7.00 (178)	0.63 (16)	0.69 (16)
FHS-4-1250*	Brown	1250 (567)	4.00 (102)	5.63 (143)	14.13 (359)	12.25 (311)	10.63 (269)	7.00 (178)	0.63 (16)	0.69 (16)
FHS-4-1600*	Orange	1600 (726)	4.00 (102)	5.63 (143)	14.13 (359)	12.25 (311)	10.63 (269)	7.00 (178)	0.63 (16)	0.69 (16)
FHS-4-2250	Beige	2250 (1021)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-2500	Bge/Blu	2500 (1134)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-2750	Bge/Grn	2750 (1247)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-3000	Bge/Blk	3000 (1361)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-3250	Bge/Red	3250 (1474)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-3500	Bge/Brn	3500 (1588)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-3850*	Bge/Org	3850 (1746)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-4200*	Chrome	4200 (1905)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-4450*	Chr/Blu	4450 (2018)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-4700*	Chr/Grn	4700 (2132)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-4950*	Chr/Blk	4950 (2245)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-5200*	Chr/Red	5200 (2359)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-5450*	Chr/Brn	5450 (2472)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)
FHS-4-5800*	Chr/Org	5800 (2631)	4.00 (102)	8.00 (203)	16.19 (411)	14.75 (375)	12.87 (327)	10.00 (254)	0.88 (22)	1.06 (22)

\*May require optional adapter plate for seismic zone 2 or greater

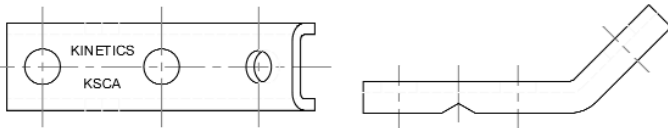
# KINETICS™

## Seismic Restraint for Isolated and Suspended Mechanical Equipment

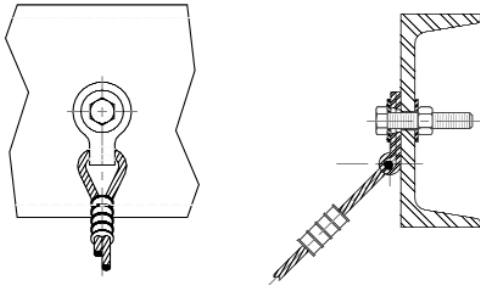
for -

- Piping
- Fans
- VAV & Fan Terminal Boxes
- Silencers & Mufflers
- Ductwork
- Air Handlers

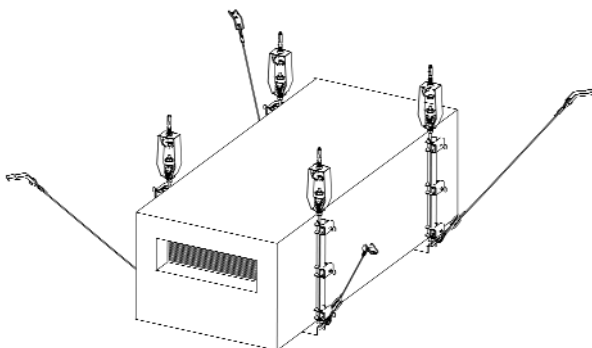
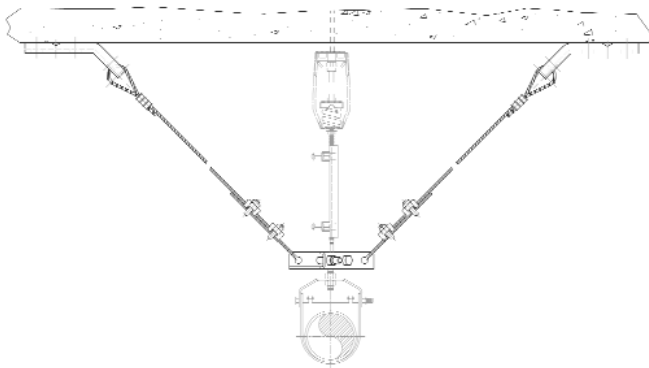
### Kinetics KSCA Cable Attachment Bracket



### Kinetics KSUA Cable Attachment Bracket



### Kinetics Seismic Cable Restraint Kit



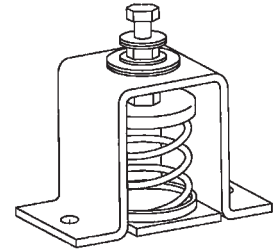
# KINETICS™

## Floor-Mounted Seismic Restraints

### Seismic Control Spring Isolators

#### Model FHS

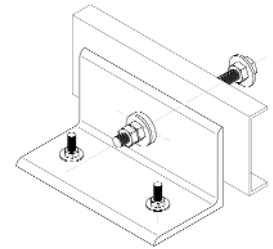
- Combination spring isolator & seismic restraint
- All-directional restraint with vertical limit stops



### Seismic Snubber

#### Model HS-5

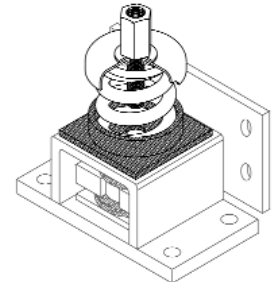
- Double-axis horizontal and vertical seismic restraint
- Standard capacities to 3,275 lbs. (1486 kg)
- Can be bolted or welded in place



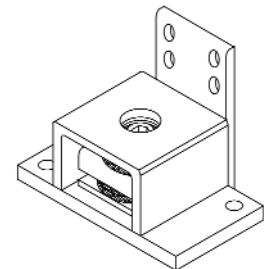
### Modular Restraint/Isolator

#### Model FMS

- Can be used as a restraint device or as a seismically rated vibration isolator assembly
- Restraint components are available in 8 sizes with horizontal force ratings to 70,000 lbs. (31, 751 kg)
- Standard isolation elements are available to 4" deflection with support capacities to 23,000 lbs. (10433 kg)
- Ideal for equipment mounted on structural frame or concrete inertia bases



Kinetics FMS with isolator



Kinetics FMS without isolator



#### United States

6300 Ireland Place  
P.O. Box 655  
Dublin, Ohio 43017  
Phone: 614-889-0480  
Fax: 614-889-0540

#### Canada

1720 Meyerside Drive  
Mississauga, Ontario  
L5T 1A3  
Phone: 905-670-4922  
Fax: 905-670-1698

[www.kineticsnoise.com](http://www.kineticsnoise.com)  
[sales@kineticsnoise.com](mailto:sales@kineticsnoise.com)

Kinetics Noise Control, Inc. is continually upgrading the quality of our products. We reserve the right to make changes to this and all products without notice.