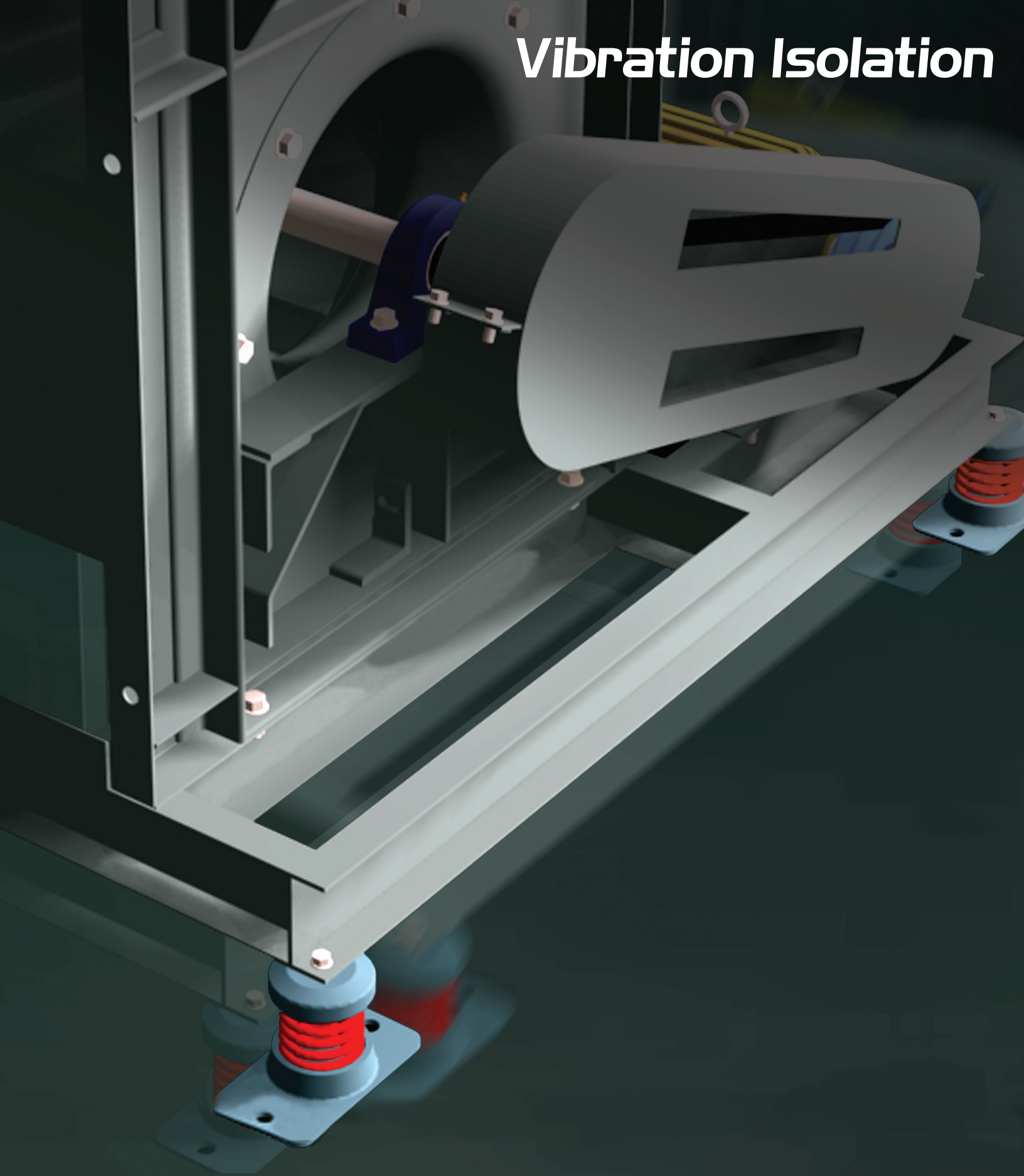


# Vibration Isolation



**COOK**

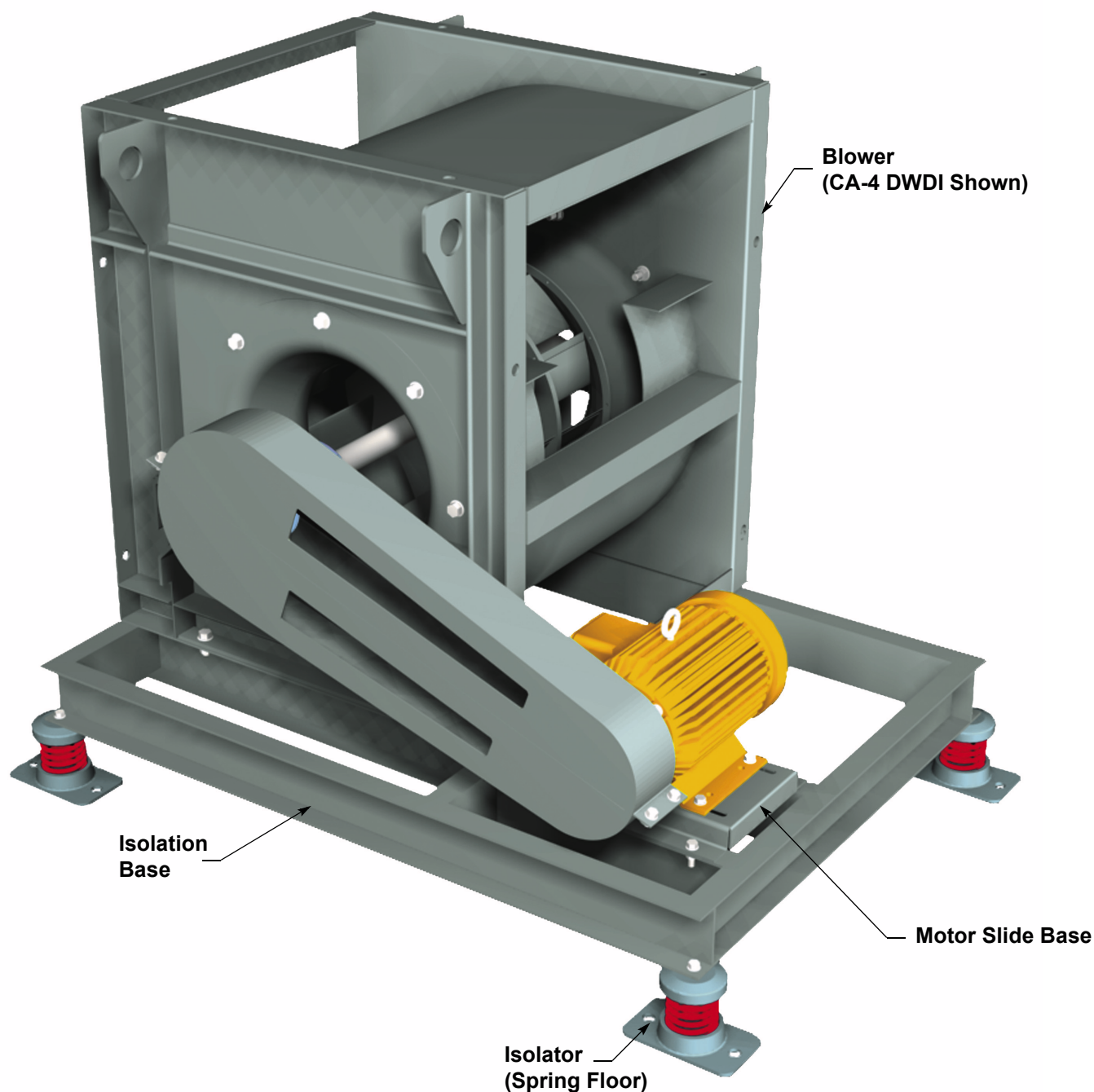
# Introduction

Loren Cook Company offers a full line of vibration isolation products. This offering includes: rubber-in-shear and spring isolators, isolation rails and bases, and inertia bases.

As society has become more sensitive to noise in the environment, reducing noise and vibration has become a critical component of design. Since all mechanical equipment produces vibration, proper isolation is necessary to prevent the transmission of this noise and vibration to the building structure.

By purchasing this isolation equipment and the fan directly from Loren Cook, the customer is assured of proper fit and coordinated delivery. Isolation bases purchased with the fan are normally tested and shipped with the fan pre-mounted. Isolators are shipped loose.

## Example Configuration



## Mounting Selection

The following chart shows the mounting options available for Cook blowers. The first selection moving across the chart represents the lowest cost mounting solution. The selections shown are minimum recommendations for slab on grade installations. The mass and stiffness of the fan and support system and installation factors, as well as cost, can all influence isolation selection. See ASHRAE 2003 HVAC Applications, Chapter 47 for more information.

Fan Type	Arr.	Size	Mounting Selection (Fan Class)			
			Isolators Only	Isolation Rails	Isolation Base	Inertia Base
CPS, CPA, CPV	10	60-270	1	1	1	1
		300-490	N/A	1	1	1
CA-SWSI, CF	1	All	N/A	N/A	1, 2	1, 2, 3*
	3	All	N/A	N/A	1, 2	1, 2, 3*
	9, 10	120-270	1	1	1, 2	1, 2, 3
		300-730	N/A	1	1, 2	1, 2, 3
CA-DWDI	3	All	N/A	N/A	1, 2	1, 2, 3
IMH	1	All	N/A	N/A	1, 2	1, 2, 3
	9, 10	70-170	All	All	All	All
		190-290	N/A	All	All	All
PLC	1	All	N/A	N/A	1, 2	1, 2, 3
	3	All	N/A	N/A	1, 2	1, 2, 3
	3V	All	1	N/A	1, 2	N/A
	3S	All	1	N/A	1, 2	1, 2
	3T	All	1	N/A	1	1
CIC	1	All	N/A	N/A	1, 2, 3	1, 2, 3
	9 (Horz. Ceiling)	120-490	1	N/A	N/A	N/A
		540-730	1, 2, 3	Incl.	N/A	N/A
	9 (Horz. Floor)	All	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3
QMX	9 (Vert.)	All	1, 2, 3	1, 2, 3	1, 2, 3	N/A
	3, 9 (Horz.)	All	All	All	All	All
	3, 9 (Vert.)	All	All	All	All	N/A
TCN	9 (Horz.)	All	All	All	All	All
	9 (Vert.)	All	All	N/A	N/A	N/A

\*Class 3 available in Arrangement 9 only.

## Isolator Selection

The following process represents the basic steps to determine the proper type of isolator for a fan or blower. Consult ASHRAE 2003 HVAC Applications, Chapter 47 for more detailed guidelines.

1. Using Chart 1, determine the isolator efficiency required for the application.
2. Next, use Chart 2 to determine the static deflection based on the previously determined isolator efficiency and fan RPM.
3. Locate the appropriate isolator type in Chart 3 based on the static deflection and the application.

### Chart 1

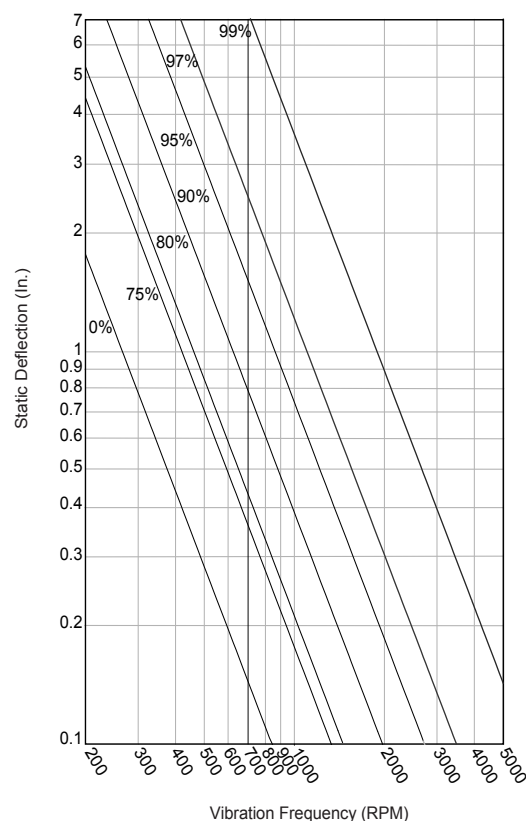
RPM	Isolator Efficiency (%)	
	Standard	Critical
0-450	75	90
451-850	90	95
851 >	95	97

### Chart 3

Deflection	Application	Isolator Type
.25"	Floor	RF (RIS Floor)
	Ceiling	RC (RIS Ceiling)
.5"	Floor	RF2 (RIS Floor)
	Ceiling	RC2 (RIS Ceiling)
1" - 4"	Floor	
	Indoor	SF (Open Spring - Floor)
	Outdoor/Restrained Motion	RS (Restrained Spring - Floor)
	Indoor Limited Side Motion	HF* (Housed Spring - Floor)
	Ceiling	SC (Spring Ceiling)

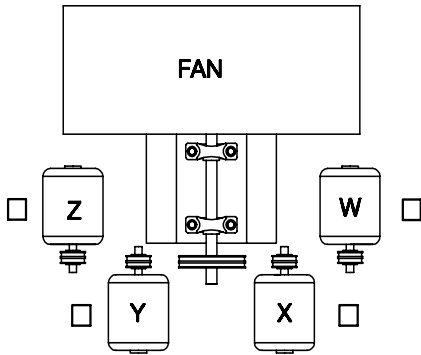
\*HF isolators are available only in 1" deflection.

### Chart 2



# Specification Checklist

## MOTOR POSITION CHART (SELECT POSITION ON ARR 1 & 3 ONLY)



## Fan Information

MODEL	SIZE	CLASS	ARR	ROTATION	DISCH	RPM	BHP

## Motor Information

HP	RPM	VOLTS	HZ	PHASE	TYPE	FRAME

### ☐ Direct Mount

#### ☐ Rubber-in-Shear

☐ Floor (RF)  → Deflection ☐ 1/4" ☐ 1/2"

☐ Ceiling (RC)

#### ☐ Open Spring

☐ Floor (SF)  → Deflection ☐ 1" ☐ 2" ☐ 3" ☐ 4"

☐ Ceiling (SC)

☐ Restrained Spring - Floor (RS) → Deflection ☐ 1" ☐ 2" ☐ 3" ☐ 4"

☐ Housed Spring - Floor (HF) → Deflection ☐ 1"

### ☐ Isolation Rails

#### ☐ Rubber-in-Shear

☐ Floor (RF)  → Deflection ☐ 1/4" ☐ 1/2"

☐ Ceiling (RC)

#### ☐ Open Spring

☐ Floor (SF)  → Deflection ☐ 1" ☐ 2" ☐ 3" ☐ 4"

☐ Ceiling (SC)

☐ Restrained Spring - Floor (RS) → Deflection ☐ 1" ☐ 2" ☐ 3" ☐ 4"

☐ Housed Spring - Floor (HF) → Deflection ☐ 1"

### ☐ Isolation Base

☐ Rubber-in-Shear - Floor (RF) → Deflection ☐ 1/4" ☐ 1/2"

☐ Open Spring - Floor (SF)  → Deflection ☐ 1" ☐ 2" ☐ 3" ☐ 4"

☐ Restrained Spring - Floor (RS)

☐ Housed Spring - Floor (HF) → Deflection ☐ 1"

☐ Special Thickness → Thickness ☐ 4" ☐ 6" ☐ 8" ☐ 10" ☐ 12"

☐ Special Coating Special Coating \_\_\_\_\_

### ☐ Inertia Base

☐ Open Spring - Floor (SF)  → Deflection ☐ 1" ☐ 2" ☐ 3" ☐ 4"

☐ Restrained Spring - Floor (RS)

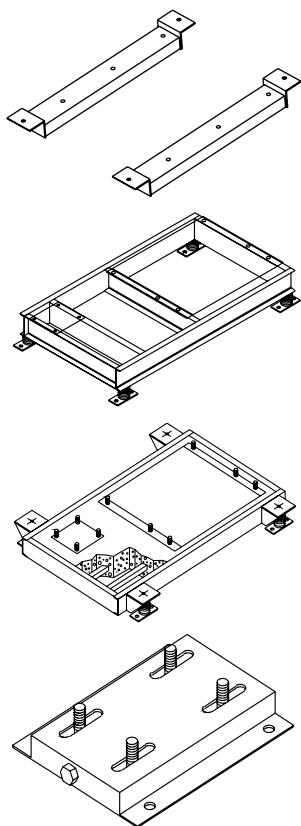
☐ Housed Spring - Floor (HF) → Deflection ☐ 1"

☐ Special Thickness → Thickness ☐ 4" ☐ 6" ☐ 8" ☐ 10" ☐ 12"

☐ Special Coating Special Coating \_\_\_\_\_



## Mounting Options



### Isolation Rails

Isolation rails are required for isolating any Arrangement 9 or 10 fan with a centrifugal wheel diameter of 30 inches or more, unless the fan is supplied with an isolation or inertia base (see below). Smaller fans may benefit from isolation rails if fan attachment points do not coincide with desired mounting locations. Isolation rails, supplied in pairs, are designed to run the full length of the supported equipment and can only be used on fans where the motor is an integral part of the fan. Each rail is constructed of rigid structural steel components coated with the standard factory finish, and are intended to be used in conjunction with two RIS Floor, Spring Floor, or Restrained Spring isolators depending on the needs of the application. They can also be used in ceiling mount applications with RIS Ceiling or Spring Ceiling Isolators. **Isolators are not included with the rails unless otherwise specified.** Optional seismic type isolators are also available; consult factory representative for more information.

### Isolation Base

An isolation base is used to provide a single integral support for the fan and motor in cases where the motor is not an integral part of the fan such as Arrangement 1 and 3. Isolation bases are designed to run the full length of the supported equipment and motor. The base is constructed of structural steel channel (ASTM-A36) sized to resist belt pull and maintain proper alignment between the fan and motor. All connections are fully welded. The isolation base requires an adjustable motor slide base for motor mounting. Isolation bases are provided with mounting holes at each of the four corners and are available with optional rubber-in-shear (RF), spring floor (SF) or housed spring floor (HF) isolators (set of four required). **Isolators are not included with the rails unless otherwise specified.** Optional height saving brackets and seismic type isolators are also available; consult factory representative for more information.

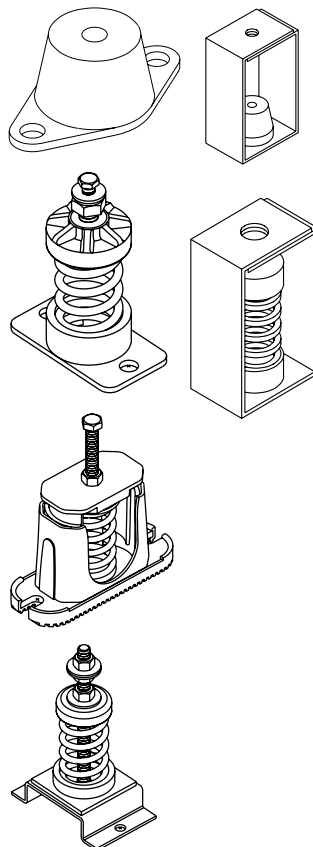
### Inertia Base

Inertia bases are used where additional mass is required to help dampen and dissipate vibration on large or high velocity fan equipment. The added weight allows the use of stiffer springs which further limits movement. The base is designed as a form for concrete which is poured on-site. The base consists of structural steel channel perimeter frame, with angle stiffeners on the interior of the base running in two directions. An adjustable motor slide base is required for motor mounting. Optional spring floor (SF) or housed spring floor (HF) isolators available. Height saving brackets are provided standard. **Isolators are not included with the rails unless otherwise specified.** Optional seismic type isolators are also available; consult factory representative for more information.

### Motor Slide Base

A motor slide base is required for mounting motors on Arrangement 1 and 3 fans and is not included with the isolation or inertia base. The motor slide base must be selected based on the frame size of the motor used.

## Isolator Options



### Rubber-In-Shear (RIS) Isolators

RIS isolators are available in floor (RF) or ceiling (RC) configuration and are generally used for smaller diameter fans (up to 27") and speeds above 1500 RPM. These isolators provide excellent damping qualities and sound absorption and do not require adjustment. Standard RIS isolators are rated for .25" of deflection which is sufficient for most all cases. For critical installations, special .5" deflection isolators (RF2/RC2) are available.

### Open Spring Isolators

Open type spring isolators are available in floor (SF) or ceiling (SC) configuration and are generally used in larger diameter fans (above 27"). These isolators provide additional deflection that is needed for larger, slower RPM applications. Open spring isolators provide minimal lateral support and should not be used in outdoor applications where wind loads or other lateral forces are present. Open spring isolators include rubber mounting for additional sound isolation as well as leveling bolts to compensate for variations in load and deflection. Standard spring isolators are rated for 1" of deflection which is sufficient for most all cases. For critical applications and fans running slower than 400 RPM, special 2" and higher deflection isolators are available.

### Housed Spring Isolators

Housed type spring isolators are available in floor mounted (HF) configuration only and are used in applications similar to open type spring isolators but where additional lateral support is required. These isolators incorporate built-in restraints to resist lateral forces, but do not restrain vertical movement. Housed spring isolators are rated for 1" deflection. Special isolators are available which incorporate vertical restraints and additional deflection. Seismic isolators are also available. Consult factory representative for more information.

### Restrained Spring Isolators

Restrained spring isolators are used in applications similar to open spring isolators but when upward travel due to periodic forces outside the system, such as wind loading, must be limited. They accomplish vertical restraint by means of a long bolt, which extends through the center of the spring and is anchored to the spring base plate. The restraining bolt is also used for leveling. Restrained isolators have the same lateral stability as open springs (approx. 80% of the vertical rating), and provide a minimum of 50% overload capacity. Standard spring isolators are rated for 1" of deflection which is sufficient for most all cases. For critical applications and fans running slower than 400 RPM, special 2" and higher deflection isolators are available.

## Other Options

### Seismic Isolators, Snubbers and Thrust Restraints

Seismic isolators, snubbers, and thrust restraints are available on a special request basis. Please contact your factory representative for information.



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