


VIBRATION ISOLATION & RESTRAINT SYSTEMS

A detailed technical line drawing of a vibration isolation system. The main component is a large, rectangular table with a thick top and four legs. The table is mounted on a base plate. Underneath the table, there are four vertical support columns. One of these columns is shown in a cutaway view, revealing a coiled spring mechanism. The base plate has several circular holes for mounting. In the background, there are faint, overlapping line drawings of other mechanical components, including what looks like a smaller table or a different type of isolation system, suggesting a range of products.

VIBRO-ACOUSTICS 
by Swegon

Our goal is to save you **TIME**

while we reduce your risk.

From scope of supply to delivery lead times, product installation to project management, we are constantly working to save your most valuable asset—your time. Our experience and efforts will help ensure specification and code-compliant solutions, minimizing your risk.

1

Engineering

The right solution is a practical solution.

Simple problems have simple solutions and complex problems can also have simple solutions. We design isolation, support, and restraint systems to be as simple to install as possible. Our practical solutions minimize installation time and help ensure performance objectives and code requirements are met.

Engineering Capabilities	2
Applications	4
Architectural Noise Control	14

2

Project Management

Solutions are not always found in catalogs.

The best solutions often need to be discussed, changed, and managed before being delivered. We work with our customers to understand their needs and help them through the solutions process as efficiently as possible. From kick-off meetings to sign-off letters and everything in between, we customize our solutions to meet project-specific requirements and save time.

Your V-A Project Manager	16
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3

Products

The best products minimize risk, are readily available, and are easy to install.

Vibration control and restraint solutions require installation of components that need to be secured and adjusted. We are dedicated to meeting demanding schedules, and we take pride in delivering our products on time.

Time-Saving Products	18
Product List	22

4

Custom(er) Solutions

Ingenuity and creativity for individual customers.

Our people and processes enable us to provide tailored solutions to every customer for the unique challenges on every project. We do what needs to be done where standard products and processes fall short.

Custom(er) Solutions	24
Technical Challenges	26
Operational and Site Challenges	28

Table of Contents

1 ENGINEERING

OUR ENGINEERING CAPABILITIES

Using an integrated systems approach, Vibro-Acoustics will work on your project's unique needs to assess and address noise, vibration, and restraint challenges. We aim to minimize installation time while ensuring effective vibration control and code compliance, minimizing risks and problems.

2

Equipment Attachments

Our knowledge of buildings and building systems allows us to provide appropriate and practical solutions.

3

Bracing and Restraints

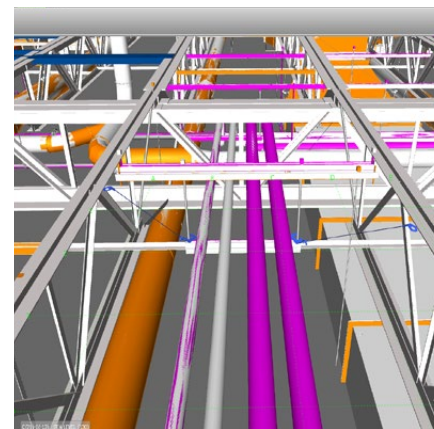
We optimize the number of restraints for suspended components while remaining code compliant.



1

Seismic & Wind Calculations

Using the applicable building codes, we determine forces from earthquakes and wind on non-structural components.



4

3D Markups

We can easily work with 3D drawings to markup restraint locations to help minimize clashes before they happen.

5

Equipment Supports

Our steel frames and inertia bases are easy to install, minimizing the number of isolators and restraints.

6

Pipe Riser Supports

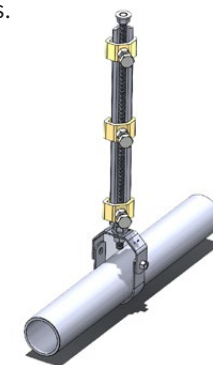
We analyze thermal expansion and contraction of vertical pipe risers and design anchors and resilient supports to control thermal expansion and contraction movement, minimizing stress to the structure and piping connections.



7

Hanger Rod Analyses

We determine hanger rod attachment and sizing to accommodate seismic loads, including adding stiffeners only where required, considering site conditions and load analyses instead of using conservative look-up tables.



8

Vibration Isolation Selections

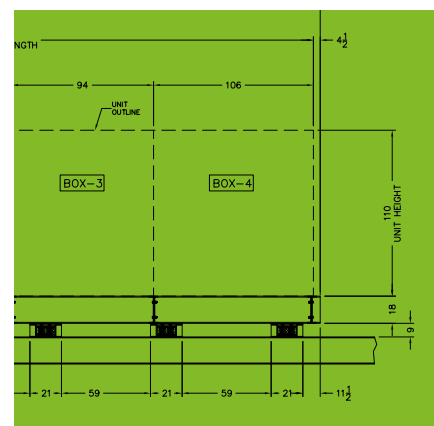
Our noise control expertise can help minimize risks of exceeding background noise or vibration criteria.



9

Architectural Noise Control

We design, supply products for, and help oversee installations of floating floors and ceilings to meet sound isolation requirements between vertically adjacent spaces.



APPLICATIONS

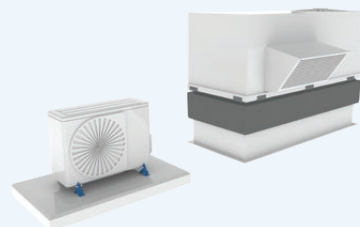
Vibro-Acoustics has both the product and experience to provide vibration isolation and wind/seismic restraint solutions for all HVAC equipment and distribution systems.

PG 8



Air Handling Units

PG 9



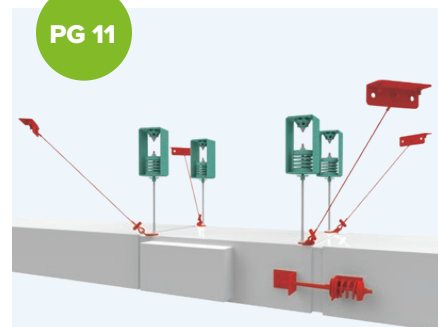
Rooftop Equipment

PG 10



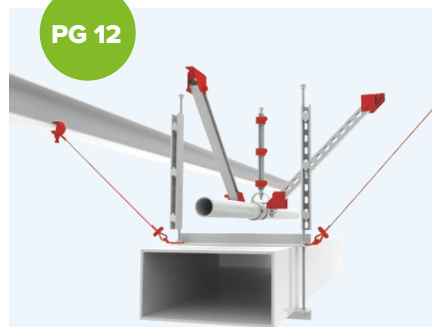
Chillers

PG 11



Suspended Equipment

PG 12



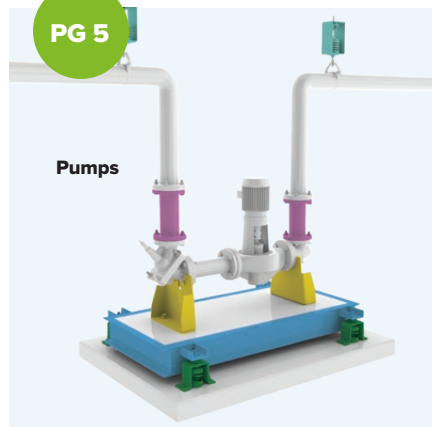
Distribution Systems/
Pipe/Duct/Electrical

PG 6



Cooling Towers

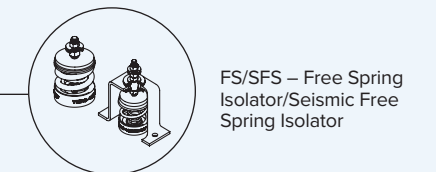
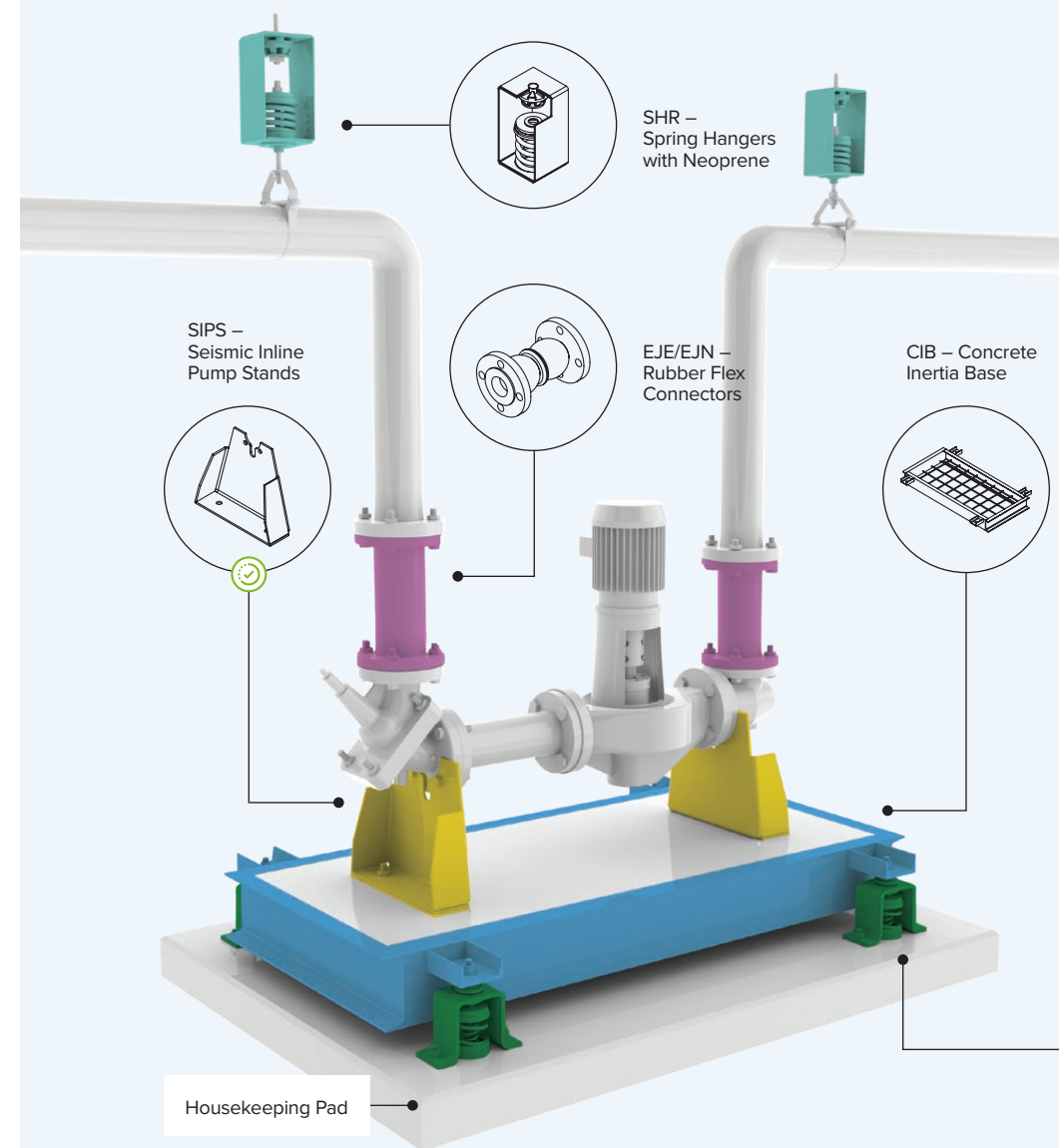
PG 5



Pumps

PUMPS

Support systems that protect, secure, and isolate. Vibro-Acoustics provides multiple support systems for the many kinds and configurations of hydronic pumps used in HVAC systems. Pumps installed near sensitive areas and on upper floors are typically supported with inertia bases on spring isolators that protect the pump from excessive movement and that minimize vibration amplitude and structure-borne noise. Vertical inline pumps can be securely held at a serviceable height with pump stands. Flexible pipe connectors and spring hangers with neoprene are used to minimize vibration transmission through pipes into the structure.



Reduce Risk & Save Time

Engineering Capability

- Housekeeping Pad Design:** Concrete pads need to be adequately secured to the structural floor to transfer loads.
- Inertia Base Design:** Rectangular, L-shaped, or T-shaped to match supported equipment, sized to allow for adequate concrete anchor edge distance, and available with pre-installed hold-down bolt templates to save even more time.
- Seismic Calculation:** Consideration of forces and design of anchorage to prevent excessive movement or overturning.
- Isolator Layout:** Selection and location of a minimal number of isolators to support pumps and associated piping to save time and minimize the risk of structure-borne noise.

Product Highlight

SIPS - Seismic Inline Pump Stands

Practical, strong, and easy-to-install supports for any flanged piping system or inline pump that can resist earthquake forces and be coupled with vibration isolators to minimize structure-borne noise.



U.S. Patent D,699,549
Canadian Industrial Design Registration 142578

COOLING TOWERS

SCSR – Seismic Restrained Spring Isolator

EJE/EJN – Rubber Flex Connector

SPSA – Adjustable Pipe Stand

Height-saving Bracket

Cross Bracing

CTB – Cooling Tower Base
Designed to provide adequate support for towers, transferring gravity, seismic, and wind loads to structure.

Anchoring Attachment
Steel Support Dunnage
Embedment Plate

FSR, Free Spring Rail
Practical low height solution for basic vibration isolation needs.

Reduce Risk & Save Time

Engineering Capability

- Height-saving Brackets:** Standardized or custom engineered brackets meet project specific height requirements
- Wind and Seismic Calculations:** Compliance with code-mandated design-level earthquake and wind forces to address uplift and overturning.
- Anchoring Attachments:** Selection of appropriate welds, fasteners, and anchors to ensure loads are transferred to structure.
- Cross Bracing:** Support frames are designed with bracing to protect equipment and attachments from excessive stress.

Project Management

- Single Source Responsibility:** Vibro-Acoustics helps address all aspects of cooling tower support, isolation, and restraint. We collect, coordinate, and integrate information required to save time and reduce risk through our submittals and solutions.

Product Highlight

SPSA – Adjustable Pipe Stand

Rated for wind and seismic forces, support rooftop equipment piping and save time in adjustments for changing pipe sizes and roof slopes.

HSB – Height-saving Bracket

Eliminate the need to remove or rework existing supports, dunnage, and other rooftop equipment piping with ready-to-install, project specific height-saving brackets.

SCSR – Seismic Restrained Spring Isolator

SCSR comes in pre-compressed spring models to reduce installation time while providing vibration isolation and restraint against wind and seismic forces.

Applications

Overturned cooling tower due to inadequate wind restraints.



VIBRO-ACOUSTICS PROVIDES complete, practical solutions for outdoor equipment for support, vibration isolation, and restraint. We can coordinate with or design roof steel support dunnage and concrete pier embedment plates.

AIR HANDLING UNITS



Reduce Risk & Save Time

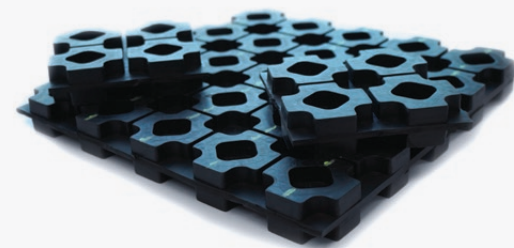
Engineering Capability

-  **Isolation:** Sizing and locating of neoprene pads to match loading and performance requirements, and determining the need for load distribution plates.
-  **Restraint:** Selection of brackets and anchors to hold the unit in place. Design of custom brackets as necessary to match design loads, unit configuration, and supporting structure.

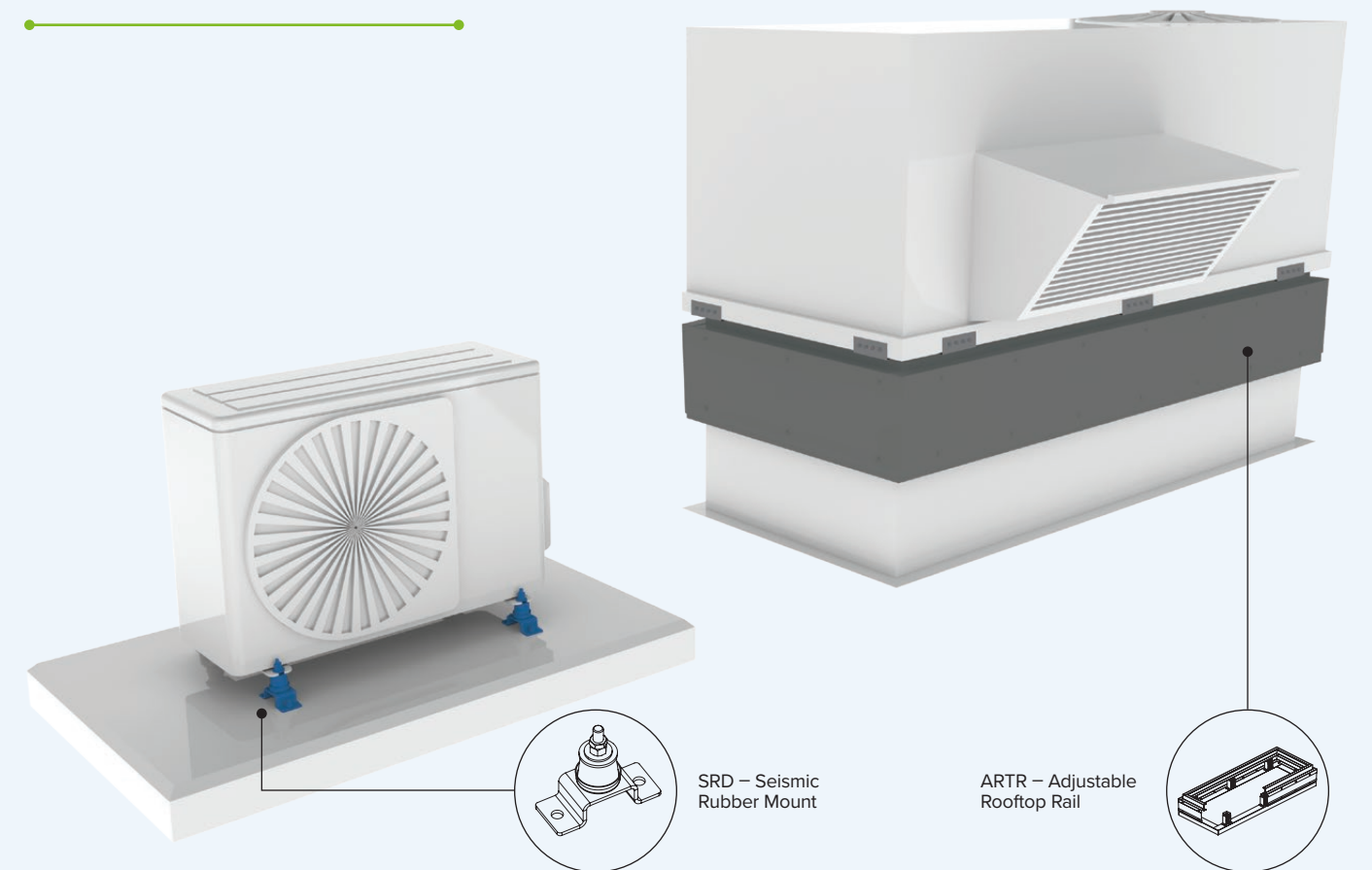
Product Highlight

NP – Neo+ Isolation Pad

Neo+ is designed to allow quick cutting to size and to make holes that accommodate the most common equipment hold-down bolt and anchor sizes.





ROOFTOP EQUIPMENT

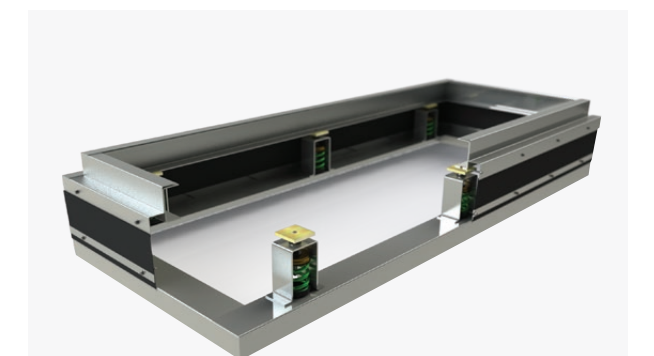


Reduce Risk & Save Time

Engineering Capability

-  **Wind and Seismic Calculations:** Determination of uplift and overturning forces and selection of appropriate attachments to prevent excessive movement due to earthquake and wind forces. Modifications to existing curbs and pedestals to accommodate connections to transfer calculated loads.
-  **Isolation:** Selection and sizing of isolators and isolation rails to meet project specifications and match roof construction.

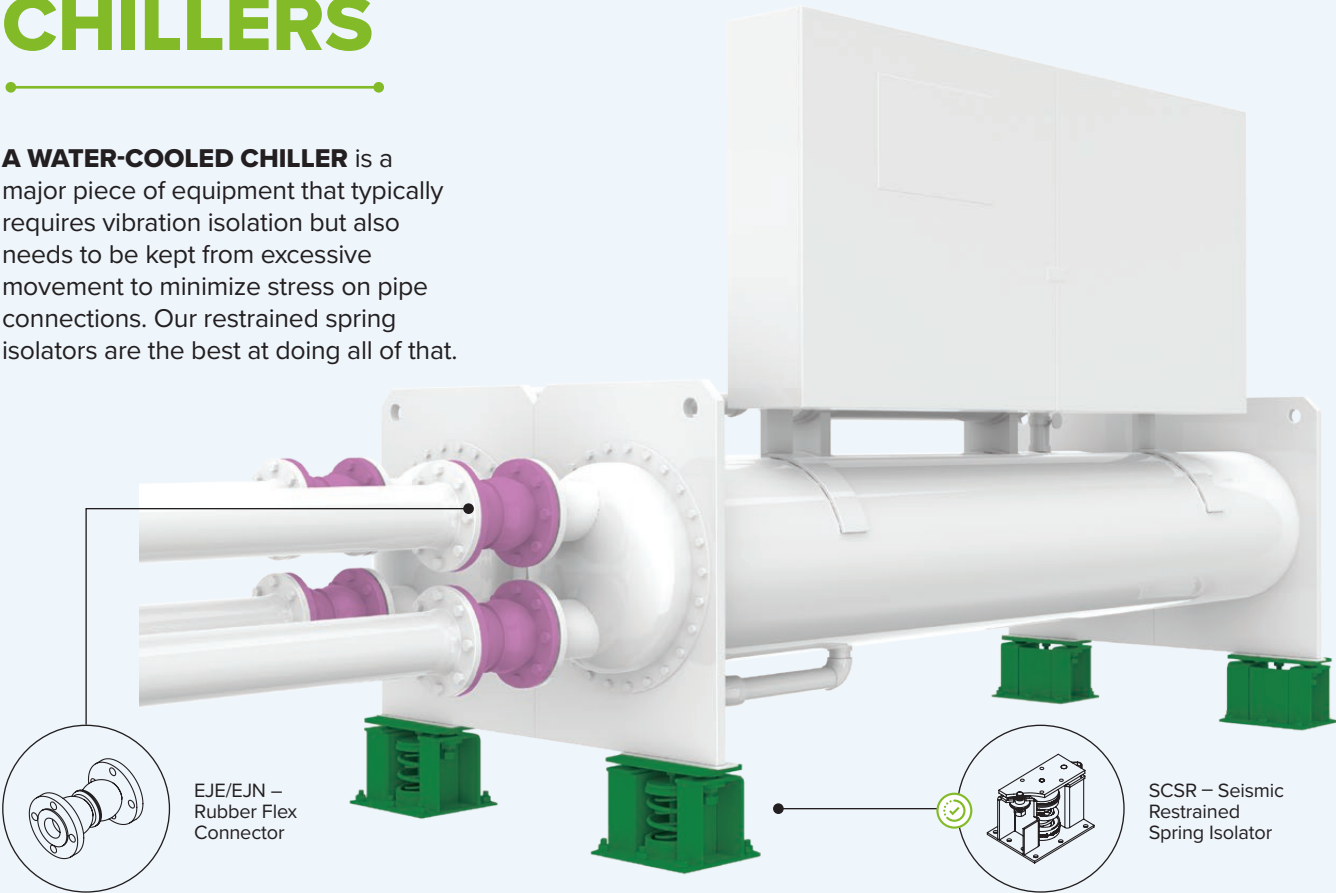
Product Highlight



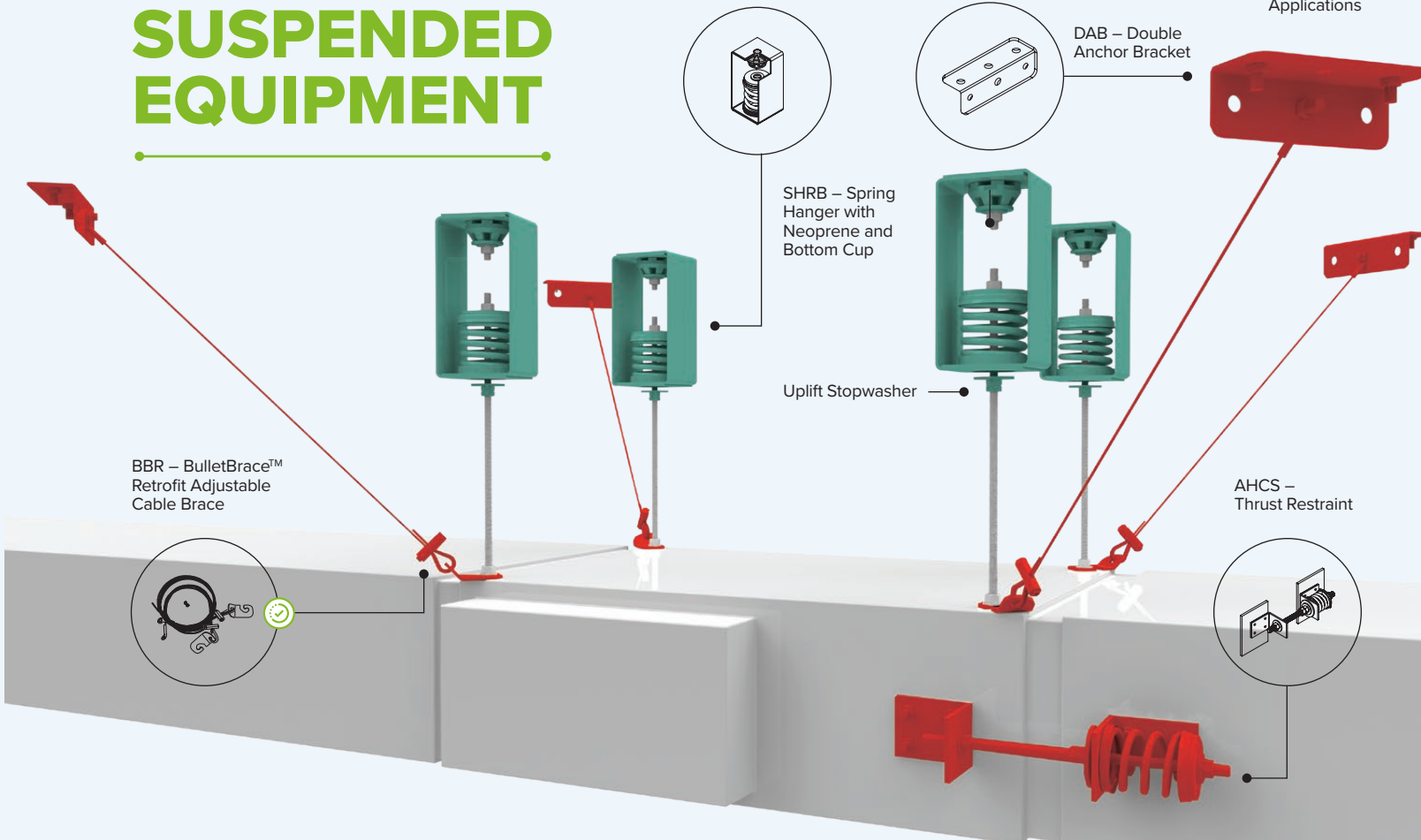
ARTR - Adjustable Rooftop Rail

CHILLERS

A **WATER-COOLED CHILLER** is a major piece of equipment that typically requires vibration isolation but also needs to be kept from excessive movement to minimize stress on pipe connections. Our restrained spring isolators are the best at doing all of that.



SUSPENDED EQUIPMENT



Reduce Risk & Save Time

Engineering Capability

- ✔ **Seismic Calculations:** Determination of earthquake forces that would cause the equipment to move or overturn and design of attachments to prevent excessive movement or failure. Embedded plates may be required to adequately transfer loads to building structure.
- ✔ **Custom Isolation:** Your engineering and design partner in custom isolator and height saving solutions for existing and retrofit projects.

Project Management

- ✔ **Vibro-Acoustics helps** address all aspects of chiller isolation and restraint, including specification requirements and housekeeping pad sizing. We collect, coordinate, and integrate information required to save time and reduce risk through our submittals and solutions.

Product Highlight



Reduce Risk & Save Time

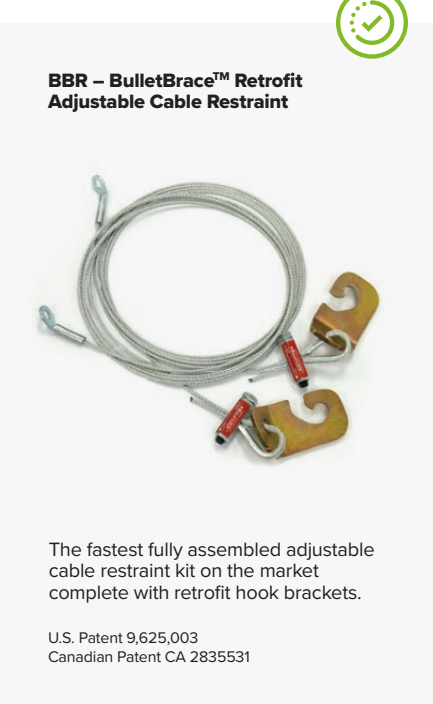
Engineering Capability

- ✔ **Restraint design:** Selection and detailing of appropriate products to provide specified vibration isolation and restraint to meet seismic and anti-terrorism bracing requirements.
- ✔ **3D markups:** Clash detection and avoidance through placement of restraints in 3-dimensional models.

Project Management

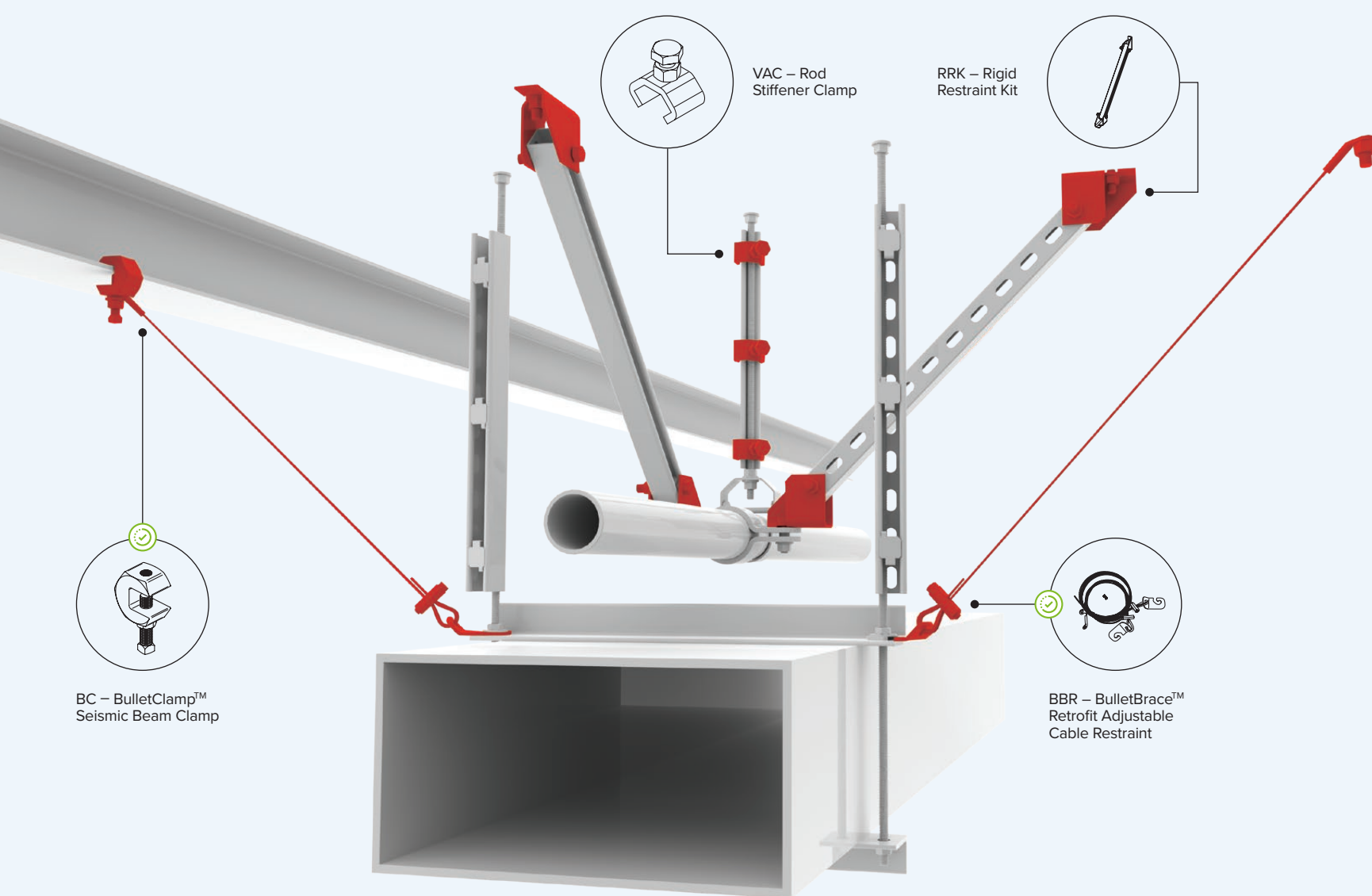
- ✔ **Our project managers** help gather all necessary information to provide project-specific design and products to meet specification and code requirements. We collect, coordinate, and integrate information required to save time and reduce risk through our submittals and solutions.

Product Highlight



DISTRIBUTION SYSTEMS/ PIPE/DUCT/ ELECTRICAL

SEISMIC RESTRAINT OF DISTRIBUTION SYSTEMS accounts for the majority of time spent on most projects to comply with building code earthquake resistance requirements. Our BulletBrace, BulletClamp, and bracing and restraint mark ups, all help significantly to save time and reduce risk.



BulletBrace™ cable restraints, here installed on natural gas and heating water pipes, are quick and easy to install, taking just a few minutes per point. The rod stiffeners and clamps shown help ensure the threaded rods can withstand seismic uplift forces. These pipes are protected against damage from design-level earthquake events.

Reduce Risk & Save Time

Engineering Capability

- Seismic Calculations:** Determination of earthquake forces that would cause the distribution system to move, causing excessive stress or damage to adjacent components.
- Attachments:** Determination of appropriate restraints and attachments that match the structure.
- Restraint layout:** Markups of distribution system drawings showing locations and configurations of restraints to minimize quantities and installation time required.


Product Highlight



BBR – BulletBrace™ Retrofit Adjustable Cable Restraint

The fastest fully assembled adjustable cable restraint kit on the market complete with retrofit hook brackets.


U.S. Patent 9,625,003
Canadian Patent CA 2835531



BC – BulletClamp™ Seismic Beam Clamp

The fastest-to-install, compact, tough, and seismically-rated beam clamp for attaching seismic restraints to structural steel.

U.S. Patent D825,307
Canadian Industrial Design Registration 175067



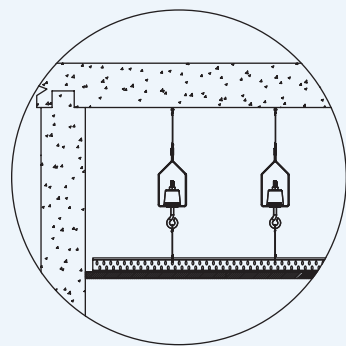
RRK – Rigid Restraint Kit

Our universal brackets used with standard strut for rigid restraints attach directly to structure and, due to the slotted design, to existing suspended components.

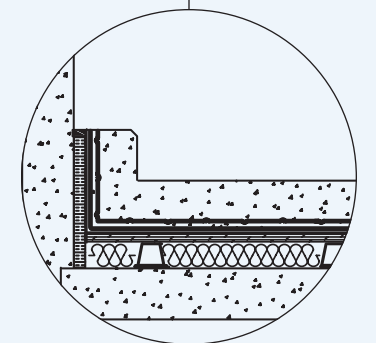
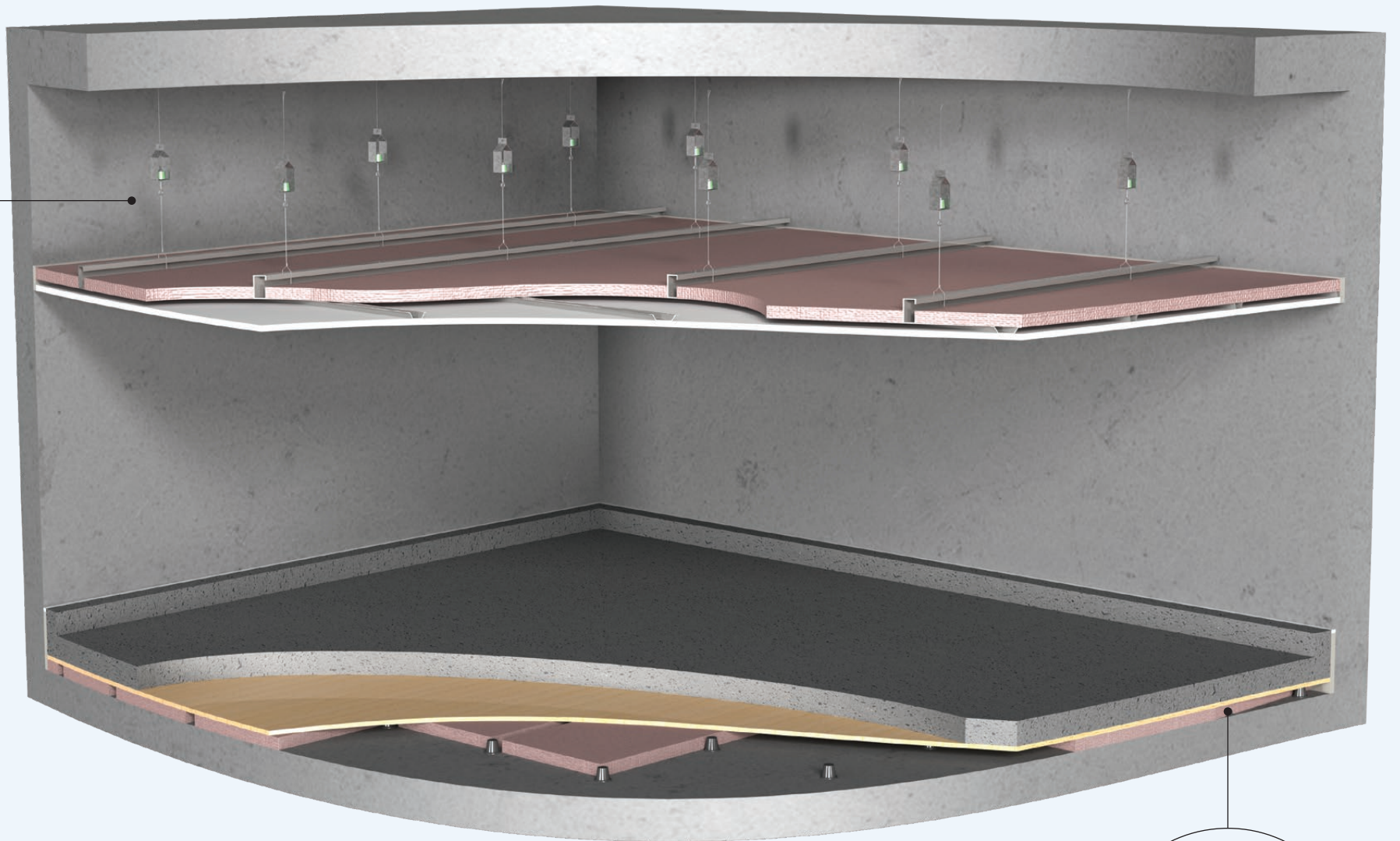
ARCHITECTURAL NOISE CONTROL

MAKING YOUR BUILDING QUIETER

Quiet and noisy spaces in buildings need to have adequate separation to meet background noise criteria. Where such spaces cannot be located away from each other, the construction of floors and ceilings surrounding them needs careful consideration. Sound hits the surfaces, moving them enough to re-radiate the sound on the other side. The addition of mass, resiliency, and discontinuities (air gaps) helps to decrease the sound transmission through building construction. Our architectural noise control products help provide greater acoustic separation between adjacent spaces by minimizing the additional mass required, using insulation, resilient elements, and air gaps to meet performance requirements. Floating floors and floating ceilings are effective at keeping background noise levels as low as possible.



Architectural and acoustical ceilings can be resiliently supported using either neoprene or spring type isolators, complete with eyebolt hooks for ease of installing using standard wire.

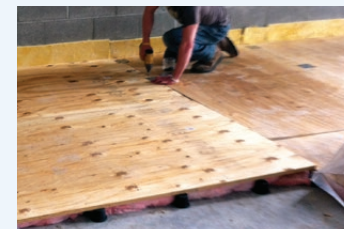


Concrete floating floors either use plywood formwork on neoprene isolators, with or without insulation, or use fewer jack-up mounts with high load neoprene isolators.

Floating floor installation for mechanical equipment room.



Isolators are placed as shown on project-specific drawings to match weight of floor and equipment.



Submittal drawings provide clear layout patterns for plywood panels, arranged to minimize installation time.

2 YOUR V-A PROJECT MANAGER

BE MORE PRODUCTIVE ONSITE WITH LESS WORK

Meet all of your vibration isolation, seismic/wind restraint, and floating floor/ceiling needs with a single source, Vibro-Acoustics. Your dedicated V-A Project Manager is focused on helping you save time and reduce risk.

MANY PROJECTS include delegated design portions where contractors must assume high levels of risk and uncertainty.

Vibro-Acoustics' Project Managers act as an extension of your team from initial contact to final completion, helping to seamlessly integrate vibration isolation and restraint systems into your project. They have direct, personal access to building code experts, creative design engineers, time-saving off-the shelf products, and flexible responsive manufacturing and shipping to ensure on-time deliveries. Our Project Managers proactively advise you on ways to reduce time, cost and risk.

For projects requiring engineered solutions, we assign a V-A Project Manager as your single point of contact for anything related to our scope of work.

HOW DO PROJECT MANAGERS REDUCE YOUR RISK?

1

Access to building code and material standards experts.

We recommend practical solutions with clear applications that meet code requirements.

2

Site-specific solutions.

Using project-specific information in engineering design and product selection, we provide solutions that match actual conditions with custom(er) engineering and products.

3

In-house structural, mechanical, and field engineers.

As a single source of responsibility, we offer in-house training, stamped submittals, and sign-off letters, custom designs, field support, and site inspections.

HOW DO PROJECT MANAGERS SAVE YOU TIME?

1

Time-saving products and solutions.

Our kick-off meetings help to explore time-saving options for the project.

2

Competitive lead times.

We provide an online, dynamic lead time for product and engineering services so you can plan your project better.

3

Timeline and order release management.

We proactively follow up to help meet project timelines, reviewing critical path items to ensure on-time deliveries.

4

Quick ship options.

Our project managers communicate the various options available to help expedite engineering, manufacturing and shipments to help save time.

3 PRODUCTS

TIME-SAVING PRODUCTS

Vibro-Acoustics' product development process includes time-of-installation studies and ease-of-use trials to ensure our innovative products can help save installers valuable time over other means and methods. We continually engage our customers to find better ways of doing things.

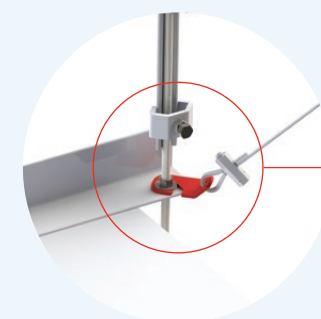


Installation costs can often be 5X the cost of the product being installed.

Products that minimize the amount of time spent installing them can have lower overall costs than cheaper products that are more difficult and take longer to install. The biggest cost-saving opportunity for a contractor is in **reducing the installation time required.**

BB/BBR

JUST SLIDE AND SECURE!



Restraint System Example

Lock Screw

Secure Screw

BULLETLOCK™

U.S. Patent 9,625,003
Canadian Patent CA 2835531

Attachment to component

Retrofit Bracket (BBR)
VAB Bracket with through hole (BB)

BULLETBRACE™

BB/BBR

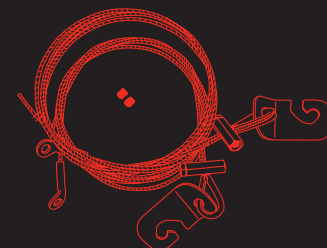
BulletBrace™ Seismic Cable Restraint Kit

- > Kits come with pre-assembled ends, so they are ready for use straight out of the package
- > Ease of adjustability, just slide and secure
- > Tested and rated per ANSI/ASHRAE 171

QUANTIFIED SAVINGS

16 min per point

* Compared to industry standard products



BC

BulletClamp™ Seismic Beam Clamps

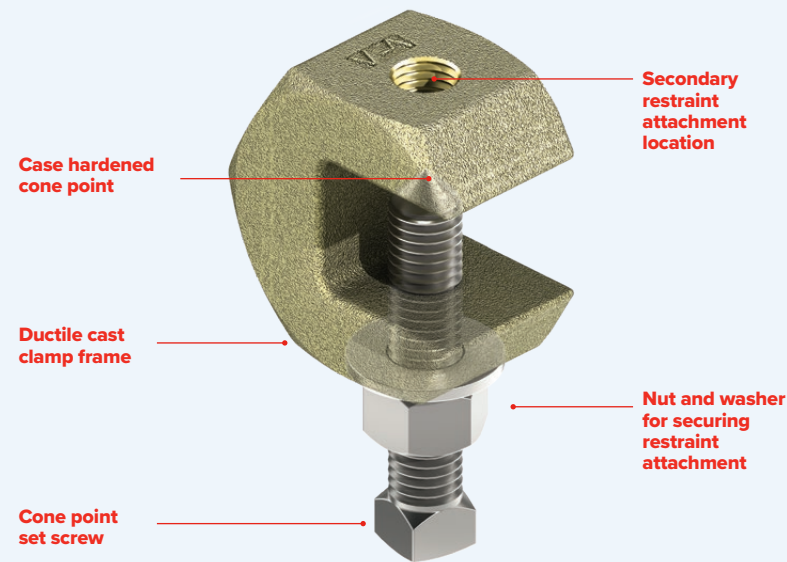
- > Compact and strong
- > Seismically-rated applications
- > Having few components allows fast installation

Quantified Savings

4 min per clamp

* Compared to industry-standard products

Rated for 2,500 lbs in all directions!



U.S. Patent D825,307
Canadian Industrial Design Registration 175067

BULLETCLAMP™

NP

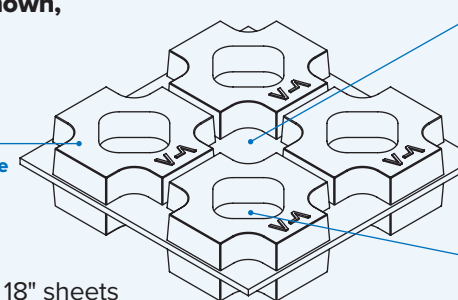
Neo+ Isolation Pads

- > Offered in 40 and 60 Durometer
- > Cut to size in seconds
- > Tested per ASTM.D575-91 (2012) Method A



4x4 model shown, made of four 2x2 modules

High tensile strength neoprene made with virgin material



Full size: 18" x 18" sheets

SPS/SPSA

Seismic Pipe Stands

- > Great alternative to site-fabricated supports for indoor or outdoor piping
- > Adjustable versions provide ability to maintain pipe elevation with changing roof slopes

Quantified Savings Buy vs. Build

1 hr

* Compared to building on-site

SCSR

Seismic Restrained Spring Isolators

- > Standard sizes up to 18,000 lbs. Custom sizes for higher capacities available.
- > 4" deflection precompressed for saving 35% time.
- > Housings designed to withstand at least 1g lateral load.
- > 1", 2", 3", and 4" deflection. Custom spring designs with other deflections also available.

Quantified Savings

20 min per install



Baseplate designed for use with either steel or concrete support

High strength snubber with reinforced rubber elements

Hot-dipped galvanized housing

Equipment mounting holes

Single adjustment nut to help minimize adjustment time

Powder-coated color-coded springs

SIPS

Seismic Inline Pump Stands

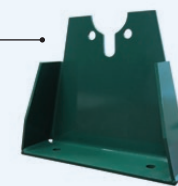
- > Easily bolted to pipe and vertical inline pump flanges for gravity support and seismic restraint
- > Low-profile versions suitable for mounting on spring isolators
- > Great for all support applications, not just seismic
- > SIPS-NP versions available complete with Neo+ isolation pads
- > Tested per ANSI/ASHRAE 171
- > Available in ANSI Class 125 and Class 250 bolt patterns

Quantified Savings Buy vs. Build

2 hrs per pump

* Compared to building on-site

Made with high-strength low-alloy steel

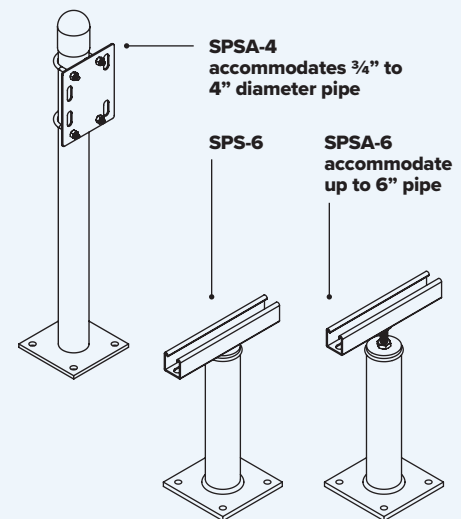


SIPS for pump sizes between 1-1/2" to 8"

SIPS for pump sizes between 10" to 16"

Low profile SIPS to be combined with spring isolators

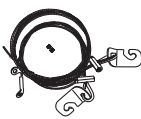
U.S. Patent D,699,549
Canadian Industrial Design Registration 142578



PRODUCT LIST

● Seismic ● Isolation

TIME SAVING PRODUCT HIGHLIGHTS



BBR – BulletBrace™ Retrofit Adjustable Cable Restraint Kit



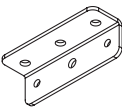
BB – BulletBrace™ Cable Restraint Kit



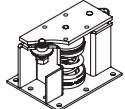
BC – Seismically Rated BulletClamp™



RRK – Rigid Restraint



DAB – Double Anchor Bracket



SCSR-4 – Precompressed Seismic Restrained Spring



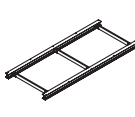
PSHR – Precompressed Spring Hangers with Neoprene



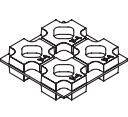
SIPS – Seismic Inline Pump Stand



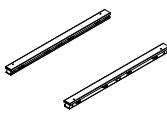
SPSA – Seismic Pipe Stand Adjustable



CTB – Cooling Tower Support Base



NP – Neo+ Isolation Pad

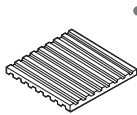


FSR - Free Spring Rails

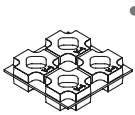
FLOOR MOUNTED



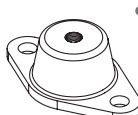
GW – Grommet Washer



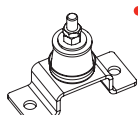
N Pad – Vibration Isolation Pad



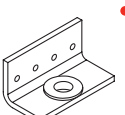
NP – Neo+ Isolation Pad



RD – Rubber-in-Shear Floor Mount



SRD – Seismic Rubber-in-Shear Mount



SRB – Seismic Restraint Bracket



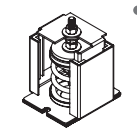
FS – Free Spring



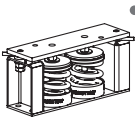
FST – Free Spring with Top



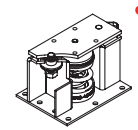
SFS – Seismic Free Spring



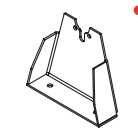
CM – Closed Mount Spring



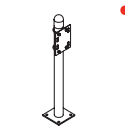
CSR – Restrained Spring



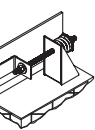
SCSR – Seismic Restrained Spring



SIPS – Seismic Inline Pump Stand



SPSA – Seismic Pipe Stand Adjustable



HCS – Base Mounted Thrust Restraint

SUSPENDED



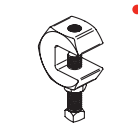
BB – BulletBrace™ Cable Restraint Kit



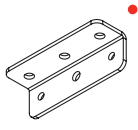
SRK – Cable Restraint Kit with Clip



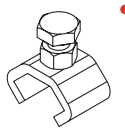
RRK – Rigid Restraint



BC – Seismically Rated BulletClamp



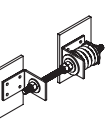
DAB – Double Anchor Bracket



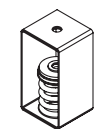
VAC – Rod Stiffener Clamps



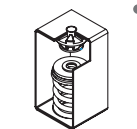
QC – nVent CADDY Quick Clip Rod Stiffener



AHCS – Equipment Mounted Thrust Restraint



SH – Spring Hanger



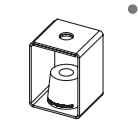
SHR – Spring Hanger with Neoprene



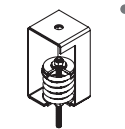
SHRB – Spring Hanger with Neoprene and Bottom Cup



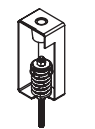
SHB – Spring Hanger with Bottom Cup



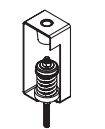
NH – Neoprene Hanger



PSH – Precompressed Spring Hanger

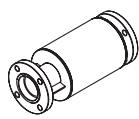


PSHR – Precompressed Spring Hangers with Neoprene

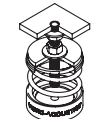


PSHRB – Precompressed Spring Hanger with Neoprene and Bottom Cup

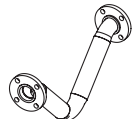
THERMAL EXPANSION/RISERS



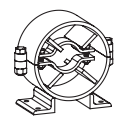
XPEJ – Externally Pressurized Expansion Joint



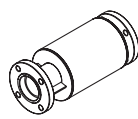
FST – Free Spring with Top



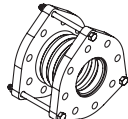
SSV – Seismic V-Loop



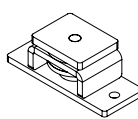
SPG – Spider Guide



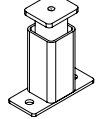
TEC – Thermal Expansion Compensator



EJM – Metal Bellows Expansion Joints

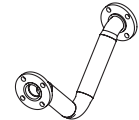


PRA – Pipe Riser Anchor

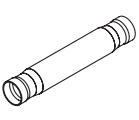


PRG – Pipe Riser Guide

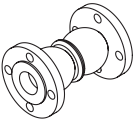
FLEXIBLE CONNECTORS



SSV – Seismic V-Loops

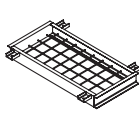


FCB/FCSS – Braided Metal Flexible Connector

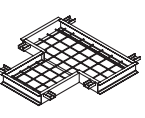


EJE – Rubber Expansion Joint

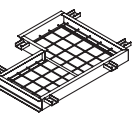
BASE & CURB MOUNTED



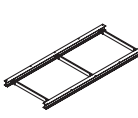
CIB – Concrete Inertia Base



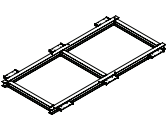
TCIB – T-Shaped Reinforced Concrete Inertia Base



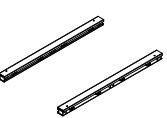
LCIB – L-Shaped Reinforced Concrete Inertia Base



CTB – Cooling Tower Base



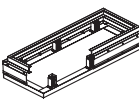
CTB with HSB - Cooling Tower Base with Height Saving Bracket



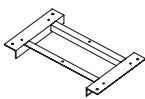
FSR - Free Spring Rails



VCR – Vibration Isolation Curb

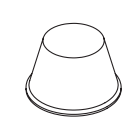


ARTR – Adjustable Rooftop Isolation Rail



IFB – Integral Steel Fan Base

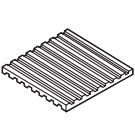
ARCHITECTURAL NOISE CONTROL



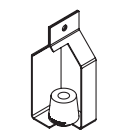
Formwork Floor Mount



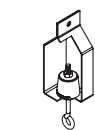
Jack-Up Floor Mount



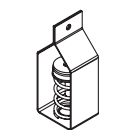
Vibration Isolation Pad



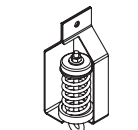
NHC – Neoprene Ceiling Hanger



NHCH – Neoprene Ceiling Hanger with Eyebolt



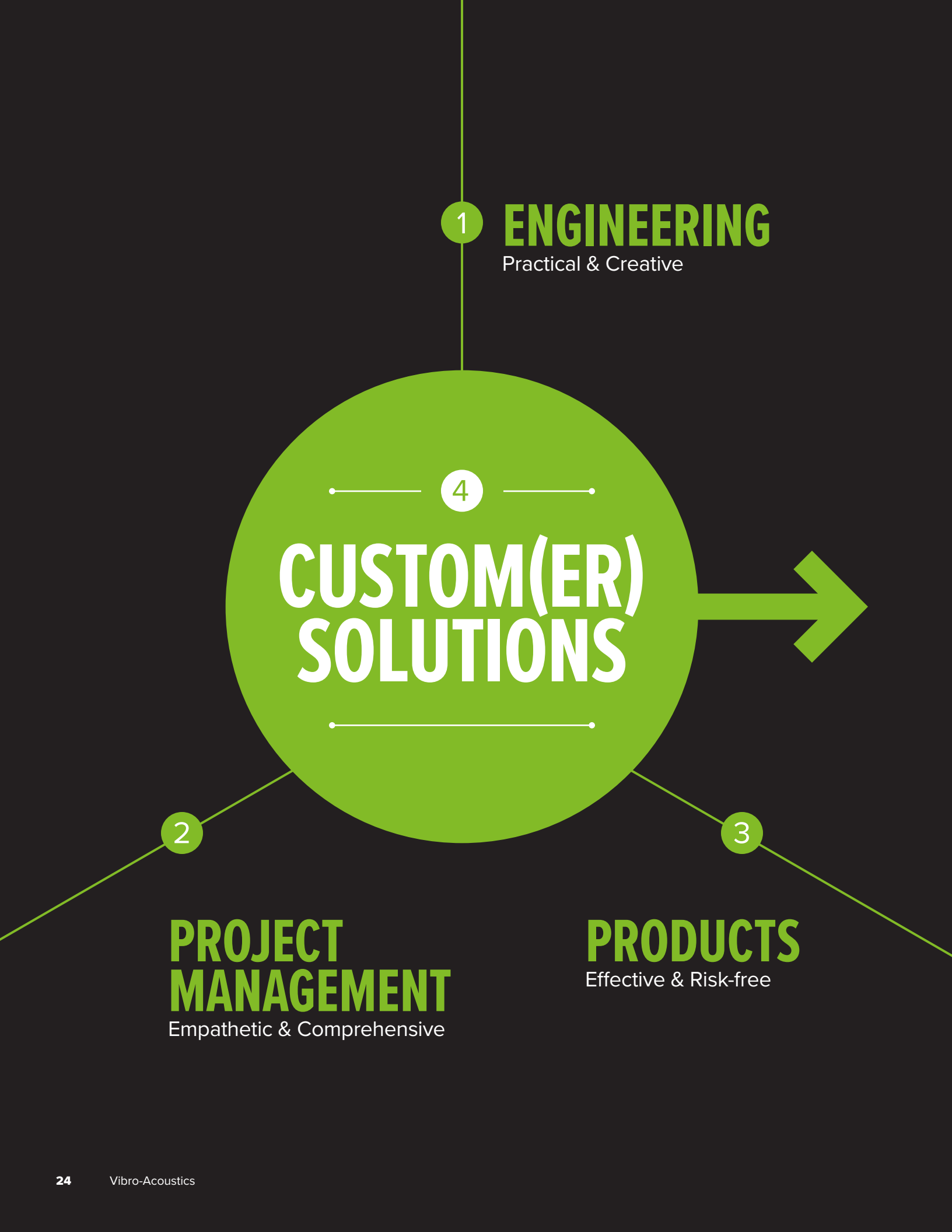
SHC – Spring Ceiling Hanger



SHCHB – Spring Ceiling Hanger with Hook and Bottom Cup



GW – Grommet Washer



4 CUSTOM(ER) SOLUTIONS

WE ARE PART OF YOUR TEAM

When standard isolation and restraint products and processes aren't quite enough to tackle unique and challenging project-specific conditions, our team of designers, engineers, project managers, and fabricators will rise to the task, delivering solutions that are customized to meet your needs.

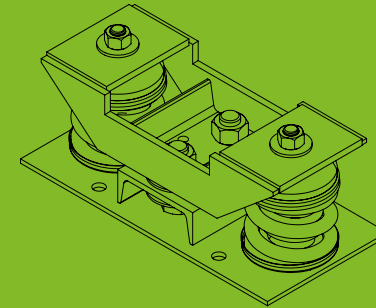


TECHNICAL CHALLENGES

Our design and engineering staff have breadth and depth of knowledge and experience in creatively tackling many different kinds of challenges related to vibration isolation and seismic/wind restraint for non-structural components.



EFFECTIVE AND PRACTICAL ENGINEERING SOLUTIONS



Space Limitations

From architectural sightline considerations to ceiling height restrictions, we can provide solutions that fit the available space.



Seismic and Wind Load Requirements

We design to site-specific code information instead of worst-case data to minimize costs.



Existing Piers and Other Limitations on Support Points

We engineer and manufacture custom isolator and restraint housings to match existing support locations and sizes, coordinating the design of equipment support frames to interface between the two and safely transfer all design loads.



Equipment Supports

Our steel frames are designed for equipment of any size, shape, weight, or configuration to provide adequate support.



Custom Anchorage

Extreme design loads occasionally require customized embedded plates that we design for attachment to concrete.

**REDUCE
COST, TIME,
AND RISK.**



Flexible Delivery

Where appropriate, solutions may be designed fully assembled, knocked-down, field-fabricated, or for fabrication by others.



Housekeeping Pad Design

We help ensure equipment pads are sized for anchor requirements and are adequately attached to the structural floor.



Layered Distribution Systems

Multiple layers of pipes can be supported on a custom frame designed with multiple levels that also provides seismic restraint.

OPERATIONAL AND SITE CHALLENGES

Our project management and operational staff, including purchasers, fabrication machinery operators, welders, and shippers regularly collaborate and work together to come up with custom approaches that address unique challenges. From initial inquiry to final installation, we will help find ways to meet aggressive construction schedules and to solve site problems.



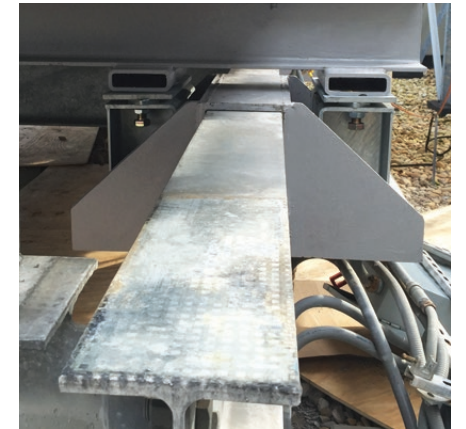
Top: Removal of the housekeeping pad and installation of a steel support base complete with height-saving brackets allowed the use of 4" deflection isolators for this critical facility.

Bottom: Steel support structure complete with stairs and catwalk for a large cooling tower, designed and fabricated to withstand wind and seismic loads.

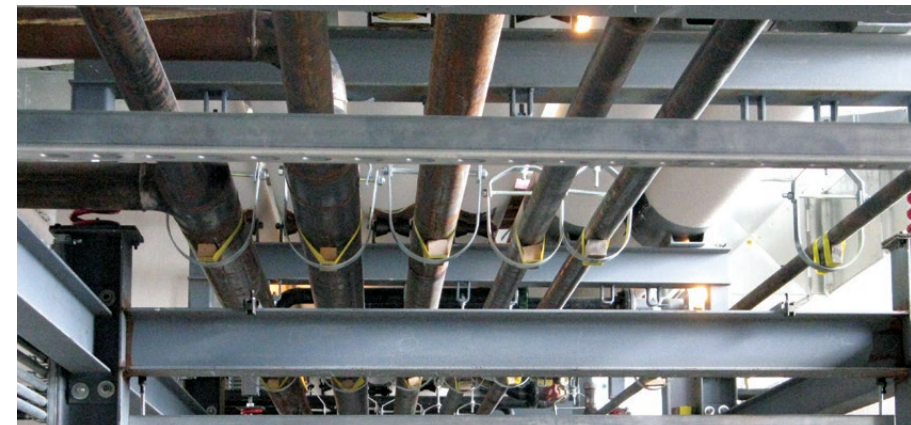


Left: Combination height-saving and load-distribution bracket, complete with custom 5" deflection spring isolators, that only added 4" from top of existing column to equipment support.

Right: Saddle-style height-saving double isolator bracket that was provided along with a custom cooling tower steel support base, installed on existing dunnage.



Left: Custom floor-supported, vibration isolated pipe rack system through a congested area in a mechanical room. All pipes are either resting on or hung from a common support which rests on vibration isolators.



Right: Standard double spring isolators grouped together and welded to a large custom embedded plate and complete with a custom load distribution plate on top for supporting a large piece of equipment with high wind and seismic loads.



Left: Vibration isolated and seismically restrained mixed-flow axial exhaust fan supported on a custom designed support frame that withstands seismic design loads and positions the fan at the desired height.

Right: Custom designed and fabricated high-capacity seismically rated isolators supporting a large equipment steel support base.



The company that saves you time.

LIT-VIRS-002

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VIBRATION ISOLATION AND RESTRAINT SYSTEMS