

# SUBMITTAL REVIEW



CLIENT NAME: \_\_\_\_\_  
PROJECT TITLE: \_\_\_\_\_  
SUBMITTAL No.: \_\_\_\_\_ H2M PROJECT No.: \_\_\_\_\_  
SUBMITTAL NAME: \_\_\_\_\_

SUBMITTAL REVIEW	
<b>REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS</b>	
<input type="checkbox"/> NO EXCEPTIONS TAKEN	<input type="checkbox"/> SUBMIT SPECIFIED ITEM
<input type="checkbox"/> MAKE CORRECTIONS NOTED <small>(RESUBMISSION NOT REQUIRED)</small>	<input type="checkbox"/> NO ACTION TAKEN <small>(REVIEW IS THE RESPONSIBILITY OF ANOTHER PARTY)</small>
<input type="checkbox"/> REVISE & RESUBMIT	<input type="checkbox"/> NO ACTION TAKEN <small>(THIS SUBMITTAL IS NOT REQUIRED BY THE CONTRACT)</small>
<input type="checkbox"/> REJECTED - SEE REMARKS	<input type="checkbox"/> RECEIVED FOR RECORD
<p>Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating their work with that of all other trades; and performing the work in a safe and satisfactory manner.</p>	
Date: _____	By: _____
<small>Rev.: 2020-05-20</small>	

## Comments:

CONTRACTOR'S COMPANY NAME  
ADDRESS

**SUBMISSION TRANSMITTAL FORM**  
**CLIENT NAME:** Vails Gate Fire District  
**PROJECT TITLE:** VGFD2001-New Firehouse

**H2M PROJECT NO.:** VGFD2001

Product, Item, or System Submitted:			
Submission Date:		Submission Log No.:	
Specification Section:		Paragraph Reference:	
Contract Drawing Reference(s):			
Manufacturer's Name:			
Manufacturer's Mailing Address:			
Manufacturer's Contact Information:	<i>Name</i>	( ) <i>Tel. no.</i>	<i>Email</i>
Supplier's Name:			
Supplier's Mailing Address:			
Supplier's Contact Information:	<i>Name</i>	( ) <i>Tel. no.</i>	<i>Email</i>
This item is a substitution for the specified item:	<input type="checkbox"/> No	<input type="checkbox"/> Yes	
<p align="center"><b>KEY CONSTRUCTION SERVICES, LLC</b></p> <p><b>Project No: VGFD2001</b></p> <p><small>Reviewed for General Acceptance Only. This review does not relieve the Subcontractors or Suppliers of responsibility for making the work conform to the requirements of the contract. The Subcontractor and Suppliers are responsible for all dimensions, correct fabrication and accurate fit with the work of other trades.</small></p> <p align="center"><b><u>SUBJECT TO ARCHITECT AND OR ENGINEER APPROVAL</u></b></p> <p><b>Signed <i>Joseph Manfredi</i>(PM) Date: 12/5/2023</b></p> <p>Contractor's Approval Stamp with Signature &amp; Date</p>		<p><u>Contractor's Brief Comments or Remarks</u> (attach separate letter as needed):</p> <p>By making this submission, we represent that we have determined and verified all field measurements and dimensions, field construction criteria, site and building constraints in terms of limitations in moving the item into the enclosed space, materials, catalog and model numbers and similar data and that we have checked and coordinated this submission with other work at or adjacent to the installed location in accordance with the requirements contained in the Contract Documents.</p>	

**END OF SECTION 013300**

# Joe Lombardo

## Plumbing & Heating of Rockland, Inc.

321 Spook Rock Road  
 Suffern, NY 10901  
 Ph. 845-357-6537 Fx 845-357-8529  
 E: [info@josephlombardo.com](mailto:info@josephlombardo.com)  
 Website: [www.josephlombardo.com](http://www.josephlombardo.com)

Rockland Cty. Plumbing #1000      Rockland Cty. Cooling # 1468  
 Westchester Cty. Plumbing #460      New Jersey State Plumbing #12702

TO: Key Construction  
4246 Albany Post Rd. Suite 1  
Hyde Park, NY 12538

### LETTER OF TRANSMITTAL

DATE: <b>11.28.23</b>	JOB NO.
ATTENTION: <b>Joe Manfredi</b>	
RE: Vails Gate Firehouse	

WE ARE SENDING YOU  Attached  Under separate cover via \_\_\_\_\_ the following items:

Shop Drawings       Prints       Plans       Samples       Specifications

Copy of letter       Change order       \_\_\_\_\_

EMAIL	DATE	No.	DESCRIPTION
1	11.28-23	230548	VIBRATION ISOLATION AND SIEMIC RESTRAINTS

THESE ARE TRANSMITTED as checked below:

- For approval       No Exceptions Taken       Resubmit \_\_\_\_\_ copies for review
- For your use       Make Corrections Noted       Submit \_\_\_\_\_ copies for distribution
- As requested       Rejected       Return \_\_\_\_\_ corrected prints
- For review and comment       \_\_\_\_\_
- FOR BIDS DUE \_\_\_\_\_ 20\_\_  PRINTS RETURNED AFTER LOAN TO US

COPY TO: Joe Manfredi

SIGNED: Ronald J. Lombardo

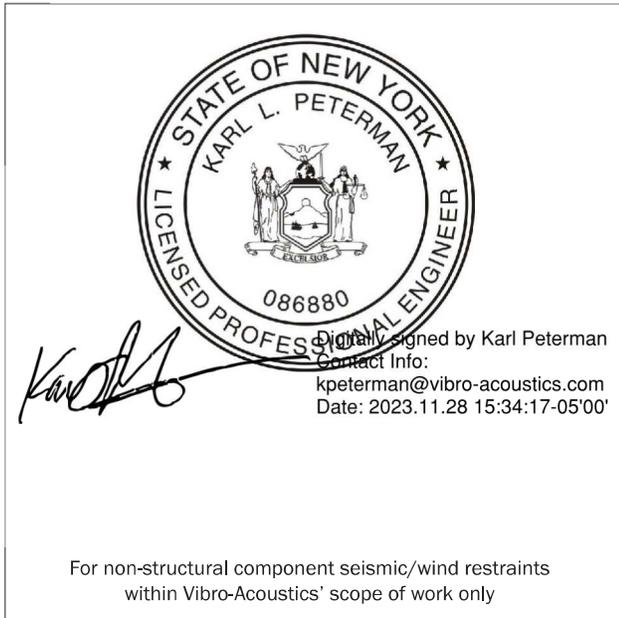
Date: 21-Nov-2023

Report #: 233298-SR01  
 Project: Vails Gate Fire District VGFD2001  
 Location: New Windsor, NY  
 Customer: Tower Enterprises of NY & NJ  
 Customer P.O. #: 13580  
 V-A Project Manager: Arakel Dakessian  
 V-A Order #: 233298  
 V-A Engineering Release #: 92857

This report reflects information received and reviewed as of date shown. The following drawings and calculations for non-structural component seismic/wind restraint included herein have been reviewed and comply with the building code:

IBC 2018

Drawing #	rev. #	# of sheets
233298-000 Design info	0	1
233298-200 Summary	0	1
233298-300 Summary	0	1
233298-220 Calc	0	1
233298-221 Calc	0	1
233298-222 Calc	0	1
233298-223 Calc	0	1
233298-224 Calc	0	1
233298-225 Calc	0	1
233298-320 Calc	0	1
Seismic markups:		
VA-SM-1	0	1
VA-SM-2	0	1
VA-PL110.09	0	1
VA-PL110.10	0	1
VA-PL110.09 (Level 2)	0	1
Isolation sheets:		
233298-100 to 107	0	8
SHR isolator installation instructions	-	1
Drawings/details:		
233298-401 CIB drawing	0	1
Restraint bracing details: piping	-	1
Below are reference materials that support the calculations and drawings listed above.		
BB-13 cable kit datasheets	-	3
BC-50 clamp datasheets	-	2
EJE2 expansion joint datasheets	-	3
SIPS pump stand datasheets	-	2
SRB bracket datasheets	-	2
CIB installation instructions	-	2
This submittal report sheet		1
<b>Total sheets</b>		<b>41</b>



**By Karl L. Peterman, P.E.**  
 Vibro-Acoustics

**Head Office:**

3 Keensford Court, Unit 1, Ajax, ON Canada L1Z 0K4

tel: 416-291-7371 1-800-565-8401

fax: 416-291-8049 1-888-811-2264

eml: info@vibro-acoustics.com

web: www.vibro-acoustics.com

**This electronic document has been digitally signed. This message should be a green color, digital signature information should be displayed with the stamp, the number of total pages in the pdf should match exactly with the value shown on this page, and there should be no other pages attached. The electronic signature should be verifiable through any pdf reader. If any of these are different, or the signature cannot be verified, this is not the official signed document.**

This report is valid only if all sheets listed above are attached.

Location information New Windsor, New York, 12553

Design code IBC 2018

**Seismic loads design information**

Design spectral response acceleration: **S<sub>DS</sub>** = 0.21 (given)

Total number of floors: **h** = 2 (assumed)

Site Class: **C** (given)

Risk Category: **IV** (given)

Seismic Design Category: **C** (given)

See specific calculation for values of:

**I<sub>p</sub>** Component Importance factor

**a<sub>p</sub>** Component amplification factor

**R<sub>p</sub>** Response modification factor

**W<sub>p</sub>** Operating weight of equipment [lb]

**z** Equipment location floor level<sup>(1)</sup>

where  $0.3S_{DS}I_pW_p < F_p < 1.6S_{DS}I_pW_p$

Horizontal seismic design force [lbf]: **F<sub>p</sub>** =  $0.4a_pS_{DS}I_pW_p(1+2z/h)/R_p$

Vertical seismic design force [lbf]: **F<sub>pv</sub>** =  $0.2S_{DS}W_p$

Horizontal seismic acceleration: **g** =  $F_p/W_p$

**Seismic restraints NOT required for Ip=1 components**

**NOTES:**

1. For equipment mounted on the floor of the ground floor level or anywhere below the ground floor, "z" (or "h")=0; For equipment suspended from or above the ceiling of the ground floor level, or on the floor of the next level above the ground floor, "z" (or "h")=1
2. All dimensions in inches, and all forces (including weight and strength) in lbf
3. Equipment curbs, stands, and supports not supplied by Vibro-Acoustics are assumed to be capable of withstanding all forces described herein. Vibro-Acoustics analyses are void unless structural capacity of these items are substantiated by others.
4. All anchors, bolts, screws, and other fasteners must be installed in accordance with manufacturer's instructions, and with the minimum embedment depth and edge distance shown in Vibro-Acoustics' calculations.
5. Vibro-Acoustics' registered professional engineer has reviewed the seismic/wind restraint selections for compliance with building codes, job specifications, and accepted engineering practices for seismic/wind restraint. This work covers restraint materials supplied by Vibro-Acoustics. The project structural design professional of record must verify the adequacy of the structure to withstand the seismic/wind loads imparted to the structure at restraint locations. Maximum loads for a given restraint are shown/calculated in column "T" for tension loads and/or "V" for shear loads.
6. Contractor to mount anchors through isolator/restraint mounting holes into supporting structure. Contractor to secure equipment to isolators/restraints as required. Any supplemental drilling, welds, or screws added to equipment must be approved by equipment manufacturer. Calculation is for minimum anchor requirements. If equipment has additional anchor mounting holes, anchors should typically be installed in the extra holes with appropriate size anchors to fit hole diameter. Equipment design and certification not included in this review. Equipment manufacturer must determine if equipment can adequately transfer seismic/wind loads to restraints and resist loads shown.

**General Seismic and Wind loads design information**

**VIBRO-ACOUSTICS®**

Noise Control | Vibration Isolation | Restraint Systems

Project : **Vails Gate Fire District VGFD2001**

Customer: **Tower Enterprises of NY & NJ**

Consultant:

Drawn by:

Date:

Drawing No.:

Rev.

Customer P.O. No:  
**13580**

V-A Order No  
**233298.00**

V-A PM:  
**Arakel D.**

Checked by:

Date:

**233298-000**

**0**

A8-4.22

EQUIPMENT TAG #	QTY	EQUIPMENT DESCRIPTION	ISOL. SHEET #	CALC. SHEET #	ISOLATORS		RESTRAINTS		ANCHORS		OTHER COMPONENTS			
					MODEL	QTY	MODEL	QTY	MODEL <sup>(5, 6)</sup> / <sub>(Ø)</sub> , (nominal embed.), (min. slab thk.) (min. edge dist.)	QTY	TYPE	MODEL	QTY	
AS-1	1	Air separator	-	220	No isolation	-	BB-13	2	1/2" A307 steel bolts Alternate: BC-50 clamps	4	Rod stiffener clamps	VAC-1	note 8	
GFRH-SB-1,2,3	3	Infrared heater with 60' of radiant tube	-	220	(2) BB kits ea. burner & (1) BB kit every 20' of tube	BB-13	15	1/2" A307 steel bolts Alternate: BC-50 clamps	30	Rod stiffener clamps	VAC-1	note 8		
GX-2,3 TX-2,3, EXRF-122	5	Inline fan	100	221	SHR-2N-50 w/ seismic washer	BB-13	10	1/2" A307 steel bolts Alternate: BC-50 clamps	20	Rod stiffener clamps	VAC-1	note 8		
GX-1	1	Fan	101	221	SHR-2N-100 w/ seismic washer	BB-13	2	1/2" A307 steel bolts Alternate: BC-50 clamps	4	Rod stiffener clamps	VAC-1	note 8		
GXF-SB-1	1	Fan	102	221	SHR-2N-50 w/ seismic washer	BB-13	2	1/2" A307 steel bolts Alternate: BC-50 clamps	4	Rod stiffener clamps	VAC-1	note 8		
GXF-SB-2	1	Fan	103	221	SHR-2N-50 w/ seismic washer	BB-13	2	1/2" A307 steel bolts Alternate: BC-50 clamps	4	Rod stiffener clamps	VAC-1	note 8		
HHWP-3,4,5,6	4	Inline pump	104	221	SHR-SN-15 w/ seismic washer	BB-13	8	1/2" A307 steel bolts Alternate: BC-50 clamps	16	Rod stiffener clamps	VAC-1	note 8		
UH-1 to 4	4	Unit heater	105	221	SHR-2N-50 w/ seismic washer	BB-13	8	1/2" A307 steel bolts Alternate: BC-50 clamps	16	Rod stiffener clamps	VAC-1	note 8		
HHWP-1.2	2	Pump to SIPS SIPS to CIB	-	222	EJL2-1.50	SIPS-1.5-125	4	DeWalt SD1 1/2"x3-3/4" (2-1/2") (4") (4")	8	30"x22"x6"	CIB	2		
BL-1.2	2	Boiler	-	224	SFS-2N-300	SRB-222B	8	DeWalt SD1 3/8"x3-3/4" (2-3/8) (4") (3")	8	Self drilling screws	1/4"	16		
ET	1	Expansion tank	-	225	No isolation	SRB-222B	3	DeWalt SD1 3/8"x3-3/4" (2-3/8) (4") (3")	3	Self drilling screws	1/4"	6		
TXF-SB-1	1	Fan	-	-	Equipment weights <20 lbs, no seismic restraints required.							Grommet washer	GW-38	4

**NOTES:**

- (1) All quantities are total, NOT per equipment.
- (2) Components with quantities in grey are not included in the scope of supply. Contact Vibro-Acoustics for pricing.
- (3) Any products not supplied by VA are assumed to be capable of withstanding all forces described herein.  
Analyses included here are void unless structural capacities of those products are substantiated.
- (4) See notes on calculation pages for installation details and design assumptions
- (5) Anchors must be installed in accordance with manufacturer's instructions, to achieve full capacity. Embedment & slab thickness apply only to concrete anchors & screws
- (6) Concrete wedge anchors (e.g. DeWalt SD1/Hilti KBTZ anchors) can be replaced with A307 steel bolts of the same diameter if the actual substructure is not concrete.
- (7) Each BB/BBR cable kit contains two cables and components.
- (8) Customer to determine the quantities of rod stiffener clamps if required.

**VIBRATION ISOLATION & SEISMIC RESTRAINT SUMMARY FOR EQUIPMENT**

Project : Vails Gate Fire District VGFD2001

Customer: Tower Enterprises of NY & NJ

Consultant:

Customer P.O. No.: 13580

V-A Order No.: 233298

V-A PM: Arakel D.



Noise Control | Vibration Isolation | Restraint Systems

Drawn by: SM

Checked by:

Date: Nov.17, 2023

Date:

Drawing No

233298- 200

Rev. 0

This schedule is submitted for:

**APPROVAL**

Approval drawings must be returned marked "approved" prior to release for fabrication.

MARK-UP DWG#	DESCRIPTION	CALC. SHEET DWG #	RESTRAINTS			ANCHORS		OTHER COMPONENTS											
			MODEL	QTY		MODEL <sup>(5, 6)</sup>	QTY	TYPE	MODEL	QTY									
VA-SM-1	Mechanical Ductwork						(Diameter x Length), (nominal embed.), (min. slab thickness), (min. edge dist.)												
VA-SM-2	Mechanical Ductwork																		
VA-PL110.09	Mechanical Piping - Phase 2 Bldg 2 - Level 1																		
VA-PL110.10	Mechanical Piping - Phase 2 Bldg 2 - Level 1	320	BB-13	8			1/2" A307 steel bolts Alternate: BC-50 clamps		16	Rod stiffener clamps	VAC	note 8							
VA-PL110.09	Mechanical Piping - Phase 2 Bldg 2 - Level 2						No seismic restraints required.												

**NOTES:**

- (1) All quantities are total, NOT per equipment.
- (2) Components with quantities in grey are not included in the scope of supply. Contact your local sales rep or Vibro-Acoustics for pricing.
- (3) Any products not supplied by VA are assumed to be capable of withstanding all forces described herein. Analyses included here are void unless structural capacities of those products are substantiated.
- (4) See notes on calculation pages for installation details and design assumptions
- (5) Anchors must be installed in accordance with manufacturer's instructions, to achieve full capacity. Embedment & slab thickness apply only to concrete anchors.
- (6) Concrete wedge anchors (e.g. SD1/KBITZ anchors) can be replaced with A307 steel bolts of the same diameter if the actual substructure is not concrete.
- (7) Each BB/BBR cable kit contains two cables and components.
- (8) Customer to determine the quantities of rod stiffener clamps if required.

**VIBRO-ACOUSTICS**  
A Swegon Group company

**VIBRATION ISOLATION & SEISMIC RESTRAINT SUMMARY  
FOR PIPING, DUCTWORK, CABLE TRAY & ELEC. CONDUIT**

Project : Vails Gate Fire District VGFDD2001

Customer: Tower Enterprises of NY & NJ

Consultant: 0

Customer P.O. No.: 13580

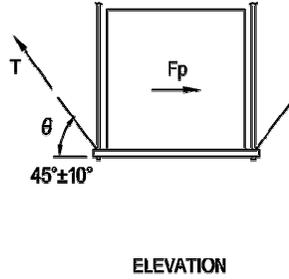
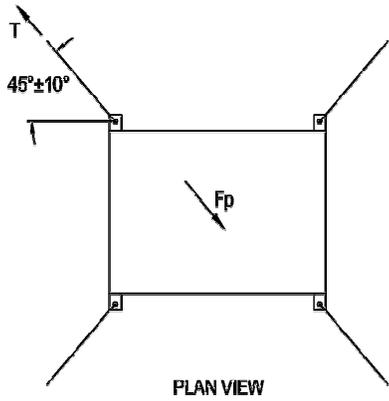
Checked by: SM Date: 20-Nov-2023

V-A Order # 233298 V-A PM: Arakel D.

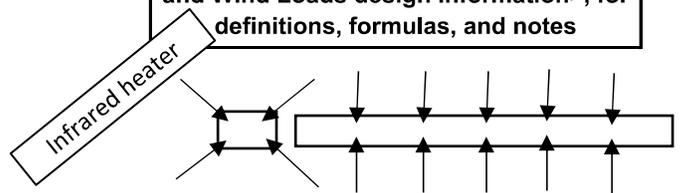
Approval drawings must be returned marked "approved" prior to release for fabrication.

Drawing No 233298-300 Rev. 0

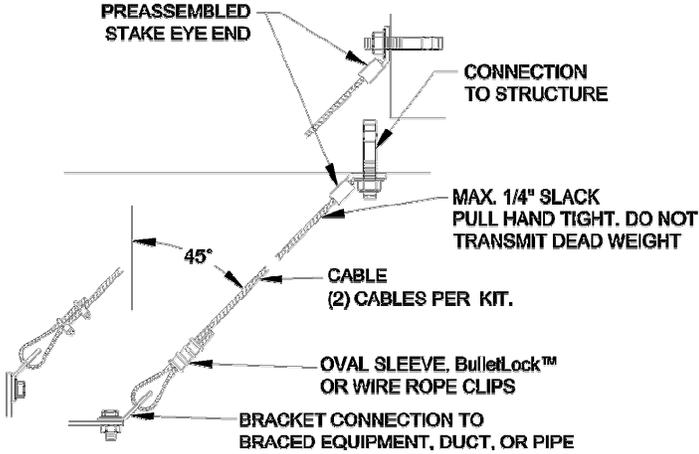
This schedule is submitted for: **APPROVAL**



See page 233298-000 <General Seismic and Wind Loads design information>, for definitions, formulas, and notes



Equipment location floor level+1      z see below  
 Installation type:      **Rigid, Steel components**  
 Component amplification factor:      **ap= 1.0**  
 Response modification factor:      **Rp= 2.5**  
 Cable Tension:       $T = F_p / \cos 45$   
 Cable layout: **Four cables (one at each corner)**



Equipment Tag.	$I_p$	$W_p$	z	$F_p$	g	T	$F_c$	
1	AS	1.5	200	1	20	0.10	28	0
2	GFRH-SB-1, 2, 3	1.5	266	1	27	0.10	38	0
3								
4								
5								
6								
7								
8								
9								
10								

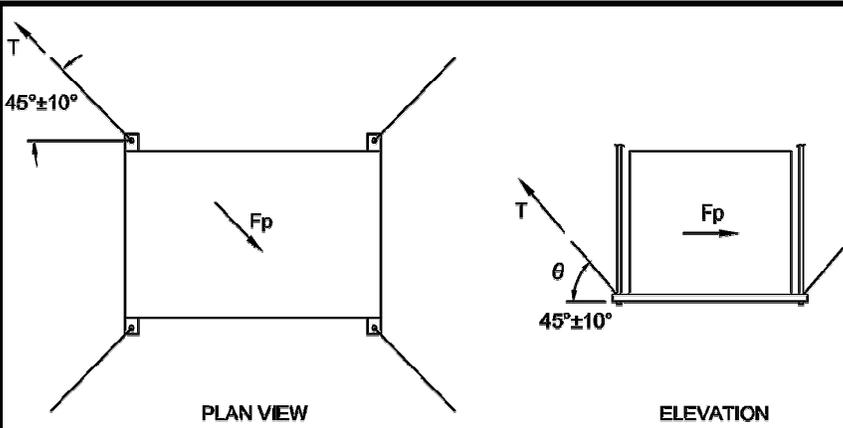
See page 233298-000 for definitions & formulas. Units of measure: Imperial [in, lb, lbf, psi]

	Max. allowed T [lb]	Restraint selection BulletBrace™	BB/BBR-13 anchorage requirements	BB/BBR-19 anchorage requirements
			1/2" A307 bolt	5/8" A307 bolt
	1000		2000	
1	AS	BB/BBR-13 or BB/BBR-19	X	X
2	GFRH-SB-1, 2, 3	BB/BBR-13 or BB/BBR-19	X	X
3				
4				
5				
6				
7				
8				
9				
10				

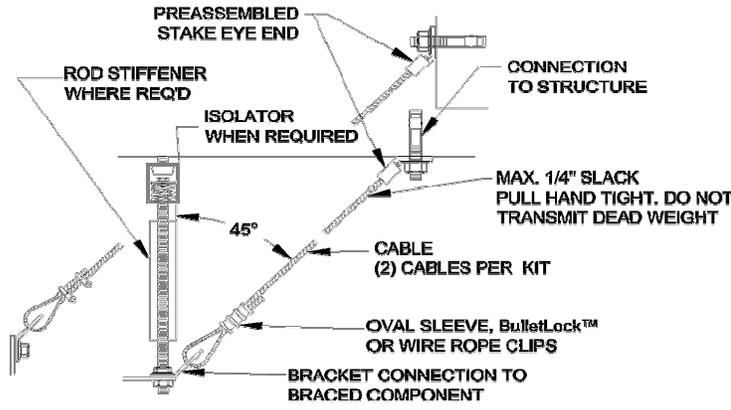
Notes: Other anchorage solutions available (e.g., shorter embedment; stainless steel). Min installation angle from vertical: 30 degrees  
 Values shown determined per ACI 355.2 and ASHRAE 171.  
 See drawing BB-AL for attachment level details.

<b>IBC 2018 SEISMIC LOAD CALCULATION: SUSPENDED EQUIPMENT (NON-ISOLATED) RESTRAINED WITH CABLES</b>			<b>VIBROACOUSTICS®</b> Noise Control   Vibration Isolation   Restraint Systems		
Project: <b>Vails Gate Fire District VGFD2001</b>					
Customer: <b>Tower Enterprises of NY &amp; NJ</b>			Drawn by: <b>SM</b>	Date: <b>Nov.17, 2023</b>	Drawing No.: <b>233298-220</b>
Consultant:			Checked by:	Date:	Rev. <b>0</b>
Customer P.O. No: <b>13580</b>	V-A Order No <b>233298</b>	V-A PM: <b>Arakel D.</b>			<b>A8-4.22</b>

See page 233298-000 <General Seismic and Wind Loads design information>, for definitions, formulas, and notes



Equipment location floor level+1      z see below  
 Installation type:      **Vibration isolated**  
 Component amplification factor:      **ap= 2.5**  
 Response modification factor:      **Rp= 2.5**  
 Cable Tension:       $T = Fp / \cos 45$   
 Cable layout: **Four cables (one at each corner)**



Equipment Tag.	Ip	Wp	z	Fp	g	T	Fc	
1	GX-2,3	1.5	85	1	21	0.25	30	0
2	GX-1	1.5	263	2	99	0.38	140	0
3	GXF-SB-1	1.5	160	2	60	0.38	85	0
4	GXF-SB-2	1.5	85	2	32	0.38	45	0
5	HHWP-3, 4, 5, 6	1.5	30	1	8	0.25	11	0
6	UH-1 to 4	1.5	92	2	35	0.38	49	0
7								
8								
9								
10								

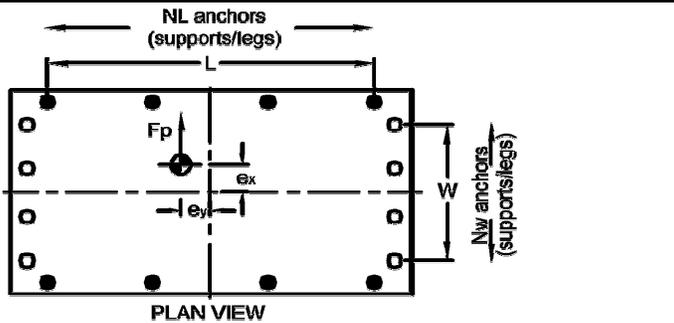
See page 233298-000 for definitions & formulas. Units of measure: Imperial [in, lb, lbf, psi]

	Restraint selection	Max. allowed T [lb]		
		BB/BBR-13 anchorage requirements	BB/BBR-19 anchorage requirements	
	BulletBrace™	1/2" A307 bolt	5/8" A307 bolt	
		1000	2000	
1	GX-2,3	BB/BBR-13 or BB/BBR-19	X	X
2	GX-1	BB/BBR-13 or BB/BBR-19	X	X
3	GXF-SB-1	BB/BBR-13 or BB/BBR-19	X	X
4	GXF-SB-2	BB/BBR-13 or BB/BBR-19	X	X
5	HHWP-3, 4, 5, 6	BB/BBR-13 or BB/BBR-19	X	X
6	UH-1 to 4	BB/BBR-13 or BB/BBR-19	X	X
7				
8				
9				
10				

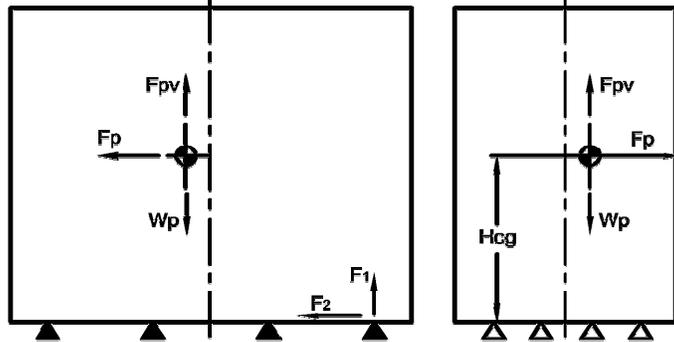
Notes: Other anchorage solutions available (e.g., shorter embedment; stainless steel). Min installation angle from vertical: 30 degrees  
 Values shown determined per ACI 355.2 and ASHRAE 171.  
 See drawing BB-AL for attachment level details.

<b>IBC 2018 SEISMIC LOAD CALCULATION: SUSPENDED EQUIPMENT (ISOLATED) RESTRAINED WITH CABLES</b>			<b>VIBROACOUSTICS®</b>		
Project: <b>Vails Gate Fire District VGFD2001</b>			Noise Control   Vibration Isolation   Restraint Systems		
Customer: <b>Tower Enterprises of NY &amp; NJ</b>			Drawn by: <b>SM</b>	Date: <b>Nov.17, 2023</b>	Drawing No.: <b>233298-221</b>
Consultant:			Checked by:	Date:	Rev. <b>0</b>
Customer P.O. No: <b>13580</b>	V-A Order No <b>233298</b>	V-A PM: <b>Arakel D.</b>			<b>A8-4.22</b>

See page 233298-000 <General Seismic and Wind Loads design information>, for definitions, formulas, and notes



Installation type: **On isolated base**  
 $a_p = 2.5$        $R_p = 2.0$   
 LRFD basic load combination:  $0.9D+1E$



Restraints along short/long side & total:  $N_w \circ / N_L \bullet$  &  $N$

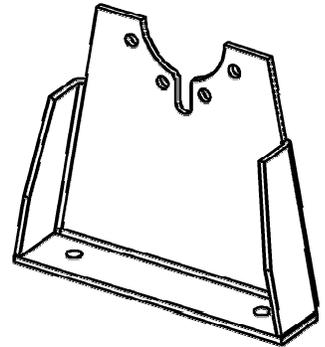
ADDITIONAL SUPPORTS (IF NEEDED) MUST BE LOCATED ALONG LONG EDGE

Horizontal/Vertical seismic design force: **Fp/Fpv** Maximum Tension/Shear on restraints: **F1/F2**

See page 233298-000 for definitions & formulas. Units of measure: Imperial [in, lb, lbf, psi]

Equipment Tag	$l_p$	$W_p$	$z$	$L$	$W$	$H_{cg}$	$e_x$	$e_y$	$N_L$	$N_w$	$N$	$g$	$F_p$	$F_{pv}$	$F_1$	$F_2$
1 HHWP-1.2	1.5	607	0	15	9	15	0	0	2	0	4	0.16	95	25	0	24
2																
3																
4																

**STRENGTH CHECK: "SIPS" PUMP STAND** [in,lb,lbf,psi]



Equipment Tag	SIPS size	Max. lateral load/stand [lbs]	Allowable lateral load/stand [lbs]	OK ?
1 HHWP-1.2	1 1/2	48	900	YES
2				
3				
4				

**CONNECTION STRENGTH CHECK (LRFD): (based on DeWalt Power-Stud+ SD1 concrete expansion anchor in 3000 psi cracked concrete)**

Stand-off: NO

Qty. of anchors at each connection:  $n$

Anchor Tension [lbf]:  $T$

Strength in Tension [lbf]:  $F_t$

Edge distance (in):  $e$

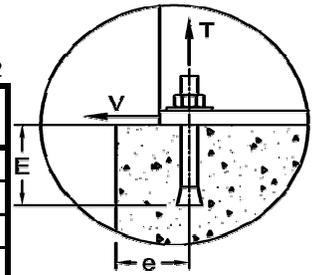
Anchor Shear [lbf]:  $V$

Strength in Shear [lbf]:  $F_v$

Units of measure: Imperial [in,lb,lbf,psi]

Designed with Overstrength factor for Horizontal Seismic Load Effect  $\Omega_0=2$

#	$n$	$\emptyset$ (nominal embed. depth) (slab thk.)	$e$	Seismic load $T(F_1)$ & $V(F_2)$	Seismic Strength $F_t$ & $F_v$	seismic util.	OK ?
1	1	1/2 (2-1/2) (4" slab)	4	28    48	1,284    1,227	4%	YES
2							
3							
4							



**IBC 2018 SEISMIC LOAD CALCULATION: FLOOR-MOUNTED EQUIPMENT (RIGID CONNECTION)**

**VIBRO-ACOUSTICS®**

Project: **Vails Gate Fire District VGFD2001**

Noise Control | Vibration Isolation | Restraint Systems

Customer: **Tower Enterprises of NY & NJ**

Drawn by:

Date:

Drawing No.:

Rev.

Consultant:

**SM**

**Nov.17, 2023**

**233298-222**

**0**

Customer P.O. #: **13580**

V-A Order #: **233298**

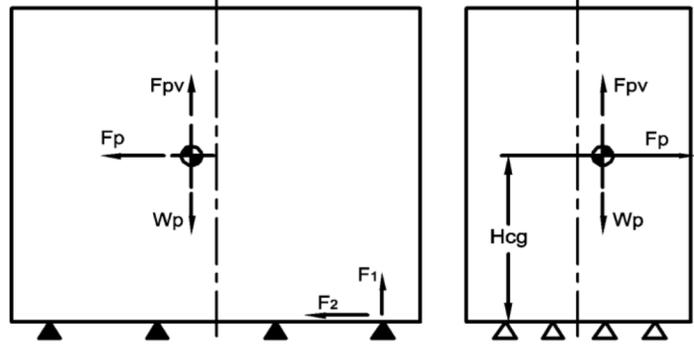
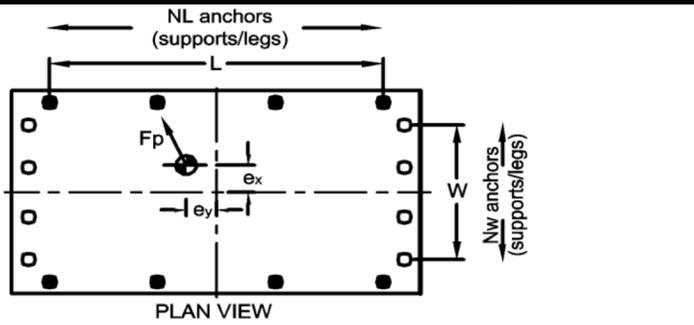
V-A PM: **Arakel D.**

Checked by:

Date:

A8-4.22

See page 233298-000 <General Seismic and Wind Loads design information>, for definitions, formulas, and notes



ADDITIONAL SUPPORTS (IF NEEDED) MUST BE LOCATED ALONG LONG EDGE

LRFD basic load combination: 0.9D+1E

ap= 2.5 Rp= 2.0

Horizontal/Vertical seismic design force: **Fp/Fpv** Max. Tension/Shear on restraints: **F1/F2**

Equipment Tag	lp	Wp	z	L	W	Hcg	ex	ey
HHWP-1.2	1.5	770	0	19.25	24	23.5	0	0

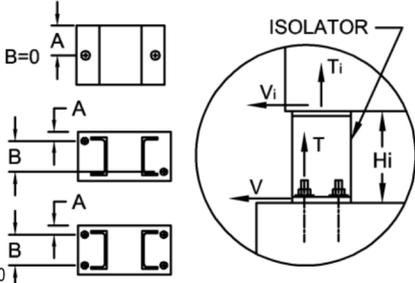
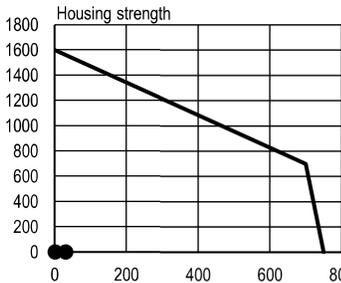
Restraints on Long/Short side/total: NL ●, Nw ○, N See page 233298-000 for definitions & formulas [in,lb,lb,psi]

Equipment Tag	Isolator type and anchor size	NL	Nw	N	g	Fp	Fpv	F1	F2
HHWP-1.2	SFS-SA 30-400 1/2"	2	0	4	0.16	121	32	0	30

**LOADS ON EACH CONNECTION (ANCHOR) [in,lb,lb,psi]**

**M** :QTY of mounting holes to be used on each Isolator  
**T** :Tension at each connection **Hi** :Isolator operating height  
**V** :Shear at each connection **A, B** :Anchor pattern (see dwg)

TAG#	M	A	B	Hi	Seismic load T(F1) & V(F2) for steel / for concrete			
1	2	1.5	0	6.5	162	15	239	30
2								



**CONNECTION STRENGTH CHECK (LRFD): (based on DeWalt Power-Stud+ SD1 concrete expansion anchor in 3000 psi cracked concrete)**

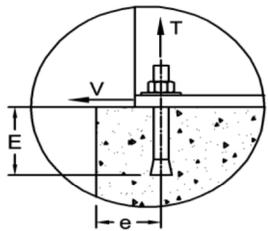
Stand-off: NO

Qty. of anchors at each connection: **n** Anchor Tension [lb]: **T** Strength in Tension [lb]: **Ft**  
 Edge distance (in): **e** Anchor Shear [lb]: **V** Strength in Shear [lb]: **Fv**

Units of measure: Imperial [in,lb,lb,psi]

Designed with Overstrength factor for Horizontal Seismic Load Effect  $\Omega_0=2$

TAG#	n	Ø (nominal embed. depth) (slab thk.)	e	Seismic load T(F1) & V(F2)	Seismic Strength Ft & Fv	seismic util.	OK ?
1	1	1/2 (2-1/2) (4" sla	4	239 30	1,284 1,227	19%	YES
2	1						

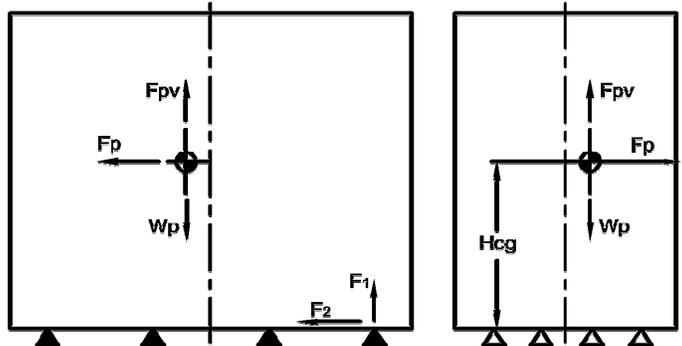
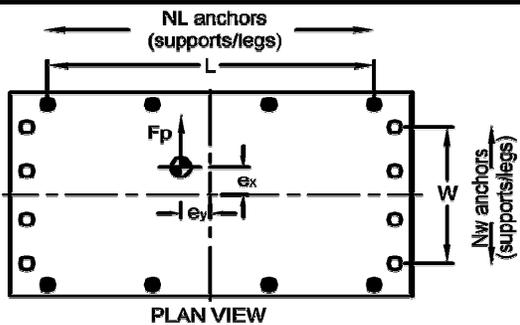


**IBC 2018 SEISMIC LOAD CALCULATION: FLOOR-MOUNTED EQUIPMENT, SPRING ISOLATED**

**VIBRO-ACOUSTICS®**

Project : <b>Vails Gate Fire District VGFD2001</b>			Noise Control   Vibration Isolation   Restraint Systems		
Customer: <b>Tower Enterprises of NY &amp; NJ</b>			Drawn by: <b>SM</b>	Date: <b>Nov.17, 2023</b>	Drawing No.: <b>233298-223</b>
Consultant:			Checked by:	Date:	Rev. <b>0</b>
Customer P.O. No <b>13580</b>	V-A Order No <b>233298</b>	V-A PM: <b>Arakel D.</b>			<b>A8-4.22</b>

See page 233298-000 <General Seismic and Wind Loads design information>, for definitions, formulas, and notes



Installation type: **Rigid - rugged component**  
 $a_p = 1.0$        $R_p = 2.5$   
 LRFD basic load combination:  $0.9D+1E$

ADDITIONAL SUPPORTS (IF NEEDED) MUST BE LOCATED ALONG LONG EDGE

Restraints along short/long side & total:  $N_w \circ / N_L \bullet$  &  $N$

Horizontal/Vertical seismic design force: **Fp/Fpv**    Maximum Tension/Shear on restraints: **F1/F2**  
 See page 233298-000 for definitions & formulas. Units of measure: Imperial [in, lb, lbf, psi]

Equipment Tag	lp	Wp	z	L	W	Hcg	ex	ey	NL	Nw	N	g	Fp	Fpv	F1	F2	
1	BL-1,2	1.5	889	0	56	28.9	26.5	0	0	2	0	4	0.09	84	37	0	21
2																	
3																	
4																	
5																	
6																	
7																	
8																	

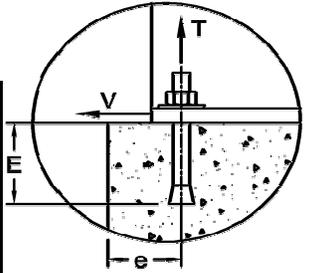
**CONNECTION STRENGTH CHECK (LRFD): (based on DeWalt Power-Stud+ SD1 concrete expansion anchor in 3000 psi cracked concrete)**

Stand-off: NO

Qty. of anchors at each connection: **n**      Anchor Tension [lbf]: **T**      Strength in Tension [lbf]: **Ft**  
 Edge distance (in): **e**      Anchor Shear [lbf]: **V**      Strength in Shear [lbf]: **Fv**

Units of measure: Imperial [in,lb,lbf,psi]      Designed with Overstrength factor for Horizontal Seismic Load Effect  $\Omega_0=2$

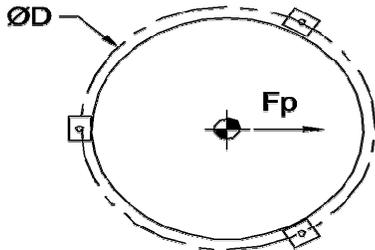
TAG#	n	Ø (nominal embed. depth) (slab thk.)	e	Seismic load T(F1) & V(F2)		Seismic Strength Ft & Fv		seismic util.	OK ?
1	1	3/8 (2-3/8) (4" slab)	3	0	42	1,087	844	5%	YES
2									
3									
4									
5									
6									
7									
8									



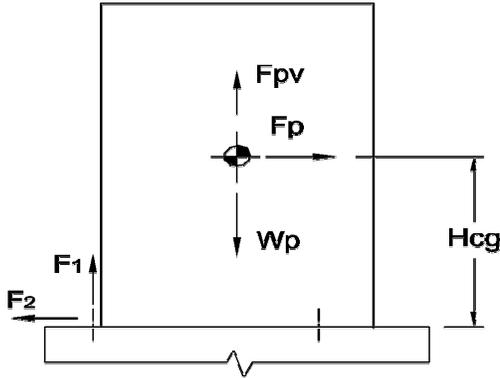
IBC 2018 SEISMIC LOAD CALCULATION: FLOOR-MOUNTED EQUIPMENT (RIGID CONNECTION)		
Project:	Vails Gate Fire District VGFD2001	
Customer:	Tower Enterprises of NY & NJ	
Consultant:		
Customer P.O. #:	V-A Order #	V-A PM:
13580	233298	Arakel D.

**VIBRO-ACOUSTICS®**  
 Noise Control | Vibration Isolation | Restraint Systems

Drawn by:	Date:	Drawing No.:	Rev.:
SM	Nov.17, 2023	233298-224	0
Checked by:	Date:		
		A8-4.22	



PLAN VIEW



SIDE VIEW

See page 233298-000 <General Seismic and Wind Loads design information>, for definitions, formulas, and notes

Installation type: **Rigid - rugged component**  
 $a_p = 1.0$        $R_p = 2.5$   
 LRFD basic load combination:  $0.9D+1E$

Total QTY of restraints: **N**  
 Horizontal/Vertical seismic design force: **Fp/Fpv**  
 Maximum Tension/Shear on restraints: **F1/F2**

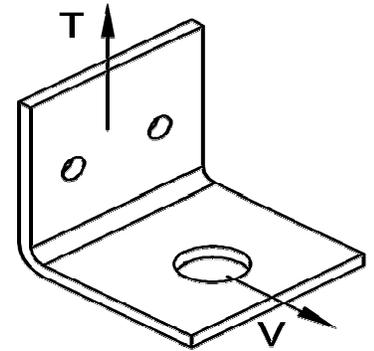
See page 233298-000 for definitions & formulas. Units of measure: Imperial [in, lb, lbf, psi]

Equipment Tag	$l_p$	$W_p$	$z$	$D$	$H_{cg}$	$N$	$g$	$F_p$	$F_{pv}$	$F_1$	$F_2$
1 ET-1	1.5	205	0	20	20	3	0.09	19	9	0	6
2											
3											
4											

**STRENGTH CHECK: "SRB" BRACKET (LRFD)** [in,lb,lbf,psi]

Tension load on bracket: **T**  
 Shear load on bracket: **V**

Strength in Tension [lbf]: **Ft**  
 Strength in Shear [lbf]: **Fv**



Equipment Tag	Bracket model	Attachment to equipment	max.T [lb]	max.V [lb]	Ft [lb]	Fv [lb]	OK ?
1 ET-1	SRB-222B	Screws or welding	0	6	970	500	YES
2							
3							
4							

**CONNECTION STRENGTH CHECK (LRFD): (based on DeWalt Power-Stud+ SD1 concrete expansion anchor in 3000 psi cracked concrete)**

Stand-off: **NO**

Qty. of anchors at each connection: **n**  
 Edge distance (in): **e**

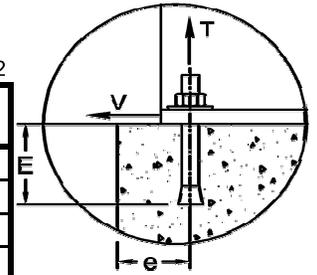
Anchor Tension [lbf]: **T**  
 Anchor Shear [lbf]: **V**

Strength in Tension [lbf]: **Ft**  
 Strength in Shear [lbf]: **Fv**

Units of measure: Imperial [in,lb,lbf,psi]

Designed with Overstrength factor for Horizontal Seismic Load Effect  $\Omega_0=2$

TA#	n	Ø (nominal embed. depth) (slab thk.)	e	Seismic load T(F1) & V(F2)	Seismic Strength Ft & Fv	seismic util.	OK ?
1	1	3/8 (2-3/8) (4" slab)	3	0    13	1,087    844	2%	YES
2							
3							
4							



**IBC 2018 SEISMIC LOAD CALCULATION: FLOOR-MOUNTED EQUIPMENT (RIGID CONNECTION)**

**VIBRO-ACOUSTICS®**

Project: <b>Vails Gate Fire District VGFD2001</b>		
Customer: <b>Tower Enterprises of NY &amp; NJ</b>		
Consultant:		
Customer P.O. No: <b>13580</b>	V-A Order No <b>233298</b>	V-A PM: <b>Arakel D.</b>

Noise Control   Vibration Isolation   Restraint Systems		
Drawn by: <b>SM</b>	Date: <b>Nov.20, 2023</b>	Drawing No.:
Checked by:	Date:	<b>233298-225</b>
		Rev. <b>0</b>
		A8-4.22

See page -000 <General Seismic and Wind Loads design information>, for definitions, formulas, and notes

Mark-up Drawing No.	Z	Pipe size [in]	Pipe service and linear weight [lb/ft] weight includes pipe + content + insulation	Ap	lp	Rp		
1	VA-PL110.10	1	4	Water	18.1	2.5	1.5	6
2								
3								
4								
5								
6								

Mark-up Drawing No.	Restrained Length [ft]	Wp (+5%) [lbf]	Fp [lbf]	g = Fp/Wp	T [lbf]	Fc [lbf]	
1	VA-PL110.10	80	1520	159	0.10	159	0
2							
3							
4							
5							
6							

	Max. allowed T [lb]	Restraint selection BulletBrace™	BB/BBR-13 anchorage requirements	BB/BBR-19 anchorage requirements
			1/2" A307 bolt	5/8" A307 bolt
			1000	2000
1	VA-PL110.10	BB/BBR-13 or BB/BBR-19	X	X
2				
3				
4				
5				
6				

**NOTES:**

- 1) For restraints installed with a compound angle, the restrained length is twice the span between 2 restraints, except for the situation where the full straight run and the span are equal (short run)
- 2) Min installation angle from vertical: 30 degrees
- 3) Other anchorage solutions available (e.g., shorter embedment; stainless steel)
- 4) Values shown determined per ACI 355.2 and ASHRAE 171
- 5) See drawing BB-AL for attachment level details.

**IBC 2018 CALCULATION: SEISMIC RESTRAINT FOR SUSPENDED PIPING**

Project : **Vails Gate Fire District VGFD2001**

Customer: **Tower Enterprises of NY & NJ**

Consultant: **0**

Customer P.O. No: **13580**

V-A Order No: **233298**

V-A PM: **Arakel D.**

**VIBROACOUSTICS®**  
A Swegon Group company

Drawn by:

**SM**

Date:

**21-Nov-2023**

Drawing No.:

**233298- 320**

Rev.

**0**

Checked by:

Date:

A06.6/26/16



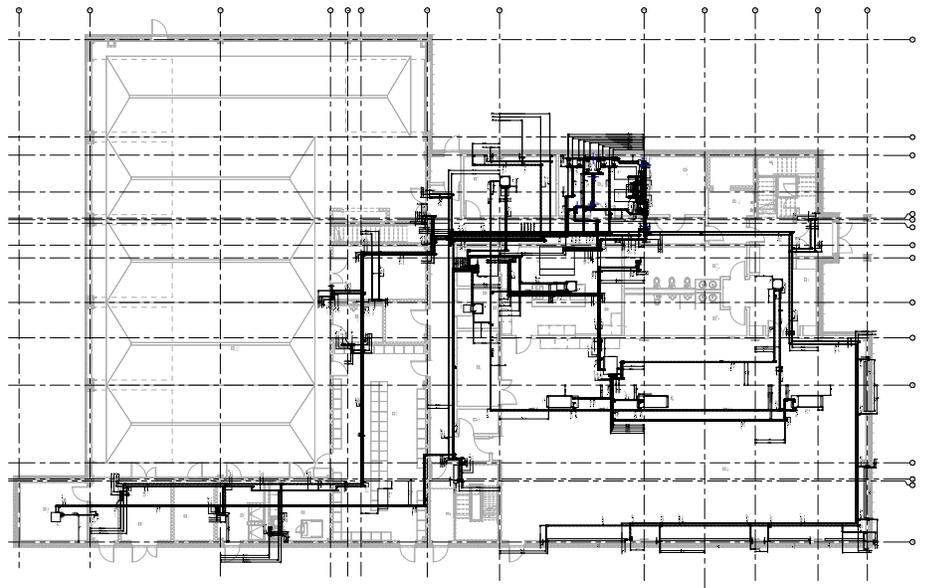


- NOTES:
- 1) No seismic restraints required for ductwork shown on this floor.
  - 2) Existing ductwork not within Vibration Acoustics scope of work and assumed to be adequately restrained.
  - 3) If final duct system installation notes significant from these drawings, contact Vibration Acoustics for additional notes.

PROJECT: Vibe Gas Fire Protect (15)2021	MECHANICAL DUCTWORK
CLIENT: Vibe Gas	SEISMIC RESTRAINTS
CONSULTANT: Vibe Acoustics	SCALE: NTS
BY: PROJECT NO. 233298	DATE: 1-26-2023
PROJECT MANAGER: [Name]	DWGNO: [Number]
AD: [Name]	REV: 0
DATE: [Date]	WEB: www.vibrationacoustics.com
NO: [Number]	EMAIL: info@vibrationacoustics.com

**VIBRO-ACOUSTICS**  
 Vibration Acoustics  
 15000 North Central Expressway  
 Suite 100  
 Dallas, TX 75243  
 Phone: (972) 412-1111  
 Fax: (972) 412-1112  
 www.vibrationacoustics.com

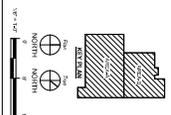




MECHANICAL FLOOR PLAN - SHOPPING CENTER - LEVEL 1 - VIBRO-ACOUSTICS

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	8/8/2023
2	REVISED PER COMMENTS	8/8/2023
3	REVISED PER COMMENTS	8/8/2023

REVISIONS:  
 1. 8/8/2023  
 2. 8/8/2023  
 3. 8/8/2023



DATE	BY	DESCRIPTION
8/8/2023	PL11010	ISSUED FOR PERMIT
8/8/2023	PL11010	REVISED PER COMMENTS
8/8/2023	PL11010	REVISED PER COMMENTS

PROJECT: VIBRO-ACOUSTICS  
 CONSULTANT: VIBRO-ACOUSTICS  
 PROJECT NO.: 232588  
 PROJECT MANAGER: AD  
 CHECKED: SM  
 DATE: 1-26-2023  
 DRAWING NO.: PL11010  
 SCALE: NTS

PROJECT:	VIBRO-ACOUSTICS
CONSULTANT:	VIBRO-ACOUSTICS
PROJECT NO.:	232588
PROJECT MANAGER:	AD
CHECKED:	SM
DATE:	1-26-2023
DRAWING NO.:	PL11010
SCALE:	NTS

- NOTES:**
- Details apply to locations shown only.
  - Use BPS-13 cable kits at all locations shown on this drawing unless otherwise noted.  
Quantities used:  
9 pcs. BPS-13 cable kits
  - For cable installation instructions refer to drawings and specifications. All cable kits must be installed in accordance with the manufacturer's instructions. Cable kits may be required, refer to drawing NS-NS11.
  - Resistant rods, trapezes and self-drilling screws by others.
  - Resistant rods and locations only valid for pipe routing system. If final pipe system installation varies from the above, refer to drawing NS-NS11 for additional work.
  - Existing piping not within Vibro-Acoustics scope of work and assumed to be adequately restrained.

**VIBRO-ACOUSTICS**  
 15300 Granddaisy  
 Fort Worth, TX 76134  
 (817) 412-1100  
 www.vibro-acoustics.com

NOTES:

(1) No seismic restraints required.

(2) All piping shall be installed within VIBRO-Acoustics scope of work and assumed to be adequately restrained.

(3) If final piping / ductwork system installation varies from these drawings contact VIBRO-Acoustics for additional work.

ABBREVIATIONS

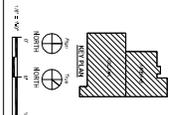
HHWS = HOT WATER SUPPLY  
 HHWR = HOT WATER RETURN  
 RL = REFRIGERANT LIQUID  
 RS = REFRIGERANT SUCTION

COLOR LEGEND

MECHANICAL PIPING



MECHANICAL PIPING - SHOP DRAW - LEVEL 2 BLDG 2 - LEVEL 2



REVISIONS	DATE
01	11/11/2020
02	11/11/2020
03	11/11/2020
04	11/11/2020
05	11/11/2020
06	11/11/2020
07	11/11/2020
08	11/11/2020
09	11/11/2020
10	11/11/2020

#MECHANICAL PIPING - SHOP DRAW - PHASE 2 BLDG 2 - LEVEL 2

DATE: 11/11/2020

Drawn By: [Name]

Checked By: [Name]

Scale: P11009

PROJECT: Vails Gate Fire District (19272021)	PROJECT MANAGER: AD
CLIENT: Vails Gate Fire District	CHECKED: NIS
CONSULTANT: [Name]	DATE: 11/26/2021
BY: PROJECT NO. 2332381	PROJECT MANAGER: [Name]
DATE: [Date]	NO: [Number]
Revision	DATE
1	11/26/2021
2	11/26/2021
3	11/26/2021
4	11/26/2021
5	11/26/2021
6	11/26/2021
7	11/26/2021
8	11/26/2021
9	11/26/2021
10	11/26/2021
11	11/26/2021
12	11/26/2021
13	11/26/2021
14	11/26/2021
15	11/26/2021
16	11/26/2021
17	11/26/2021
18	11/26/2021
19	11/26/2021
20	11/26/2021
21	11/26/2021
22	11/26/2021
23	11/26/2021
24	11/26/2021
25	11/26/2021
26	11/26/2021
27	11/26/2021
28	11/26/2021
29	11/26/2021
30	11/26/2021
31	11/26/2021
32	11/26/2021
33	11/26/2021
34	11/26/2021
35	11/26/2021
36	11/26/2021
37	11/26/2021
38	11/26/2021
39	11/26/2021
40	11/26/2021
41	11/26/2021
42	11/26/2021
43	11/26/2021
44	11/26/2021
45	11/26/2021
46	11/26/2021
47	11/26/2021
48	11/26/2021
49	11/26/2021
50	11/26/2021
51	11/26/2021
52	11/26/2021
53	11/26/2021
54	11/26/2021
55	11/26/2021
56	11/26/2021
57	11/26/2021
58	11/26/2021
59	11/26/2021
60	11/26/2021
61	11/26/2021
62	11/26/2021
63	11/26/2021
64	11/26/2021
65	11/26/2021
66	11/26/2021
67	11/26/2021
68	11/26/2021
69	11/26/2021
70	11/26/2021
71	11/26/2021
72	11/26/2021
73	11/26/2021
74	11/26/2021
75	11/26/2021
76	11/26/2021
77	11/26/2021
78	11/26/2021
79	11/26/2021
80	11/26/2021
81	11/26/2021
82	11/26/2021
83	11/26/2021
84	11/26/2021
85	11/26/2021
86	11/26/2021
87	11/26/2021
88	11/26/2021
89	11/26/2021
90	11/26/2021
91	11/26/2021
92	11/26/2021
93	11/26/2021
94	11/26/2021
95	11/26/2021
96	11/26/2021
97	11/26/2021
98	11/26/2021
99	11/26/2021
100	11/26/2021

FOR RESTRAINTS ONLY

VIBRO-ACOUSTICS  
 15000 110th Ave, Suite 1100B  
 Forest Hills, NY 11375  
 Phone: (718) 224-1100  
 Fax: (718) 224-1101  
 Email: info@vibro-acoustics.com

## 2" (51 mm) Deflection SHR Spring Hangers with Neoprene

## SHR-2

File No.: DS-SHR2-013

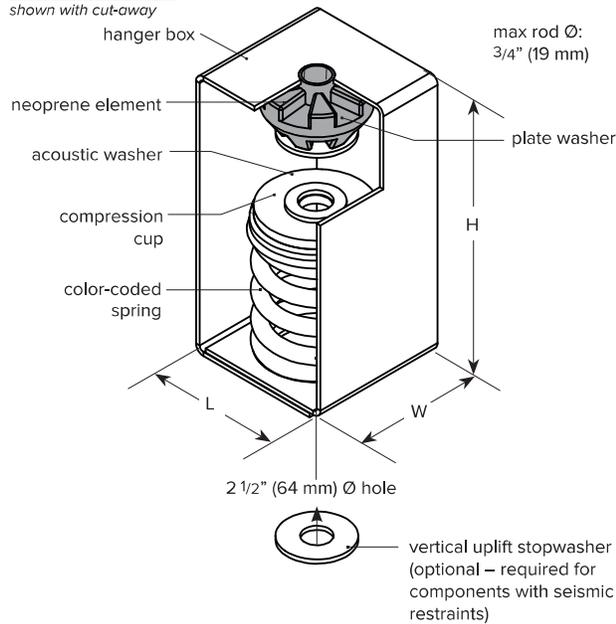
Date: 06 May 2022

Supersedes: DS-SHR2-012

Date: 06 Nov 2020

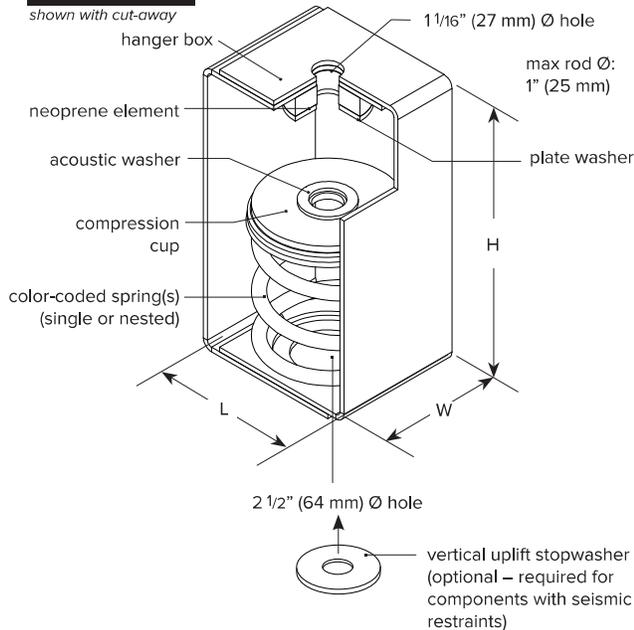
### SHR 2N

shown with cut-away



### SHR 2S

shown with cut-away



### PERFORMANCE

Model	Spring Color	Element Color	Rated Load		Deflection at rated load		Isolator Weight †	
			lb	kN	in	mm	lb	kg
SHR-2N-50	Red	Green	50	0.22	2.0	51	7.8	3.5
SHR-2N-100	White	Green	100	0.44	2.0	51	7.9	3.6
SHR-2N-200	Orange	Green	200	0.89	2.0	51	8.5	3.9
SHR-2N-300	Green	Green	300	1.33	2.1	53	8.5	3.9
SHR-2N-400	Grey	Red	400	1.78	2.0	51	8.7	4.0
SHR-2N-500	Yellow	Black	500	2.22	2.1	53	8.9	4.0
SHR-2N-600	Blue	Blue	600	2.67	2.0	51	9.4	4.3
SHR-2N-800	Black	Blue	800	3.56	2.1	53	9.0	4.1
SHR-2N-1000	Ivory	Yellow	1000	4.45	2.0	51	9.4	4.3
SHR-2S-800	Green	Green	800	3.56	2.0	51	17.1	7.8
SHR-2S-900	Green-White	Green	900	4.00	2.0	51	17.8	8.1
SHR-2S-1000	Green-Orange	Green	1000	4.45	2.0	51	18.4	8.4
SHR-2S-1100	Green-Green	Green	1100	4.89	2.0	51	18.4	8.4
SHR-2S-1200	Green-Grey	Green	1200	5.34	2.0	51	18.7	8.5
SHR-2S-1300	Green-Yellow	Green	1300	5.78	2.0	51	18.8	8.5
SHR-2S-1400	Green-Blue	Green	1400	6.23	2.0	51	19.3	8.8
SHR-2S-1600	Green-Black	Green	1600	7.12	2.1	53	18.9	8.6
SHR-2S-1800	Green-Ivory	Green	1800	8.01	2.0	51	19.3	8.8

† weights are approximate

### DIMENSIONS: SHR-2N

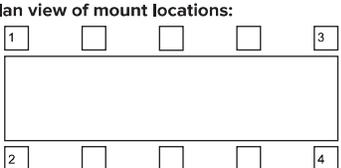
Model	L	W	H
SHR-2N	in	mm	in
50-1000	5	127	4 1/2
			114
			10 1/8
			257

### DIMENSIONS: SHR-2S

Model	L	W	H
SHR-2S	in	mm	in
800-1800	6 1/2	165	5
			127
			11 1/2
			292

### NOTES

- Spring hanger with steel spring and welded steel housing
- Hanger is designed to allow support rod misalignment through a 30-degree arc without contacting the hanger box
- Vertical uplift stopwasher must be added on spring hangers for seismically restrained equipment, duct or piping
- Minimum 50% additional travel to solid
- Springs are powder coated
- Compression cups are powder coated or zinc plated
- Housings are powder coated or galvanized

Project: Vails Gate Fire District VGFD2001			Plan view of mount locations: 		1. SHR-2N-50	6.
Customer: Tower Enterprises of NY & NJ					2. SHR-2N-50	7.
Consultant:					3. SHR-2N-50	8.
Dwg No.: 233298-100	Rev: 0	Drawn by: SM			4. SHR-2N-50	9.
V-A Project Manager: Arakel Dakessian					5.	10.
TAG: TX-2, 3, ERFX-122			EQUIPMENT: Inline fan(s) - ACME - 85 lbs		QTY of sets required: 3	
COMMENTS:					DATE: 2023-11-21	

## 2" (51 mm) Deflection SHR Spring Hangers with Neoprene

## SHR-2

File No.: DS-SHR2-013

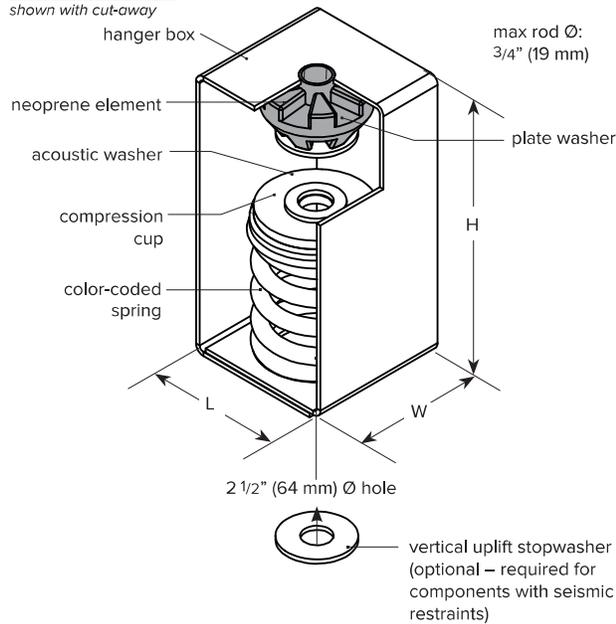
Date: 06 May 2022

Supersedes: DS-SHR2-012

Date: 06 Nov 2020

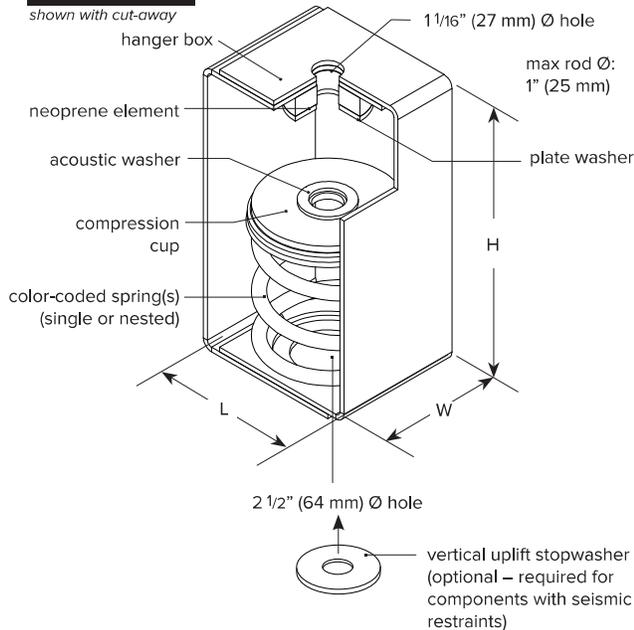
### SHR 2N

shown with cut-away



### SHR 2S

shown with cut-away



### PERFORMANCE

Model	Spring Color	Element Color	Rated Load		Deflection at rated load		Isolator Weight †	
			lb	kN	in	mm	lb	kg
SHR-2N-50	Red	Green	50	0.22	2.0	51	7.8	3.5
SHR-2N-100	White	Green	100	0.44	2.0	51	7.9	3.6
SHR-2N-200	Orange	Green	200	0.89	2.0	51	8.5	3.9
SHR-2N-300	Green	Green	300	1.33	2.1	53	8.5	3.9
SHR-2N-400	Grey	Red	400	1.78	2.0	51	8.7	4.0
SHR-2N-500	Yellow	Black	500	2.22	2.1	53	8.9	4.0
SHR-2N-600	Blue	Blue	600	2.67	2.0	51	9.4	4.3
SHR-2N-800	Black	Blue	800	3.56	2.1	53	9.0	4.1
SHR-2N-1000	Ivory	Yellow	1000	4.45	2.0	51	9.4	4.3
SHR-2S-800	Green	Green	800	3.56	2.0	51	17.1	7.8
SHR-2S-900	Green-White	Green	900	4.00	2.0	51	17.8	8.1
SHR-2S-1000	Green-Orange	Green	1000	4.45	2.0	51	18.4	8.4
SHR-2S-1100	Green-Green	Green	1100	4.89	2.0	51	18.4	8.4
SHR-2S-1200	Green-Grey	Green	1200	5.34	2.0	51	18.7	8.5
SHR-2S-1300	Green-Yellow	Green	1300	5.78	2.0	51	18.8	8.5
SHR-2S-1400	Green-Blue	Green	1400	6.23	2.0	51	19.3	8.8
SHR-2S-1600	Green-Black	Green	1600	7.12	2.1	53	18.9	8.6
SHR-2S-1800	Green-Ivory	Green	1800	8.01	2.0	51	19.3	8.8

† weights are approximate

### DIMENSIONS: SHR-2N

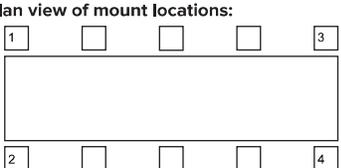
Model	L	W	H
SHR-2N	in	mm	in
50-1000	5	127	4 ½
			114
			10 ⅝
			257

### DIMENSIONS: SHR-2S

Model	L	W	H
SHR-2S	in	mm	in
800-1800	6 ½	165	5
			127
			11 ½
			292

### NOTES

- Spring hanger with steel spring and welded steel housing
- Hanger is designed to allow support rod misalignment through a 30-degree arc without contacting the hanger box
- Vertical uplift stopwasher must be added on spring hangers for seismically restrained equipment, duct or piping
- Minimum 50% additional travel to solid
- Springs are powder coated
- Compression cups are powder coated or zinc plated
- Housings are powder coated or galvanized

Project: Vails Gate Fire District VGFD2001			Plan view of mount locations: 		1. SHR-2N-50	6.
Customer: Tower Enterprises of NY & NJ					2. SHR-2N-50	7.
Consultant:					3. SHR-2N-50	8.
Dwg No.: 233298-101	Rev: 0	Drawn by: SM			4. SHR-2N-50	9.
V-A Project Manager: Arakel Dakessian					5.	10.
TAG: GX-2,3			EQUIPMENT: Inline fan(s) - ACME - 85 lbs		QTY of sets required: 2	
COMMENTS:					DATE: 2023-11-21	

## 2" (51 mm) Deflection SHR Spring Hangers with Neoprene

## SHR-2

File No.: DS-SHR2-013

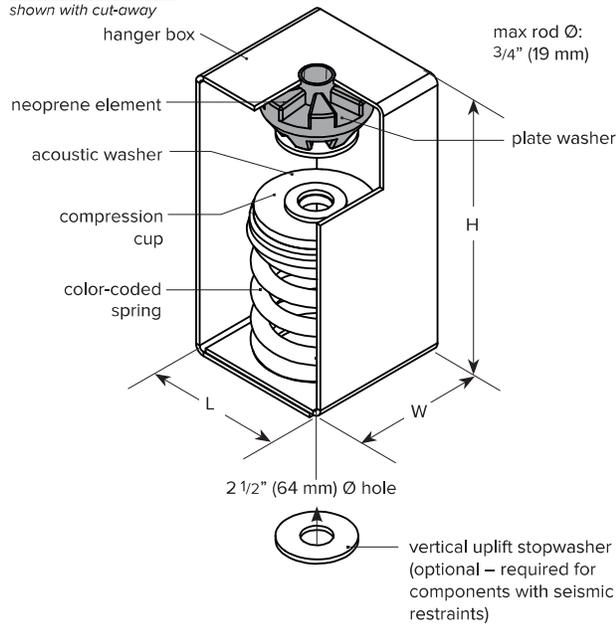
Date: 06 May 2022

Supersedes: DS-SHR2-012

Date: 06 Nov 2020

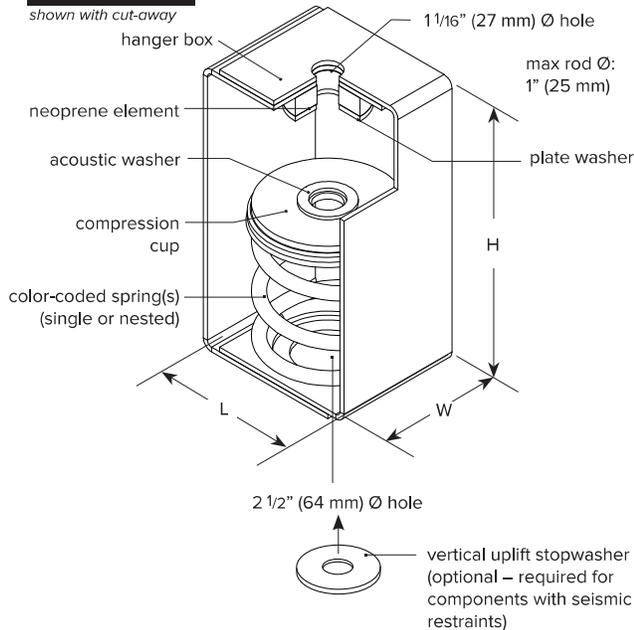
### SHR 2N

shown with cut-away



### SHR 2S

shown with cut-away



### PERFORMANCE

Model	Spring Color	Element Color	Rated Load		Deflection at rated load		Isolator Weight †	
			lb	kN	in	mm	lb	kg
SHR-2N-50	Red	Green	50	0.22	2.0	51	7.8	3.5
SHR-2N-100	White	Green	100	0.44	2.0	51	7.9	3.6
SHR-2N-200	Orange	Green	200	0.89	2.0	51	8.5	3.9
SHR-2N-300	Green	Green	300	1.33	2.1	53	8.5	3.9
SHR-2N-400	Grey	Red	400	1.78	2.0	51	8.7	4.0
SHR-2N-500	Yellow	Black	500	2.22	2.1	53	8.9	4.0
SHR-2N-600	Blue	Blue	600	2.67	2.0	51	9.4	4.3
SHR-2N-800	Black	Blue	800	3.56	2.1	53	9.0	4.1
SHR-2N-1000	Ivory	Yellow	1000	4.45	2.0	51	9.4	4.3
SHR-2S-800	Green	Green	800	3.56	2.0	51	17.1	7.8
SHR-2S-900	Green-White	Green	900	4.00	2.0	51	17.8	8.1
SHR-2S-1000	Green-Orange	Green	1000	4.45	2.0	51	18.4	8.4
SHR-2S-1100	Green-Green	Green	1100	4.89	2.0	51	18.4	8.4
SHR-2S-1200	Green-Grey	Green	1200	5.34	2.0	51	18.7	8.5
SHR-2S-1300	Green-Yellow	Green	1300	5.78	2.0	51	18.8	8.5
SHR-2S-1400	Green-Blue	Green	1400	6.23	2.0	51	19.3	8.8
SHR-2S-1600	Green-Black	Green	1600	7.12	2.1	53	18.9	8.6
SHR-2S-1800	Green-Ivory	Green	1800	8.01	2.0	51	19.3	8.8

† weights are approximate

### DIMENSIONS: SHR-2N

Model	L	W	H
SHR-2N	in	mm	in
50-1000	5	127	4 ½
			114
			10 ⅝
			257

### DIMENSIONS: SHR-2S

Model	L	W	H
SHR-2S	in	mm	in
800-1800	6 ½	165	5
			127
			11 ½
			292

### NOTES

- Spring hanger with steel spring and welded steel housing
- Hanger is designed to allow support rod misalignment through a 30-degree arc without contacting the hanger box
- Vertical uplift stopwasher must be added on spring hangers for seismically restrained equipment, duct or piping
- Minimum 50% additional travel to solid
- Springs are powder coated
- Compression cups are powder coated or zinc plated
- Housings are powder coated or galvanized

Project: Vails Gate Fire District VGFD2001			Plan view of mount locations: 		1. SHR-2N-100	6.
Customer: Tower Enterprises of NY & NJ					2. SHR-2N-100	7.
Consultant:			EQUIPMENT: Inline fan(s) - ACME - 263 lbs		3. SHR-2N-100	8.
Dwg No.: 233298-102	Rev: 0	Drawn by: SM			4. SHR-2N-100	9.
V-A Project Manager: Arakel Dakessian			DATE: 2023-11-21		5.	10.
TAG: GX-1					QTY of sets required: 1	
COMMENTS:						

## 2" (51 mm) Deflection SHR Spring Hangers with Neoprene

## SHR-2

File No.: DS-SHR2-013

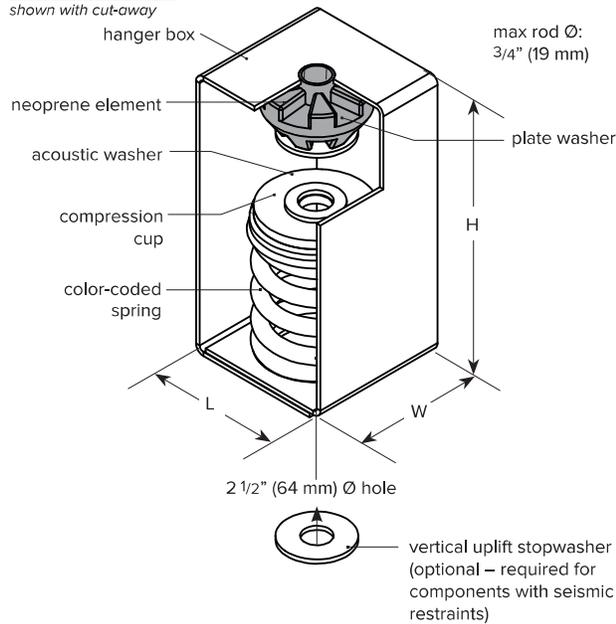
Date: 06 May 2022

Supersedes: DS-SHR2-012

Date: 06 Nov 2020

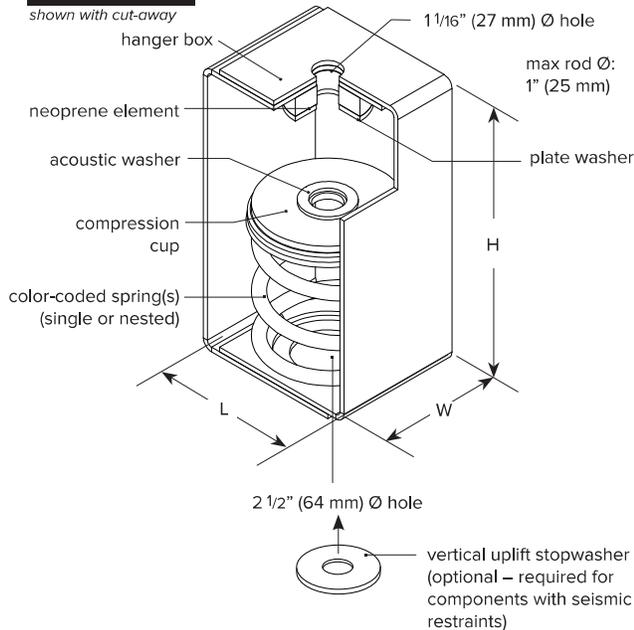
### SHR 2N

shown with cut-away



### SHR 2S

shown with cut-away



### PERFORMANCE

Model	Spring Color	Element Color	Rated Load		Deflection at rated load		Isolator Weight †	
			lb	kN	in	mm	lb	kg
SHR-2N-50	Red	Green	50	0.22	2.0	51	7.8	3.5
SHR-2N-100	White	Green	100	0.44	2.0	51	7.9	3.6
SHR-2N-200	Orange	Green	200	0.89	2.0	51	8.5	3.9
SHR-2N-300	Green	Green	300	1.33	2.1	53	8.5	3.9
SHR-2N-400	Grey	Red	400	1.78	2.0	51	8.7	4.0
SHR-2N-500	Yellow	Black	500	2.22	2.1	53	8.9	4.0
SHR-2N-600	Blue	Blue	600	2.67	2.0	51	9.4	4.3
SHR-2N-800	Black	Blue	800	3.56	2.1	53	9.0	4.1
SHR-2N-1000	Ivory	Yellow	1000	4.45	2.0	51	9.4	4.3
SHR-2S-800	Green	Green	800	3.56	2.0	51	17.1	7.8
SHR-2S-900	Green-White	Green	900	4.00	2.0	51	17.8	8.1
SHR-2S-1000	Green-Orange	Green	1000	4.45	2.0	51	18.4	8.4
SHR-2S-1100	Green-Green	Green	1100	4.89	2.0	51	18.4	8.4
SHR-2S-1200	Green-Grey	Green	1200	5.34	2.0	51	18.7	8.5
SHR-2S-1300	Green-Yellow	Green	1300	5.78	2.0	51	18.8	8.5
SHR-2S-1400	Green-Blue	Green	1400	6.23	2.0	51	19.3	8.8
SHR-2S-1600	Green-Black	Green	1600	7.12	2.1	53	18.9	8.6
SHR-2S-1800	Green-Ivory	Green	1800	8.01	2.0	51	19.3	8.8

† weights are approximate

### DIMENSIONS: SHR-2N

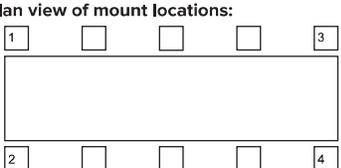
Model	L	W	H
SHR-2N	in	mm	in
50-1000	5	127	4 1/2
			114
			10 1/8
			257

### DIMENSIONS: SHR-2S

Model	L	W	H
SHR-2S	in	mm	in
800-1800	6 1/2	165	5
			127
			11 1/2
			292

### NOTES

- Spring hanger with steel spring and welded steel housing
- Hanger is designed to allow support rod misalignment through a 30-degree arc without contacting the hanger box
- Vertical uplift stopwasher must be added on spring hangers for seismically restrained equipment, duct or piping
- Minimum 50% additional travel to solid
- Springs are powder coated
- Compression cups are powder coated or zinc plated
- Housings are powder coated or galvanized

Project: Vails Gate Fire District VGFD2001			Plan view of mount locations: 		1. SHR-2N-50	6.
Customer: Tower Enterprises of NY & NJ					2. SHR-2N-50	7.
Consultant:					3. SHR-2N-50	8.
Dwg No.: 233298-103	Rev: 0	Drawn by: SM			4. SHR-2N-50	9.
V-A Project Manager: Arakel Dakessian					5.	10.
TAG: GXF-SB-1			EQUIPMENT: Fan(s) - ACME - 160 lbs		QTY of sets required: 1	
COMMENTS:					DATE: 2023-11-21	

## 2" (51 mm) Deflection SHR Spring Hangers with Neoprene

## SHR-2

File No.: DS-SHR2-013

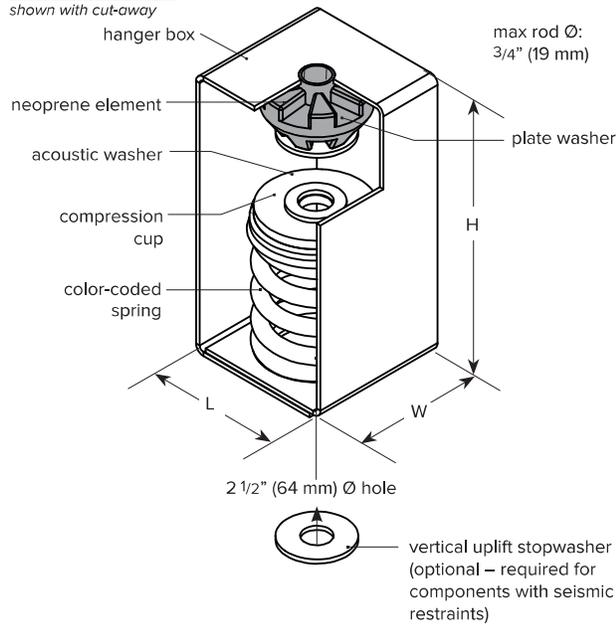
Date: 06 May 2022

Supersedes: DS-SHR2-012

Date: 06 Nov 2020

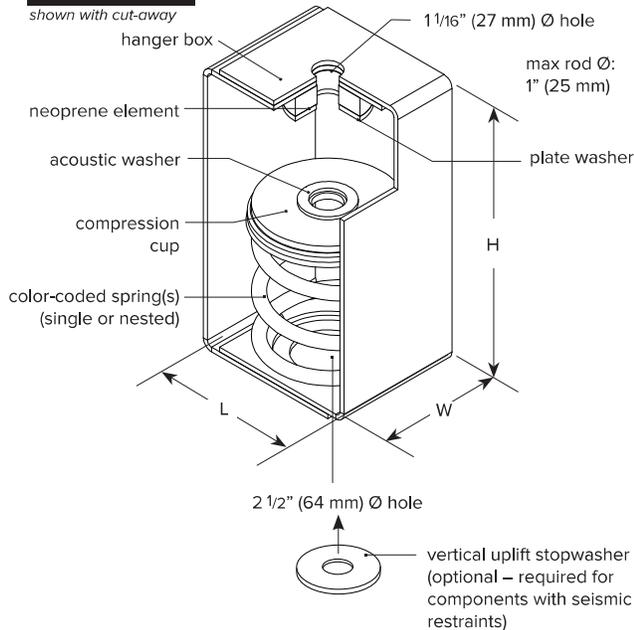
### SHR 2N

shown with cut-away



### SHR 2S

shown with cut-away



### PERFORMANCE

Model	Spring Color	Element Color	Rated Load		Deflection at rated load		Isolator Weight †	
			lb	kN	in	mm	lb	kg
SHR-2N-50	Red	Green	50	0.22	2.0	51	7.8	3.5
SHR-2N-100	White	Green	100	0.44	2.0	51	7.9	3.6
SHR-2N-200	Orange	Green	200	0.89	2.0	51	8.5	3.9
SHR-2N-300	Green	Green	300	1.33	2.1	53	8.5	3.9
SHR-2N-400	Grey	Red	400	1.78	2.0	51	8.7	4.0
SHR-2N-500	Yellow	Black	500	2.22	2.1	53	8.9	4.0
SHR-2N-600	Blue	Blue	600	2.67	2.0	51	9.4	4.3
SHR-2N-800	Black	Blue	800	3.56	2.1	53	9.0	4.1
SHR-2N-1000	Ivory	Yellow	1000	4.45	2.0	51	9.4	4.3
SHR-2S-800	Green	Green	800	3.56	2.0	51	17.1	7.8
SHR-2S-900	Green-White	Green	900	4.00	2.0	51	17.8	8.1
SHR-2S-1000	Green-Orange	Green	1000	4.45	2.0	51	18.4	8.4
SHR-2S-1100	Green-Green	Green	1100	4.89	2.0	51	18.4	8.4
SHR-2S-1200	Green-Grey	Green	1200	5.34	2.0	51	18.7	8.5
SHR-2S-1300	Green-Yellow	Green	1300	5.78	2.0	51	18.8	8.5
SHR-2S-1400	Green-Blue	Green	1400	6.23	2.0	51	19.3	8.8
SHR-2S-1600	Green-Black	Green	1600	7.12	2.1	53	18.9	8.6
SHR-2S-1800	Green-Ivory	Green	1800	8.01	2.0	51	19.3	8.8

† weights are approximate

### DIMENSIONS: SHR-2N

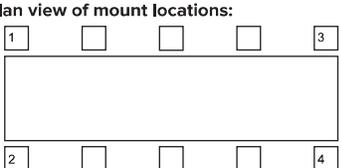
Model	L	W	H
SHR-2N	in	mm	in
50-1000	5	127	4 1/2
			114
			10 1/8
			257

### DIMENSIONS: SHR-2S

Model	L	W	H
SHR-2S	in	mm	in
800-1800	6 1/2	165	5
			127
			11 1/2
			292

### NOTES

- Spring hanger with steel spring and welded steel housing
- Hanger is designed to allow support rod misalignment through a 30-degree arc without contacting the hanger box
- Vertical uplift stopwasher must be added on spring hangers for seismically restrained equipment, duct or piping
- Minimum 50% additional travel to solid
- Springs are powder coated
- Compression cups are powder coated or zinc plated
- Housings are powder coated or galvanized

Project: Vails Gate Fire District VGFD2001			Plan view of mount locations: 		1. SHR-2N-50	6.
Customer: Tower Enterprises of NY & NJ					2. SHR-2N-50	7.
Consultant:					3. SHR-2N-50	8.
Dwg No.: 233298-104	Rev: 0	Drawn by: SM			4. SHR-2N-50	9.
V-A Project Manager: Arakel Dakessian					5.	10.
TAG: GXF-SB-2			EQUIPMENT: Fan(s) - ACME - 85 lbs		QTY of sets required: 1	
COMMENTS:					DATE: 2023-11-21	

tel: 416-291-7371 1-800-565-8401  
fax: 416-291-8049 1-888-811-2264

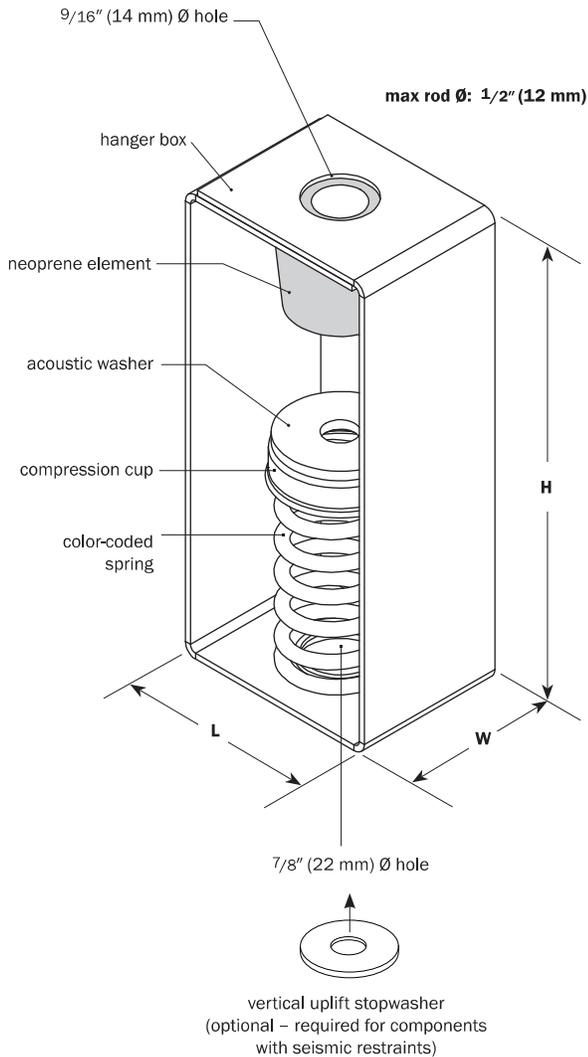
web: www.vibro-acoustics.com  
eml: info@vibro-acoustics.com

File No.: DS-SHRSN-007

Date: 28 Feb 2014

Supersedes: DS-SHRSN-006

Date: 16 Sep 2011



**PERFORMANCE**

Model	Spring Color	Element Color	Rated Load		Deflection at rated load		Isolator Weight †	
			lb	kN	in	mm	lb	kg
SHR-SN-15	White	Orange	15	0.07	1.0	25	1.0	0.4
SHR-SN-30	Yellow	Orange	30	0.13	1.0	25	1.0	0.4
SHR-SN-45	Orange	Blue	45	0.20	1.0	25	1.0	0.5
SHR-SN-60	Red	Blue	60	0.27	1.0	25	1.0	0.5
SHR-SN-100	Blue	Green	100	0.44	1.0	25	1.1	0.5
SHR-SN-150	Black	Red	150	0.67	1.0	25	1.1	0.5
SHR-SN-200	Grey	Black	200	0.90	1.0	25	1.2	0.5

for additional loads, see SHR-1 † weights are approximate

**DIMENSIONS**

Model	L	W	H
SHR-SN	in	mm	in
15-200	2 3/4	70	6 1/4

**NOTES**

- Spring hanger with steel spring and neoprene element in a welded steel housing
- Vertical uplift stopwasher must be added on spring hangers for seismically restrained equipment, duct or piping
- Minimum 50% addition travel to solid
- Springs are powder coated, housings and cups are galvanized

Project: Vails Gate Fire District VGFD2001			plan view of hanger locations 		1: SHR-SN-15	6:
Customer: Tower Enterprises of NY & NJ					2: SHR-SN-15	7:
Consultant:			3: SHR-SN-15	8:		
Dwg No.: 233298-105	Rev: 0	Drawn by: SM	4: SHR-SN-15	9:		
V-A Project Manager: Arakel Dakessian			5:	10:		
TAG: HHWP-3, 4, 5, 6			EQUIPMENT: Inline Pump(s) - Taco - 30 lbs		QTY of sets required: 4	
COMMENTS:					DATE: 2023-11-21	

## 2" (51 mm) Deflection SHR Spring Hangers with Neoprene

## SHR-2

File No.: DS-SHR2-013

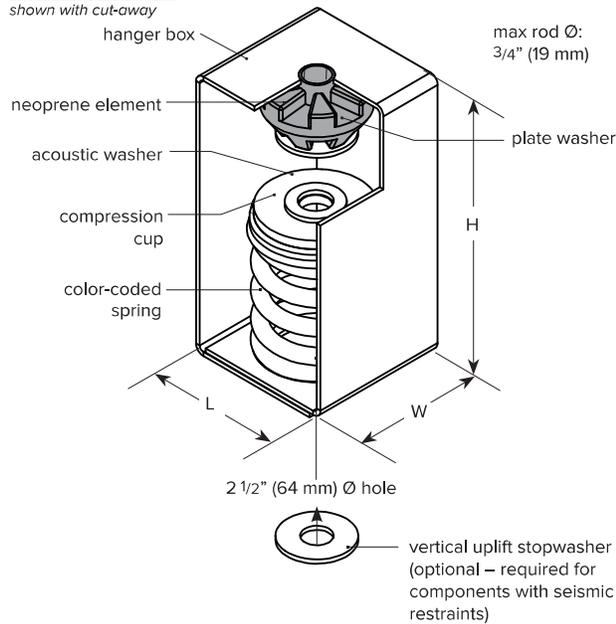
Date: 06 May 2022

Supersedes: DS-SHR2-012

Date: 06 Nov 2020

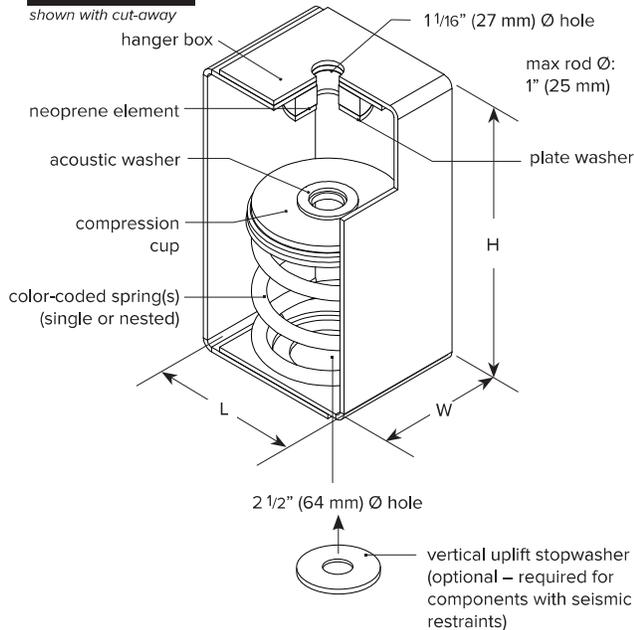
### SHR 2N

shown with cut-away



### SHR 2S

shown with cut-away



### PERFORMANCE

Model	Spring Color	Element Color	Rated Load		Deflection at rated load		Isolator Weight †	
			lb	kN	in	mm	lb	kg
SHR-2N-50	Red	Green	50	0.22	2.0	51	7.8	3.5
SHR-2N-100	White	Green	100	0.44	2.0	51	7.9	3.6
SHR-2N-200	Orange	Green	200	0.89	2.0	51	8.5	3.9
SHR-2N-300	Green	Green	300	1.33	2.1	53	8.5	3.9
SHR-2N-400	Grey	Red	400	1.78	2.0	51	8.7	4.0
SHR-2N-500	Yellow	Black	500	2.22	2.1	53	8.9	4.0
SHR-2N-600	Blue	Blue	600	2.67	2.0	51	9.4	4.3
SHR-2N-800	Black	Blue	800	3.56	2.1	53	9.0	4.1
SHR-2N-1000	Ivory	Yellow	1000	4.45	2.0	51	9.4	4.3
SHR-2S-800	Green	Green	800	3.56	2.0	51	17.1	7.8
SHR-2S-900	Green-White	Green	900	4.00	2.0	51	17.8	8.1
SHR-2S-1000	Green-Orange	Green	1000	4.45	2.0	51	18.4	8.4
SHR-2S-1100	Green-Green	Green	1100	4.89	2.0	51	18.4	8.4
SHR-2S-1200	Green-Grey	Green	1200	5.34	2.0	51	18.7	8.5
SHR-2S-1300	Green-Yellow	Green	1300	5.78	2.0	51	18.8	8.5
SHR-2S-1400	Green-Blue	Green	1400	6.23	2.0	51	19.3	8.8
SHR-2S-1600	Green-Black	Green	1600	7.12	2.1	53	18.9	8.6
SHR-2S-1800	Green-Ivory	Green	1800	8.01	2.0	51	19.3	8.8

† weights are approximate

### DIMENSIONS: SHR-2N

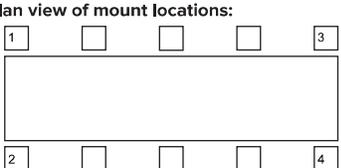
Model	L	W	H
SHR-2N	in	mm	in
50-1000	5	127	4 1/2
			114
			10 1/8
			257

### DIMENSIONS: SHR-2S

Model	L	W	H
SHR-2S	in	mm	in
800-1800	6 1/2	165	5
			127
			11 1/2
			292

### NOTES

- Spring hanger with steel spring and welded steel housing
- Hanger is designed to allow support rod misalignment through a 30-degree arc without contacting the hanger box
- Vertical uplift stopwasher must be added on spring hangers for seismically restrained equipment, duct or piping
- Minimum 50% additional travel to solid
- Springs are powder coated
- Compression cups are powder coated or zinc plated
- Housings are powder coated or galvanized

Project: Vails Gate Fire District VGFD2001			Plan view of mount locations: 		1. SHR-2N-50	6.
Customer: Tower Enterprises of NY & NJ					2. SHR-2N-50	7.
Consultant:			EQUIPMENT: Unit Heater(s) - Modine - 92 lbs		3. SHR-2N-50	8.
Dwg No.: 233298-106	Rev: 0	Drawn by: SM			4. SHR-2N-50	9.
V-A Project Manager: Arakel Dakessian			DATE: 2023-11-21		5.	10.
TAG: UH-1 to 4					QTY of sets required: 4	
COMMENTS:						

**2" (50 mm) Deflection SFS  
Seismic Floor Mounted Isolator**

**SFS-2N**

File No.: DS-SFS2N-013

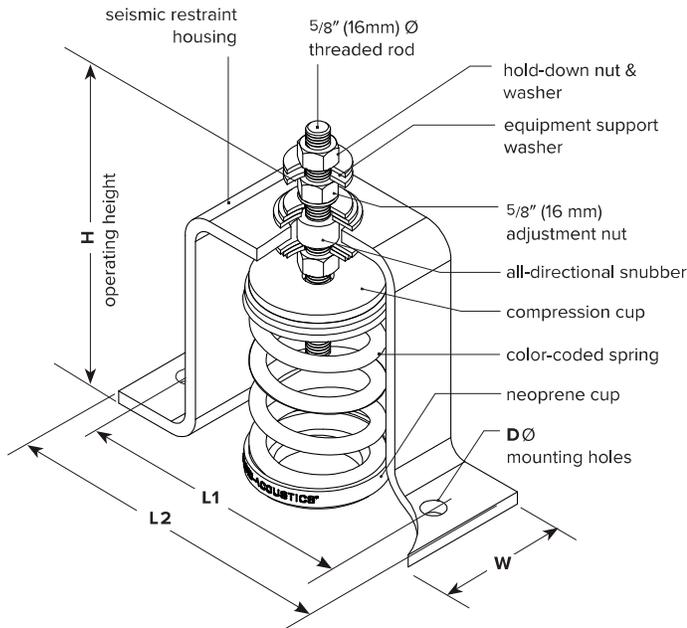
Date: 30 Apr 2020

Supersedes: DS-SFS2-012

Date: 31 Oct 2017

**SFS-2N**

shown with cut-away



**PERFORMANCE**

Model	Spring Color	Rated Load		Deflection at rated load		Isolator Weight	
		lb	kN	in	mm	lb	kg
SFS-2N-50	Red	50	0.22	2.0	51	13.1	6.0
SFS-2N-100	White	100	0.44	2.0	51	13.2	6.0
SFS-2N-200	Orange	200	0.89	2.0	51	13.9	6.3
SFS-2N-300	Green	300	1.33	2.0	51	13.8	6.3
SFS-2N-400	Grey	400	1.78	2.0	51	14.1	6.4
SFS-2N-500	Yellow	500	2.22	2.0	51	14.2	6.4
SFS-2N-600	Blue	600	2.67	2.0	51	14.7	6.7
SFS-2N-800	Black	800	3.56	2.0	51	14.3	6.5
SFS-2N-1000	Ivory	1000	4.45	2.0	51	14.7	6.7

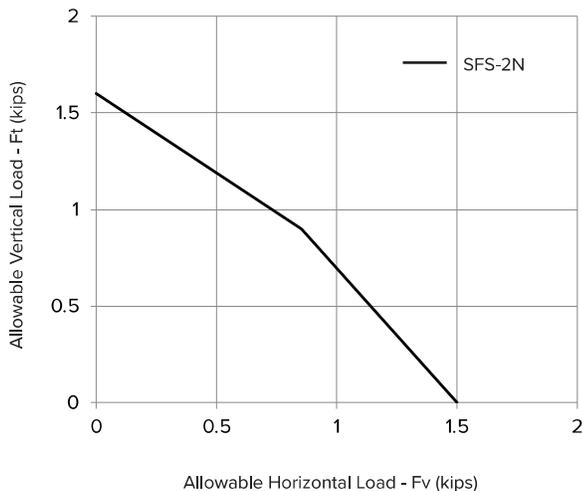
**DIMENSIONS**

Model	L1	L2	W	H	D Ø
SFS-2N	in mm	in mm	in mm	in mm	in mm
50-1000	8 1/4 210	10 1/4 260	4 102	8 1/2 216	1 1/16 17

**NOTES**

- Laterally supported, seismically restrained, open spring type isolator with support for bolting to equipment.
- Springs supported with neoprene cup for noise isolation.
- Mount includes integral all-directional snubber with elastomeric components preventing metal-to-metal contact and with 1/8" (3 mm) clearance under normal operation.
- Minimum 50% additional travel to solid
- Minimum  $k_x/k_y$  ratio of 0.8
- Carbon steel housing hot-dip galvanized; hardware zinc-plated

**RESTRAINT HOUSING LOAD CAPACITY**

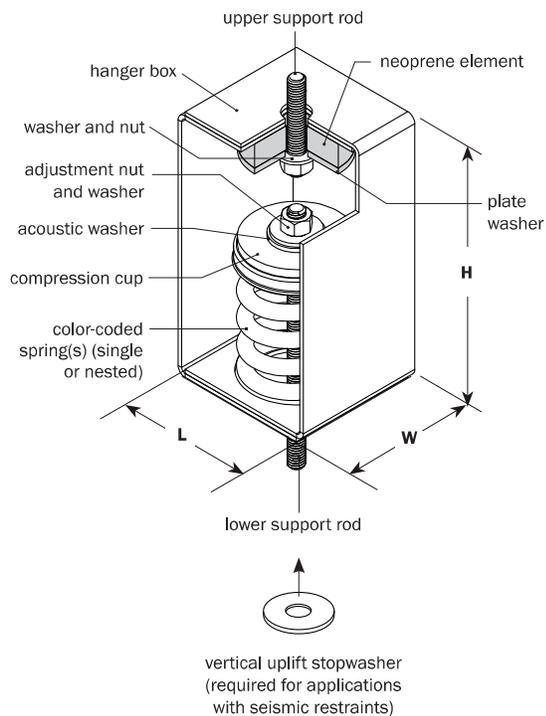


This load capacity envelope shows the maximum force that can be applied to the isolator housing with appropriate attachment to structure.

<b>Project:</b> Vails Gate Fire District VGFD2001			plan view of mount locations 1    □    □    □    3  2    □    □    □    4		1: SFS-2N-300	6:
<b>Customer:</b> Tower Enterprises of NY & NJ					2: SFS-2N-300	7:
<b>Consultant:</b>			QTY of sets required: 2		3: SFS-2N-300	8:
<b>Dwg No.:</b> 233298-107	<b>Rev:</b> 0	<b>Drawn by:</b> SM			4: SFS-2N-300	9:
<b>V-A Project Manager:</b> Arakel Dakessian					5:	10:
<b>TAG:</b> HHWP-1, 2			<b>EQUIPMENT:</b> Inline Pump(s) - 770 lbs			<b>DATE:</b> 2023-11-21
<b>COMMENTS:</b>						

## INSTRUCTIONS

Model shown with cut-away



### For Applications with Seismic Restraints Only

fig. 1

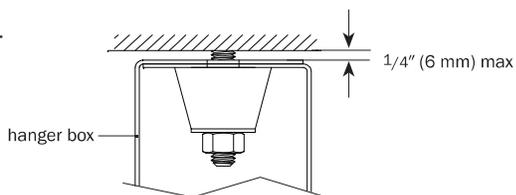
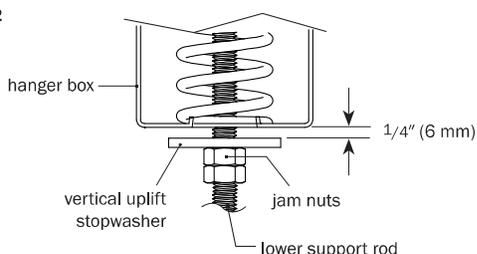


fig. 2



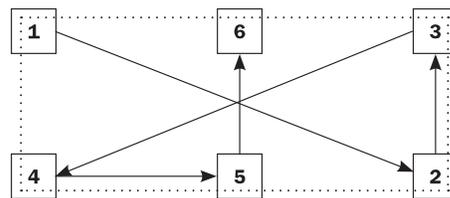
### Option A: After system/equipment has been hung

1. Hang all piping, ductwork, and equipment and bring to operating weight. Ensure sufficient space is left for hanger isolators to be installed.
2. Properly locate each hanger in the submittal drawing using hanger model and spring color(s) as identification.
3. Provide temporary support as required to allow support rods to be cut.
4. Cut support rods, removing about 1" of rod, and install hangers, aligning rods in the center of each hole. Add washers and nuts as appropriate. For seismic restraint applications, position the hanger 1/4" away from the structure, and install a vertical uplift stopwasher and associated jam nuts on lower support rod (fig. 1 and 2).
5. Turn the adjustment nut until temporary supports can be easily removed. Do not overload hangers, however. Temporary supports may need to be left in place until further isolators are installed.
6. When adjusting isolators on a pipe run or equipment, be sure to load the hangers proportionally – an example of an adjustment sequence is shown below.
7. After adjustment is complete, be sure the support rod is not touching the hanger box at the lower hole and hanger box is not in contact with structure. For seismic restraint applications, ensure the clearances between the hanger box and both the structure and vertical uplift stopwasher are 1/4" (fig. 1 and 2).

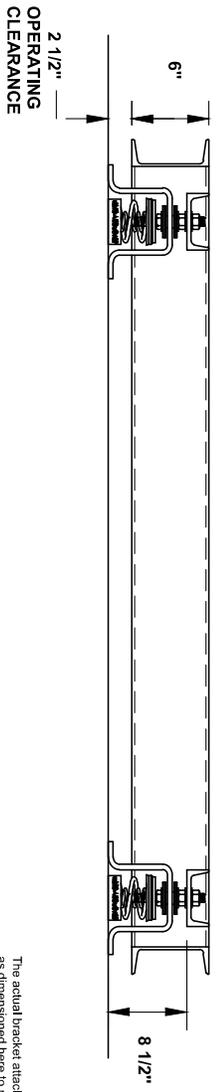
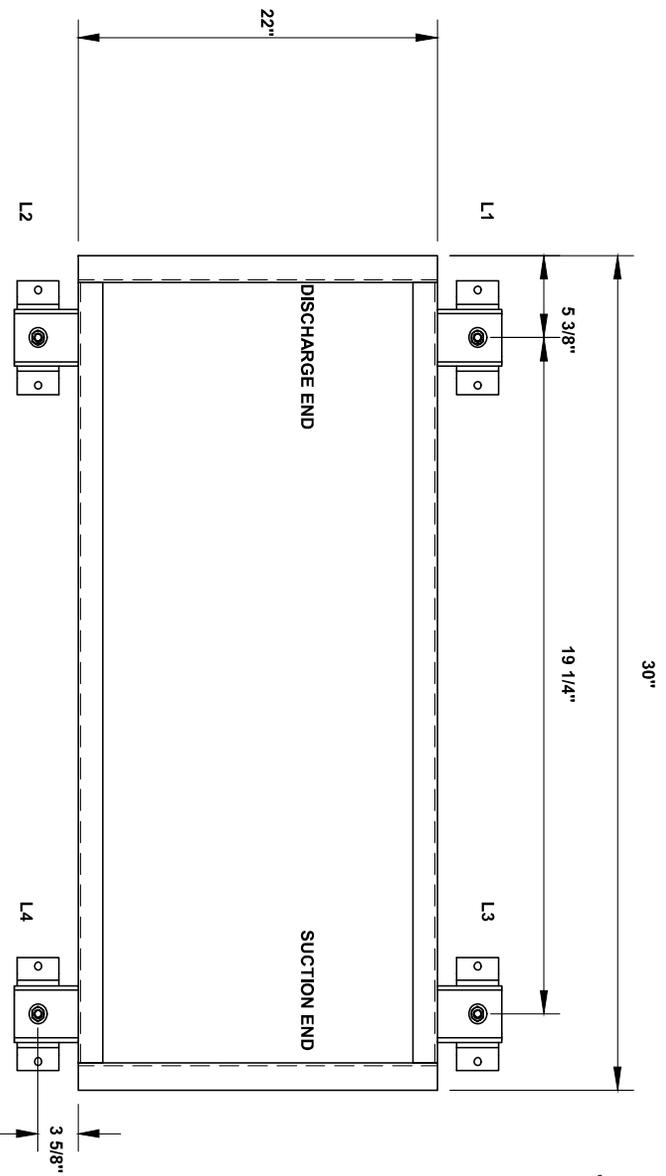
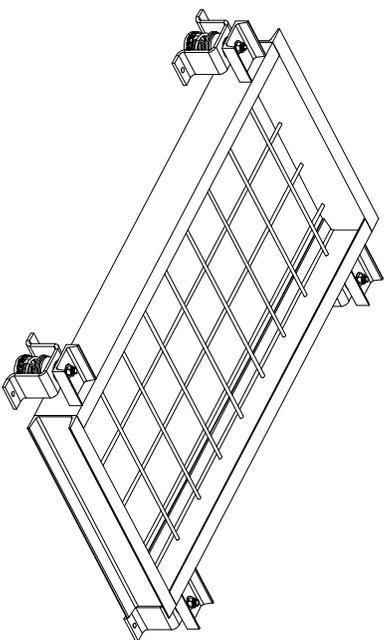
### Option B: Before system/equipment is installed

1. Properly locate each hanger in the submittal drawing using hanger model and spring color(s) as identification.
2. Attach spring hanger to upper threaded rod attached to structure.
3. If seismic restraint is required, install the hanger box 1/4" away from the structure and install a vertical uplift stopwasher and associated jam nuts on lower support rod (see fig. 1 and 2).
4. Align support rod in center of the lower hole and attach to compression cup.
5. Attach duct, pipe or equipment to lower threaded rod.
6. Adjust duct, pipe or equipment level with the adjustment nut. Be careful not to overload any one hanger – load hangers proportionally.
7. Bring equipment or pipe to its final operating weight before making any further adjustments.
8. When adjusting isolators on a pipe run or equipment, be sure to load the hangers proportionally – an example of an adjustment sequence is shown below.
9. After adjustment is complete, be sure the support rod is not touching the hanger box at the lower hole and hanger box is not in contact with structure. For seismic restraint applications, ensure the clearances between the hanger box and both the structure and vertical uplift stopwasher are 1/4" (fig. 1 and 2).

### Isolator adjustment sequence example



Isolator adjustment sequence is similar for other quantities and configurations.



Base Information	
Shipping Wt. per Base:	82 lbs
Base Finish:	Gray Primer
Base(s) shipped in (1) piece	

Isolator Information	
L1	SFS-2N - 300
L2	SFS-2N - 300
L3	SFS-2N - 300
L4	SFS-2N - 300

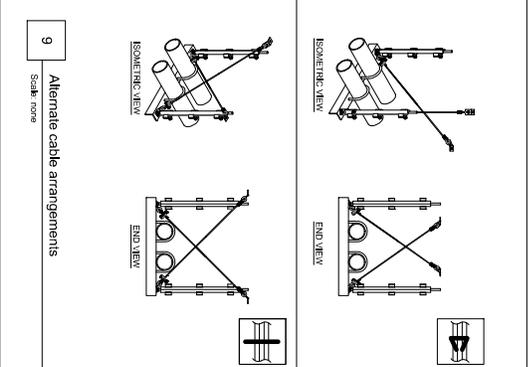
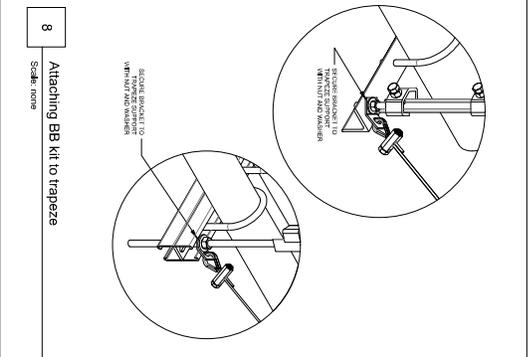
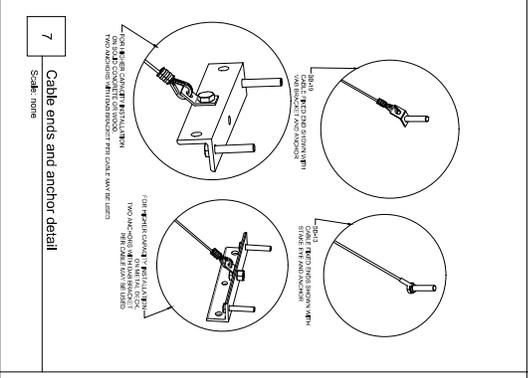
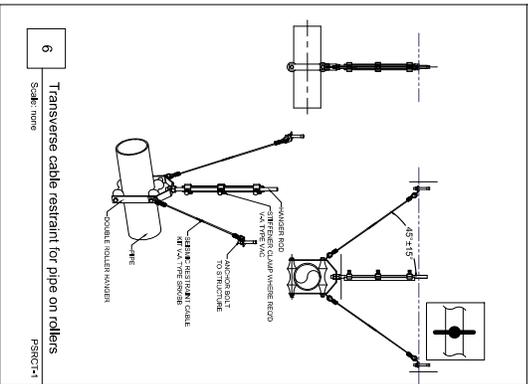
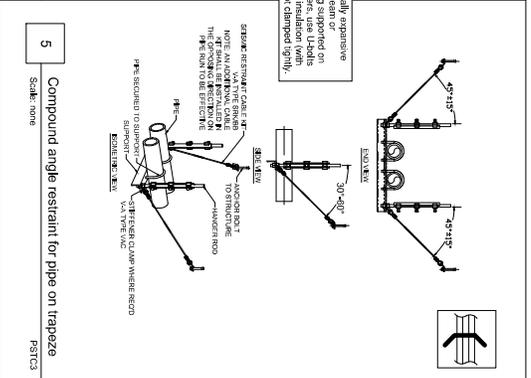
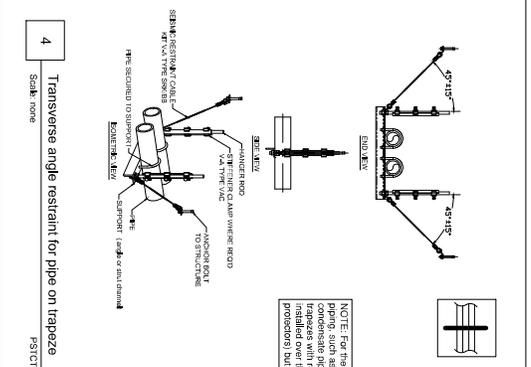
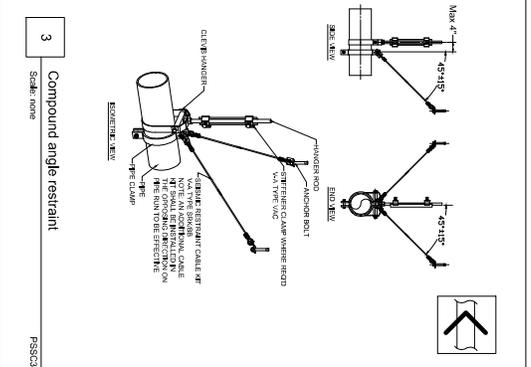
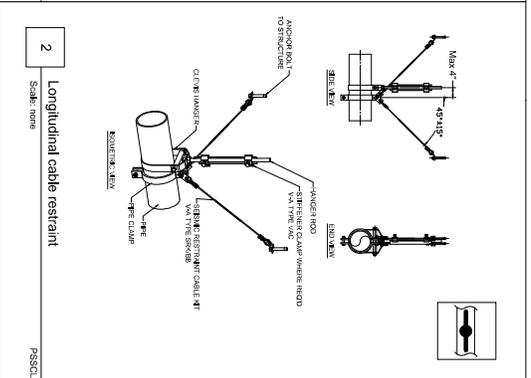
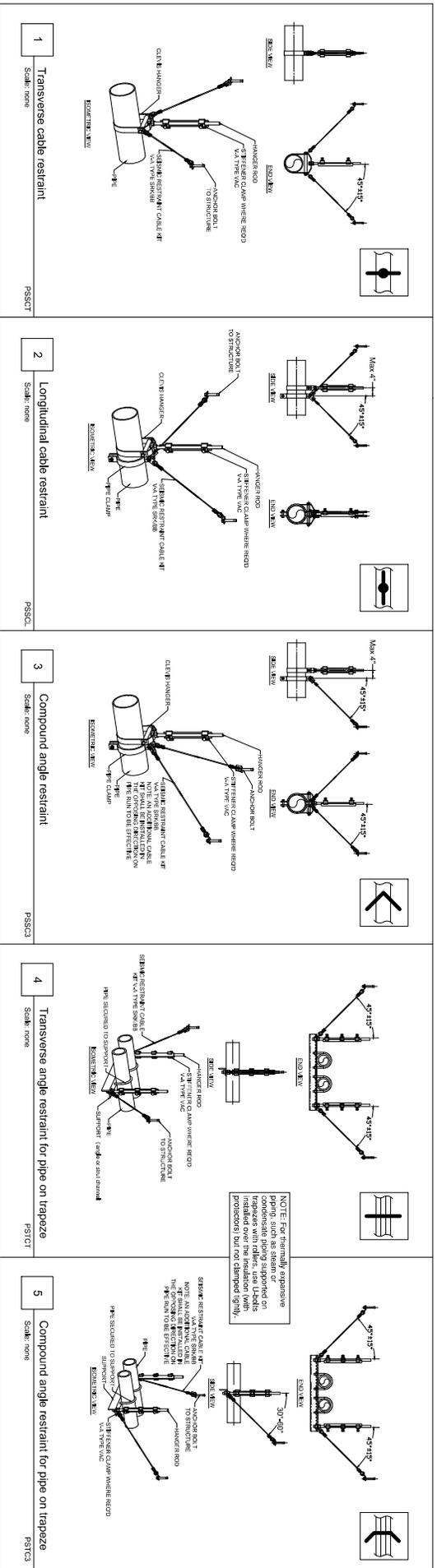
Equipment Information	
Eqt. Type: Vertical Inline Pump	
Manufacturer: Taco	
Model: SKV1506	
Tag: HHWP-1,2	
Motor: 3	
RPM: 3500	
Oper. Wt.: 262 lbs	
Total Wt. (4): 770 lbs	

- Notes**
1. Welded steel construction. Minimum 3000 psi normal weight concrete to be supplied by others
  2. Rebar is not shown in the top view for clarity
  3. This drawing is submitted for Approval
  4. "Approved" prior to release for fabrication
  5. Total operating weight includes base weight, concrete weight, equipment operating weight 10 ft. of 1.5" suction piping & 1.5" discharge piping
  6. Base is of sufficient size to support long radius elbow at suction and discharge

PROJECT: Vails Gate Fire District VGFDD2001		CIB-INERTIA BASE		QTY: 2	
CUSTOMER: Tower Enterprises of NY & NJ		BY: SM		SCALE: N/A	
CONSULTANT:		CHECK:		DATE: 17ANov23	
V-A PROJECT MANAGER: Arakel D.		DWG NO.: 233298-401		REV.: 0	



Min. recommended housekeeping size is 36" x38", including 4" from center of anchors to edge. See anchorage requirements in the seismic calculations. Housekeeping pad must be certified seismic, and anchored to the building structure (by others)



**10** Installation notes  
Scale: none

Checklist:  
 Restraints shall be installed for piping in accordance with the current edition of the ASME B31.1 Code, Part IV, in all directions and vertical sense (see Fig. 1) seismic loads shall be transferred by the restraints from the piping to the building structure.

Restraint sizes and their attachments shall be designed and installed to resist the specific seismic loads (FP) as determined by the EC. Restraint straps shall be attached to the pipe with a minimum of two bolts. Restraints shall be attached to the pipe with a minimum of two bolts. Restraint calculations shall be stamped by a professional engineer licensed in the state in which the project is located.

Transverse restraint spacing for ductile (e.g., steel) piping shall not exceed a maximum interval of 40 ft (12.2 m) on center. The distance between the last restraint and the end of the pipe shall not exceed 5 ft (1.5 m). Transverse restraint stations shall be spaced at intervals of 20 ft (6.1 m) on center. Longitudinal restraints shall be spaced at intervals of 20 ft (6.1 m) on center. The distance between the last restraint and the end of the pipe shall not exceed 40 ft (12.2 m). Longitudinal restraints shall be attached to the pipe with a minimum of two bolts. Restraints shall be attached to the pipe with a minimum of two bolts. Restraint calculations shall be stamped by a professional engineer licensed in the state in which the project is located.

Rigid restraint systems shall only be used for piping that are not supported by vibration isolators (e.g., steel) piping. Rigid restraints must use seismic-rated connection to piping supports adjacent to rigid restraints must use seismic-rated connection to structure.

**Restraint Bracing Details: Piping - Cable restraints**

Project	VA Order
Customer	Customer P.O.
Consultant	VA-PM

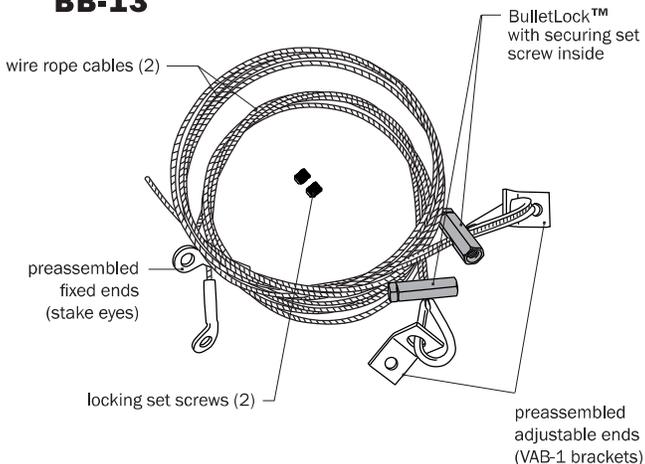
tel: 416-291-7371 1-800-565-8401  
fax: 416-291-8049 1-888-811-2264

web: www.vibro-acoustics.com  
eml: info@vibro-acoustics.com

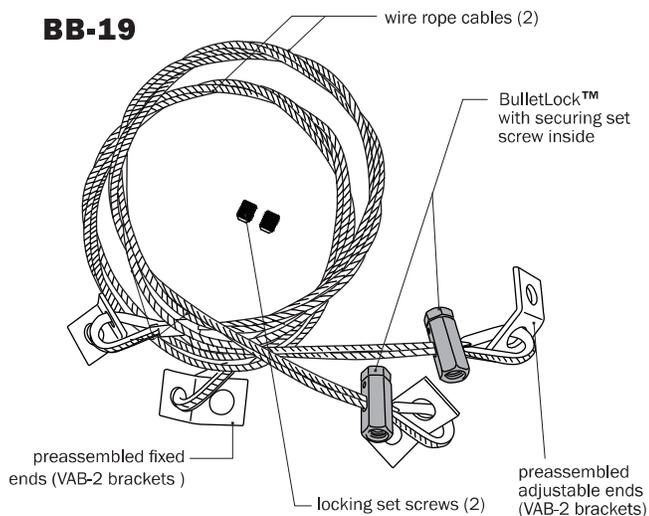
File No.: DS-BB-005  
Supersedes: DS-BB-004

Date: 23 May 2017  
Date: 20 Dec 2016

**BB-13**



**BB-19**



**PERFORMANCE**

Cable Kit Model	BulletLock™ label color	Rated Tension Load			
		Steel lb kN	6" Concrete lb kN	Metal Deck lb kN	Wood lb kN
BB-13	Green	1000 4.45	1000 4.45	626 2.78	843 3.75
BB-19	Red	2000 8.90	1490 6.63	816 3.63	1152 5.12

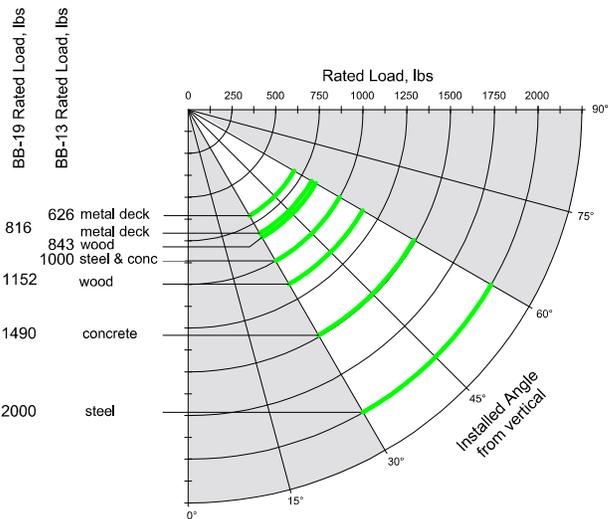
Rated loads based on:

- 30° - 60° installation angle
- 4000 psi concrete
- Hilti KB-TZ anchors
- Type W metal deck with 3.25" concrete cover
- Wood thickness at least 8 × anchor diameter
- Rated loads account for bracket prying action at critical angle
- Higher rated tension loads possible by incorporating Type DAB Double Anchor Brackets
- See BB-AL for additional requirements and load ratings for other constructions

**DIMENSIONS**

Cable Kit Model	Cable Length	Cable Diameter	Fixed End Hole	Adjustable End Hole	Securing and Locking Set Screw Diameter	Cable Kit Weight †	
						lb	kg
BB-13	10 3	1/8 3	1/2 13	1/2 13	3/8 8.5	1.5	0.7
BB-19	10 3	3/16 5	5/8 16	5/8 16	1/2 12.7	2.5	1.1

† weights are approximate



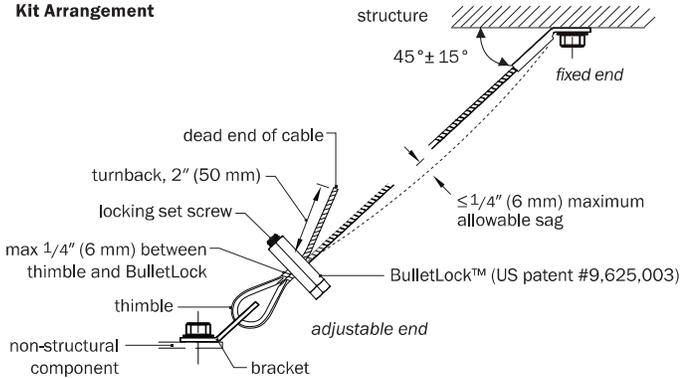
**NOTES**

- Restraint kits can be used as sway bracing to restrain non-structural components, e.g., equipment, ductwork, piping and conduit against seismic, wind, or blast forces. Not meant for gravity loads.
- Cable restraints consist of 7 × 19 galvanized steel wire rope cable in accordance with ASTM A1023 and MIL-83420
- All hardware is galvanized or zinc plated except alloy steel set screws
- Cable restraints have been tested and rated in accordance with ASHRAE 17.1
- Restraints comply with FM1950 for use at rated load between 30 and 60 degrees.

- Kits supplied with fixed ends pulled tight to adjustable ends and securing set screws finger-tight against cables.
- Cable kits use BulletLock™ securement apparatus (US patent #9,625,003) for associated wire rope size.
- Alternate configurations, materials, and brackets available. Contact Vibro-Acoustics.
- Option: Bulk wire rope and end components available where required lengths exceed standard length.

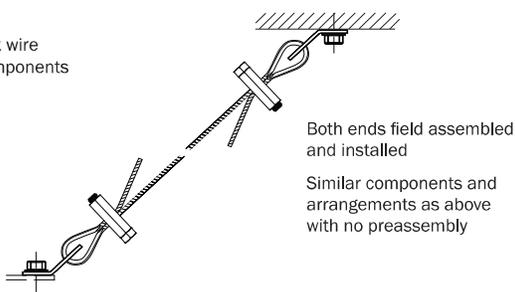
Project:			1:		6:	
Customer:			2:		7:	
Consultant:			3:		8:	
Dwg No.:	Rev:	Drawn by:	4:		9:	
V-A Project Manager:			5:		10:	
TAG:			EQUIPMENT:			
COMMENTS:			QTY of sets required:			
			DATE:			

**Standard BB or BBR  
Kit Arrangement**



**Fig.1**

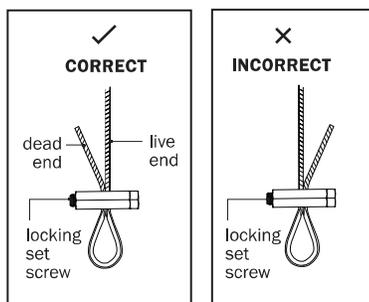
Optional bulk wire rope and components arrangement



**Table 1**

Model	BulletLock Label Color	Torque		Hex Key Size	
		ft.lb	N-m	in	mm
BB-13 / BBR-13	Red	10	13.6	3/16	5
BB-19 / BBR-19	Green	26	35.3	1/4	6

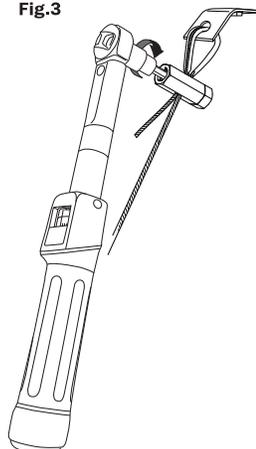
**Fig.2**



**NOTE: The securing set screw inside the BulletLock™ must be torqued tight against the dead end of the cable.**

**Please notify the factory if any parts are missing or the cable kits have incorrect BulletLock™ assemblies.**

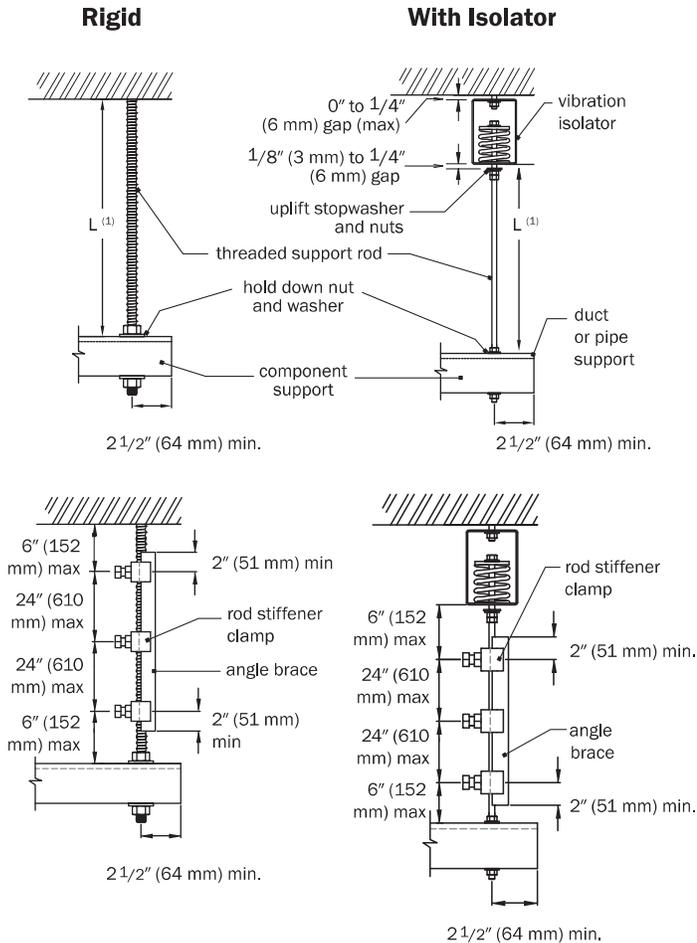
**Fig.3**



**INSTRUCTIONS**

1. Locate restraint position and direction as shown in seismic restraint submittal package.
2. Locate the positions on the structure for attaching the seismic restraints. These attachment positions shall be as close as possible to 45° (±15°) from the restrained component connection.
  - A) **For transverse or longitudinal-only restraints (shown as a straight line on floor plan markups):** This point can be estimated easily by measuring the vertical distance from the structure to the restraint attachment point on the component ①, then measuring that distance along the structure either inline with the component ② (for longitudinal restraints) or perpendicular to the component ③ (for transverse restraints).
  - B) **For compound 45° angle restraints (shown as a "V" on floor plan markups):** This point can be estimated easily by measuring the vertical distance from the structure to the restraint attachment point on the component ①, then measuring that distance along the structure inline with the component ②, then the same distance perpendicular to the component ③.
3. Note that standard BB and BBR restraint kit cable lengths are 10' (3 m). If longer cables are required, contact Vibro-Acoustics for custom length pricing or for bulk wire rope with field-assembled ends using a BulletLock™ at each end (Fig. 1).
4. Attach the preassembled fixed ends to structure using the attachment method indicated in the submittal package (e.g., seismically rated concrete anchor bolts). See sheet INS-BB-AL for attachment requirements.
5. Attach brackets on restraint adjustable ends to restrained component as indicated in the seismic restraint submittal package.
6. Pull and slide each cable from its dead end side to achieve the desired length.
  - a. The dead end is the side of the cable that does not carry any load. Securing set screw is installed at the factory snugged against the cable (Fig. 2).
  - b. Loosen the securing set screw inside each BulletLock™ to slide the cable.
7. Adjust cables to remove slack. If the non-structural component is supported with vibration isolators, leave a 1/4" (6 mm) sag in each cable to prevent vibrations from transferring to the structure.
8. Move the BulletLock within 1/4" (6 mm) of the thimble. While holding each cable in position, torque the securing set screws inside the BulletLock™ (Fig. 3). Refer to Table 1 for torque values and hex key sizes.
9. Once cable length is adjusted and the securing set screw is torqued properly, install the locking set screw hand-tight against the torqued securing set screws. Cut off excess cable, leaving a turnback length of at least 2" (50 mm) as shown above.

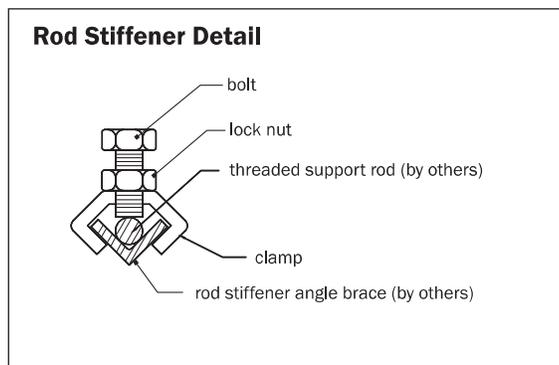
## INSTRUCTIONS



- Find the support rod at or closest to a cable restraint or rigid restraint attachment point and measure the unbraced rod length "L" as shown in the diagram on the left. (**Note:** rigid restraints cannot be used when vibration isolation is required)
- If "L" exceeds the values shown below for its corresponding diameter or the uplift force exceeds the maximum uplift force allowed then rod stiffeners may be required. Contact Vibro-Acoustics for further analysis. If stiffeners are required, then install as follows.
- Ensure support rod is secured to suspended component with a hold down nut and washer to prevent the component from moving up the rod.
- Note the size of the rod stiffener clamp as indicated in the submittal package for that restraint location. Use the appropriate rod stiffener angle brace as shown in the table below.
- Cut the angle brace to length, no more than 8" shorter than the "L" dimensions.
- Position the angle brace against the rod and slide the correct number of clamps onto the brace and rod as shown on the left.
- Move the lock nut away from the back of the clamp to allow the bolt to be turned. Tighten the bolt to push against the support rod until reaching the torque value shown below, then tighten the lock nut against the back of the clamp as shown in the detail below. Repeat for each stiffener clamp.
- Double check the dimensions and adjust as necessary.

Rod Size Ø		L <sup>(1)</sup>		Max. Uplift Force	
in	mm	in	mm	lb	kN
3/8	10	19	482	171	0.76
1/2	12	25	635	312	1.39
5/8	16	31	787	495	2.20
3/4	20	37	940	721	3.21
7/8	22	43	1092	988	4.40
1	24	50	1270	1248	5.55
1 1/8	30	56	1422	1593	7.09
1 1/4	36	62	1575	1981	8.81

(1) L = Maximum allowable threaded rod length without stiffener



Model	Torque		Brace Size	Max Rod Size		Weight	
	ft.lb	Nm		in	mm	lb	kg
VAC-1	25	34	1" x 1" x 1/4" angle (25 mm x 25 mm x 6 mm)	5/8	16	0.40	0.18
VAC-2	30	41	1 1/2" x 1 1/2" x 1/4" angle (38 mm x 38 mm x 6 mm)	1	25	0.85	0.39

### NOTES

- Minimum (2) Rod Stiffener Clamps per rod
- Rod stiffener requirements apply only to threaded rods that have seismic restraint attachment, or are located adjacent to restraint locations.

tel: 416-291-7371 1-800-565-8401  
fax: 416-291-8049 1-888-811-2264

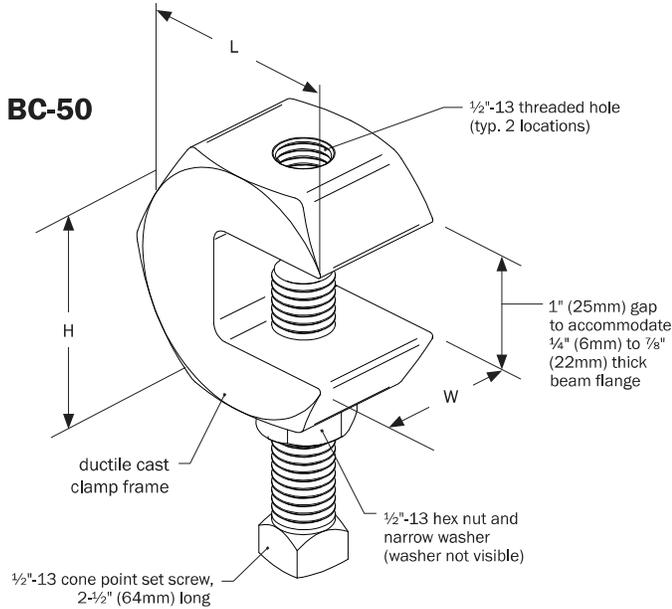
web: www.vibro-acoustics.com  
eml: info@vibro-acoustics.com

**BulletClamp™ (Design Patent Pending)**  
**Seismically Rated Beam Clamp**

**BC**

File No.: DS-BC-001  
Supersedes: New

Date: 18 Apr 2017  
Date: New



**PERFORMANCE**

Transverse Restraint Tension Capacity	Longitudinal Restraint Tension Capacity	V-Anchor Method Tension Capacity
lbs kN	lbs kN	lbs kN
<b>2500</b> 11.1	<b>2500</b> 11.1	<b>2500</b> 11.1
$30 \leq \alpha_1 \leq 60$	$30 \leq \alpha_2 \leq 60$	$30 \leq \alpha_1, \alpha_2 \leq 60$

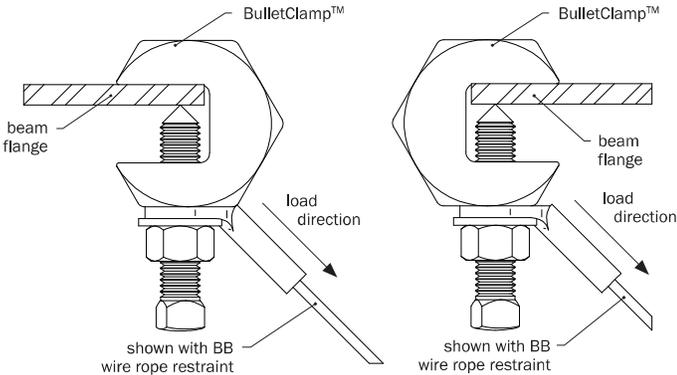
**DIMENSIONS**

Clamp Dimensions			1/2"-13 UNC Bolt Length	Total Weight	Installation Torque
L	W	H			
in mm	in mm	in mm	in mm	lbs kg	lbf-ft N-m
2-3/16" 56	1-1/4" 32	2-1/8" 54	2-1/2" 64	0.9 0.4	25 34

**INSTALLATION DETAILS**

ORIENTATION 1 - AWAY FROM BEAM

ORIENTATION 2 - TOWARDS BEAM



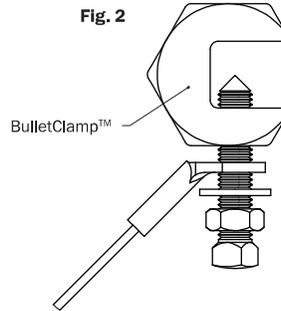
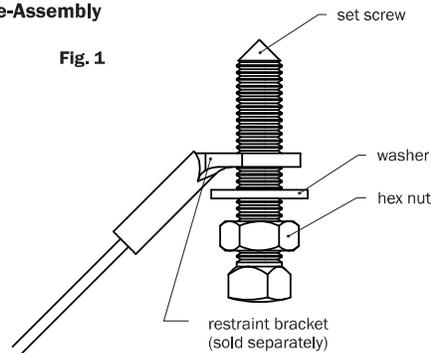
**NOTES**

- Ferritic, ductile cast clamp with zinc-chromated finish
- BC beam clamp includes 1/2"-13 cone point set screw
- High strength set screw is fully threaded and case hardened
- Set screw and hex nut are zinc plated
- Product is fully compatible with V-Anchor method using BB, BBR and RRK seismic restraint kits
- Tension capacities are the maximum loads that can be applied to the wire rope restraint attached to the clamp
- The seismic beam clamp is shown with BB kits

Project:		1:	6:
Customer:		2:	7:
Consultant:		3:	8:
Dwg No.:	Rev:	4:	9:
V-A Project Manager:		5:	10:
		QTY of sets required:	
TAG:	EQUIPMENT:		
COMMENTS:		DATE:	

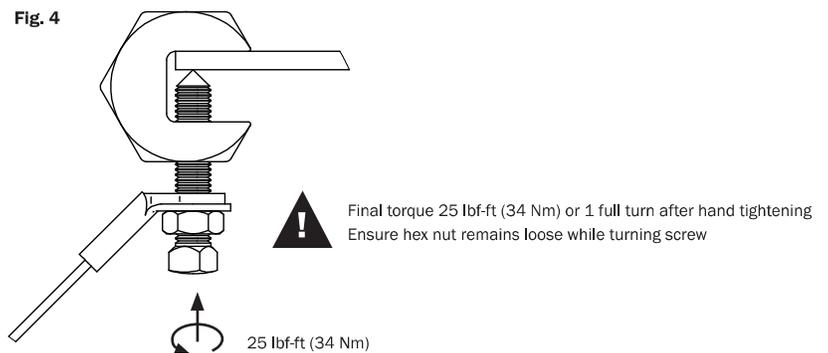
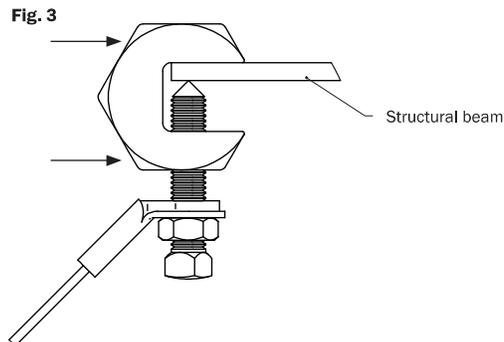
## INSTRUCTIONS

### Pre-Assembly



1. Loosely assemble the provided set screw, hex nut and washer, then add the restraint end bracket (sold separately) (Fig. 1).
2. Finish pre-assembly by loosely screwing the set screw onto the BulletClamp™ as shown (Fig. 2).

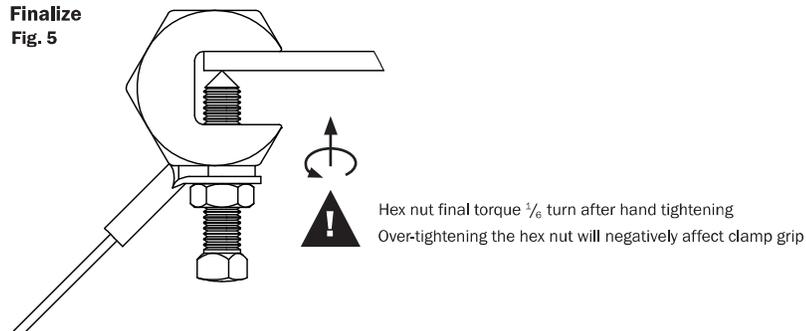
### Secure to Beam



3. Slide the BulletClamp™ onto a structural beam as shown (Fig. 3) all the way until clamp inside surface fully touches the beam flange and hand tighten the set screw against the beam (Fig. 4).
4. If a torque wrench is available, torque the screw to 25 lbf-ft. (34Nm).  
If a torque wrench is not available, hand tighten, then turn 1 full revolution using a normal wrench. Use 12 sided 15mm socket or an adjustable wrench.

### Finalize

**Fig. 5**



5. Hand tighten the hex nut and adjust the bracket angle.
6. Complete assembly by turning the hex nut  $\frac{1}{6}$  turn (Fig. 5)

#### Kit Contents

1 BulletClamp™  
1 set screw  
1 hex nut  
1 narrow washer

#### Tools Needed (by others)

12 sided 15mm socket  
Adjustable wrench  
Torque wrench

tel: 416-291-7371 1-800-565-8401  
fax: 416-291-8049 1-888-811-2264

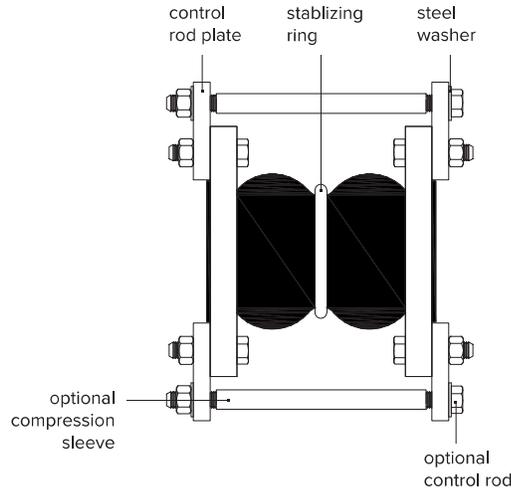
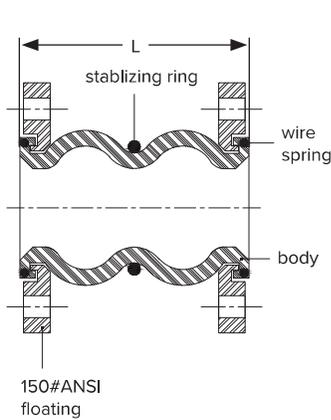
web: www.vibro-acoustics.com  
eml: info@vibro-acoustics.com

File No.: EJEEJN-2-002

Date: 12 Jan 2021

Supersedes: EJEEJN-2-001

Date: 30 Oct 2014



### PERFORMANCE AND DIMENSIONS

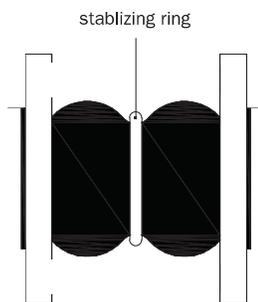
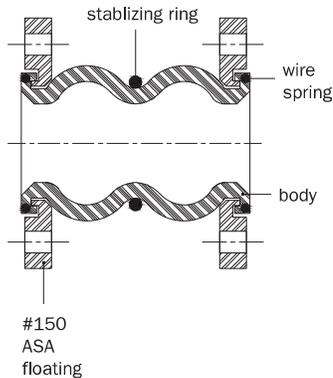
Model	Body Constr.	Nominal Size	"L" Length Face to Face	Deflections				Working Pressure		Max. Temp.
				Lateral	Axial Ext.	Axial-Comp.	Angular	w/o control rod	w/ control rod *	
		in mm	in mm	in	in	in	deg	psi	psi	°F
EJE2-1.50	EPDM	1.5 40	7 178	±1 3/4	1 1/8	2	45	179	225	250
EJE2-2	EPDM	2 50	7 178	±1 3/4	1 1/8	2	45	179	225	250
EJE2-2.50	EPDM	2.5 65	7 178	±1 3/4	1 1/8	2	43	179	225	250
EJE2-3	EPDM	3 80	7 178	±1 3/4	1 1/8	2	38	179	225	250
EJE2-4	EPDM	4 100	9 229	±1 1/2	1 3/8	2	34	179	225	250
EJE2-5	EPDM	5 125	9 229	±1 1/2	1 3/8	2	29	134	225	250
EJE2-6	EPDM	6 150	9 229	±1 1/2	1 3/8	2	25	134	225	250
EJE2-8	EPDM	8 200	13 330	±1 3/8	1 3/8	2 3/8	19	134	225	250
EJE2-10	EPDM	10 250	13 330	±1 3/8	1 3/8	2 3/8	15	134	225	250
EJE2-12	EPDM	12 300	13 330	±1 3/8	1 3/8	2 3/8	13	89	225	250
EJE2-14	EPDM	14 350	13 3/4 349	±1 1/8	1 1/8	1 3/4	9	89	150	250
EJE2-16	EPDM	16 400	13 3/4 349	±1 1/8	1 1/8	1 3/4	8	44	125	250
EJN2-1.50	Neoprene	1.5 40	7 178	±1 3/4	1 1/8	2	45	134	225	230
EJN2-2	Neoprene	2 50	7 178	±1 3/4	1 1/8	2	45	134	225	230
EJN2-2.50	Neoprene	2.5 65	7 178	±1 3/4	1 1/8	2	43	134	225	230
EJN2-3	Neoprene	3 80	7 178	±1 3/4	1 1/8	2	38	134	225	230
EJN2-4	Neoprene	4 100	9 229	±1 1/2	1 3/8	2	34	134	225	230
EJN2-5	Neoprene	5 125	9 229	±1 1/2	1 3/8	2	29	134	225	230
EJN2-6	Neoprene	6 150	9 229	±1 1/2	1 3/8	2	25	134	225	230
EJN2-8	Neoprene	8 200	13 330	±1 3/8	1 3/8	2 3/8	19	134	225	230
EJN2-10	Neoprene	10 250	13 330	±1 3/8	1 3/8	2 3/8	15	134	225	230
EJN2-12	Neoprene	12 300	13 330	±1 3/8	1 3/8	2 3/8	13	89	225	230
EJN2-14	Neoprene	14 350	13 3/4 349	±1 1/8	1 1/8	1 3/4	9	89	150	230
EJN2-16	Neoprene	16 400	13 3/4 349	±1 1/8	1 1/8	1 3/4	8	44	125	230

### NOTES

- Maximum negative pressure is 26" HG vacuum
  - Temperature range: 20°F – 300°F
  - Listed movements cannot occur simultaneously
  - 3:1 safety factor (burst to operating pressure)
  - Contact factory for stainless steel 150# and carbon steel 300# flanges
  - Contact factory for other elastomer requirements for molded body construction
  - Metal reinforcement can be provided to accommodate extreme piping system stress
- \* Control rods are used for achieving these pressure ratings. Control rods are also required for unanchored systems. Suffix "-CR" is added to the model names for control rod, i.e: EJN2-12-CR

<b>Project:</b>	<b>Model:</b>	<b>QTY of sets required:</b>			
<b>Customer:</b>	<b>DWN:</b>	<b>CHK:</b>	<b>REV:</b>	<b>DATE:</b>	
<b>Consultant:</b>	<b>TAG:</b>	<b>UNIT:</b>			
<b>V-A Project No.:</b>	<b>COMMENTS:</b>				
<b>V-A Project Manager:</b>					

## INSTRUCTIONS

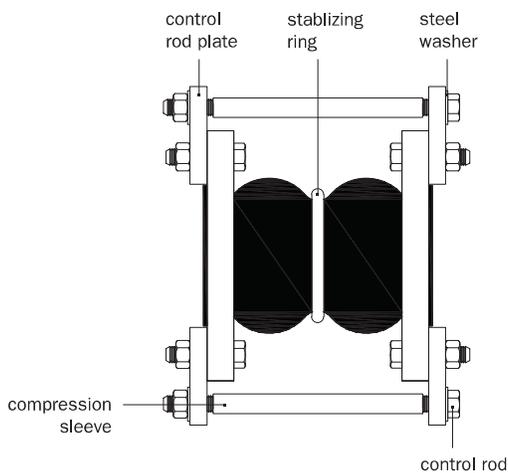
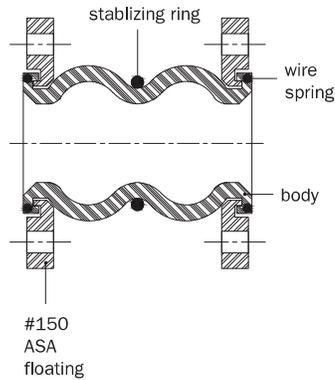


1. Make sure that the expansion joint temperature, pressure, vacuum, movements and elastomer type matches the system requirements. Vacuum rating is based on neutral installed length without external load. Contact Vibro-Acoustics if the system requirements exceed those of the expansion joint selected.
2. These connectors should not be used for accommodating misalignment errors. Make sure that the pipe misalignment is no more than 1/8" in any direction.
3. Make sure that the system is properly anchored as close to the expansion joint as possible. If there is no anchoring system, it is recommended that control rods be installed on the expansion joint to prevent excessive movements due to pressure thrust.
4. Expansion joints should not bear any dead load.
5. Line up the mating flanges and install bolts so that the bolt head is against the expansion joint flange.
6. The spherical rubber flexible connector must be compressed 1/8" to 3/16" during installation in order to obtain a correctly installed face-to-face dimension.
7. Make sure mating flanges are clean and are the flat faced type. When attaching beaded end flange expansion joints to raised face flanges, ring gaskets are required to prevent metal flange faces from cutting the rubber bead during installation.
8. Never install expansion joints next to ~~wafer type~~ <sup>all</sup> check valves or butterfly valves. Serious damage to the rubber flange bead can result due to the lack of flange mating surface and or bolt connection.
9. Tighten bolts in stages by alternating around the flange. Use the recommended torque values to achieve a good seal. Never tighten an expansion joint to the point that there is metal to metal contact between the expansion joint flange and the mating flange. See table for bolt torque data.

Nominal Pipe Size	Bolt Torque				
	Step 1	Reset	Step 2	Reset	Step 3
in	ft · lbs	Minutes	ft · lbs	Minutes	ft · lbs
1	18	30	30	60	45 - 60
1 1/4	18	30	30	60	45 - 60
1 1/2	18	30	30	60	45 - 60
2	18	30	30	60	45 - 60
2 1/2	18	30	35	60	50 - 60
3	25	30	45	60	60 - 75
3 1/2	25	30	45	60	60 - 75
4	25	30	45	60	60 - 75
5	25	30	45	60	60 - 75
6	30	30	50	60	60 - 75
8	30	30	50	60	60 - 75
10	30	30	50	60	75 - 85
12	30	30	50	60	75 - 85
14	30	30	60	60	75 - 85
16	30	30	60	60	75 - 85
18	30	30	60	60	90 - 95
20	30	30	65	60	95 - 185
24	30	30	65	60	95 - 185
30	30	30	65	60	95 - 220

Note: Over-torquing bolts can cause deformation of the rubber expansion joint flanges, thus resulting in premature failure.

10. Check the tightness of the retaining rings two or three weeks after installation and re-tighten as necessary after routine inspections. Rubber expansion joints should not be installed in areas where inspection is impossible.



## INSTRUCTIONS

1. Assemble expansion joint between pipe flanges in its manufactured face-to-face length. Include the retaining rings furnished with the expansion joint, if applicable.
2. Assemble control rod plates behind pipe flanges. Flange bolts through the control plate must be long enough to accommodate the plate. Control rod plates should be equally spaced around the flange. Depending on the size and pressure rating of the system, more than 2 control rods may be required.
3. Insert control rods through top plate holes. Steel washers are to be positioned at the outer plate surface. An optional rubber washer is positioned between the steel washer and the outer plate surface.
4. If a single nut per unit is furnished, position this nut so that there is a gap between the nut and the steel washer. This gap is equal to the joint's maximum extension commencing with the natural face-to-face length. To lock this nut into position, either stake the thread in two places or tack weld the nut to the rod. If two nuts are supplied, the nuts will create a jamming effect to prevent loosening.

Note: Consult Vibro-Acoustics if there are any questions about the rated compression and elongation. These two dimensions are critical in both setting the nuts and sizing the compression pipe sleeve.

5. If there is a requirement for compression, standard pipe sized sleeve may be used to allow the joint to be compressed to its normal limit per factory specifications.
6. If there is a requirement for spherical washers, these washers are to be positioned on the outer plate surface and backed up by movable double nuts.
7. For reducer installations, it is necessary that all control rod installations be parallel to the piping.

tel: 416-291-7371 1-800-565-8401  
fax: 416-291-8049 1-888-811-2264

web: www.vibro-acoustics.com  
eml: info@vibro-acoustics.com

**SIPS Seismic Inline  
Pump Stands**

U.S. Design Patent No. D,699,549 S

**SIPS-125**

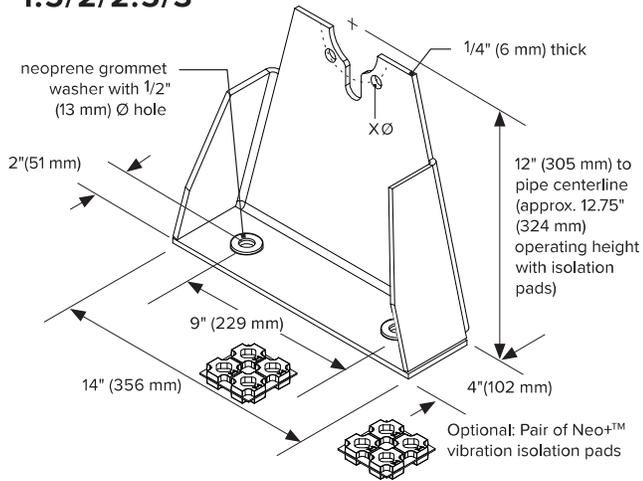
File No.: DS-SIPS-125-001

Date: 03 Sep 2020

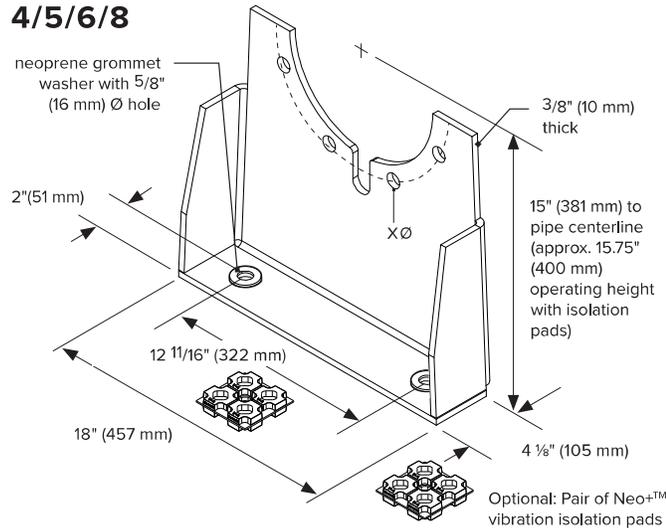
Supersedes: New

Date: New

**SIPS-125  
1.5/2/2.5/3**



**SIPS-125  
4/5/6/8**

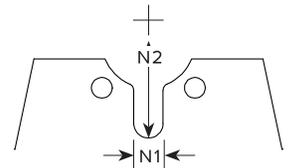


**DIMENSIONS**

Model	Nominal Pipe Size	Bolt Circle Dia (BCD)	Qty - Bolt Hole Diameter (X)	Stand Weight	Optional Neo+ pad Sizes
	in mm	in mm	in mm	lb kg	
SIPS-1.5-125	1 1/2 40	3 7/8 98	2 - 5/8 16	16.2 7.3	Black 4x4
SIPS-2-125	2 50	4 3/4 120	2 - 3/4 19	16.4 7.4	Black 4x4
SIPS-2.5-125	2 1/2 65	5 1/2 140	2 - 3/4 19	16.6 7.5	Black 4x4
SIPS-3-125	3 80	6 152	2 - 3/4 19	16.9 7.7	Black 4x4
SIPS-4-125	4 100	7 1/2 190	4 - 3/4 19	36.0 16.3	Black 4x4
SIPS-5-125	5 125	8 1/2 216	4 - 7/8 22	36.1 16.4	Black 4x4
SIPS-6-125	6 150	9 1/2 242	4 - 7/8 22	36.3 16.5	Black 4x4
SIPS-8-125	8 200	11 3/4 298	4 - 7/8 22	36.4 16.5	Black 4x4

**NOTCH DIMENSIONS**

Model	N1 Width	N2 Length
	in mm	in mm
SIPS-1.5-125	0.94 24	2.94 75
SIPS-2-125	1.06 27	3.50 89
SIPS-2.5-125	1.06 27	4.00 102
SIPS-3-125	1.06 27	4.25 108
SIPS-4-125	1.06 27	5.00 127
SIPS-5-125	1.19 30	5.56 141
SIPS-6-125	1.19 30	6.06 154
SIPS-8-125	1.19 30	7.31 186



**PERFORMANCE**

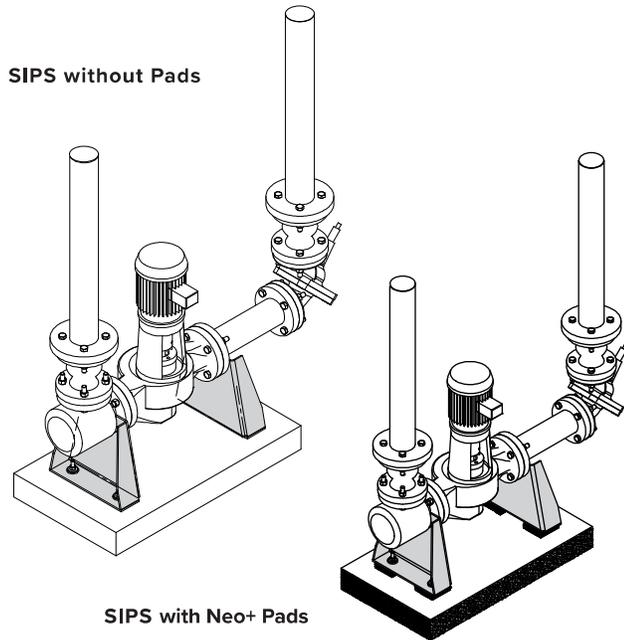
Model	Max Allowed Lateral Load without Neo+ Pads*	Max Allowed Lateral Load with Neo+ Pads*
	lb kg	lb kg
SIPS-1.5/2/2.5/3	900 408	700 318
SIPS-4/5/6/8	2600 1179	2000 907

\* Max allowed load requires correct attachment to structure

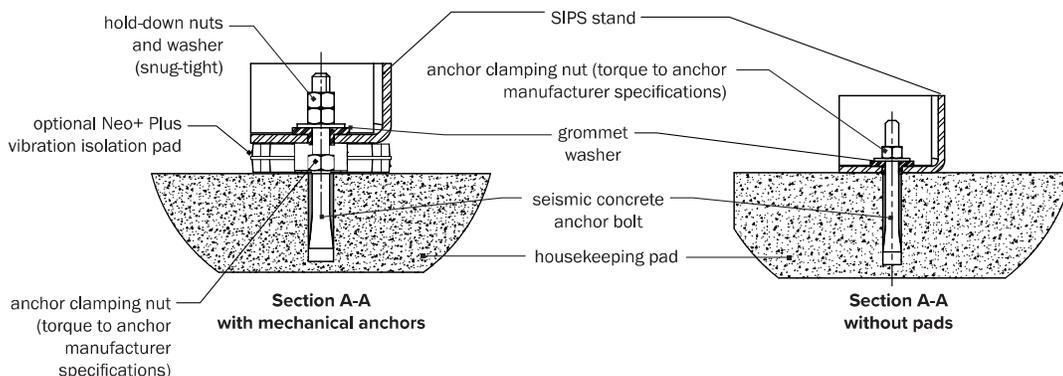
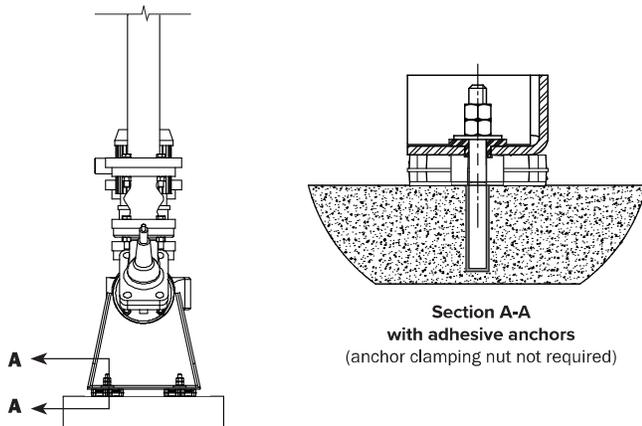
**NOTES**

- Pump stands are designed for minimum 1g lateral seismic load for most matching inline pumps. An analysis must be performed to ensure adequacy for project- specific conditions
- Stands are fabricated with high strength low alloy steel
- Bolt holes located to match ANSI 125 cast iron flange dimensions (Class 125 and 150 use the same bolt pattern)
- Pump stands are powder- coated enamel for corrosion protection
- Cutouts are sized to accommodate standard class 150 slip-on flanges
- Pump stands must be installed in pairs on inline pumps. See installation instructions for further information
- If mounted on a housekeeping pad, the housekeeping pad must be seismically doweled to the structural slab

OPTION <input type="checkbox"/> VIBRATION ISOLATION PADS				
Project:			plan view of stand locations 	Model <b>SIPS-</b>
Customer:				
Consultant:				
Dwg No.:	Rev:	Drawn by:		
V-A Project Manager:				
TAG:			EQUIPMENT:	
COMMENTS:				DATE:



**Anchor Details**



**INSTRUCTIONS**

1. Ensure the mounting surface is level and adequate to provide anchorage for the specific seismic design forces. If mounting to a housekeeping pad, ensure pad is thick enough to accommodate anchor bolts and sufficiently doweled in or connected to the structural slab to transfer the seismic loads to the structure.
2. It is common installation practice to assemble the inline pump along with its adjoining accessories before mounting on the seismic inline pump stands to ensure proper location of the stands. Provide temporary supports for the inline pump while locating the pump stands and do not attach vertical pipe drops until the stands are securely in place.
3. Properly locate each pump stand from the submittal drawing using stand model and size as identification. Locate anchor bolt hole locations and make preparations as appropriate (e.g., drill holes and install anchor bolts). The pump assembly may need to be temporarily moved aside or lifted out of the way.
4. Pump stands are to be installed on the accessory or connected pipe side of the flange connection as shown. This can allow complete removal of the pump body without removal of the pump stands.
5. If vibration isolation pads are included, install them as shown here.
6. Place the seismic inline pump stands onto the anchor bolts (and isolation pads if included). Install the grommet washers and the hold-down nuts and washer hand-tight as shown.
7. Lower pump and place the pump to both stands simultaneously to avoid bending either of stands at the time of installation and secure the flanges to the stands. Long flange bolts may be required to accommodate the additional thickness of the pump stands. Torque bolts as required.
8. Complete inline pump installation with connecting pipe and accessories attachment. Ensure connecting pipe weight does not bear on pump stands but is held by other means (e.g., precompressed spring isolation hangers).

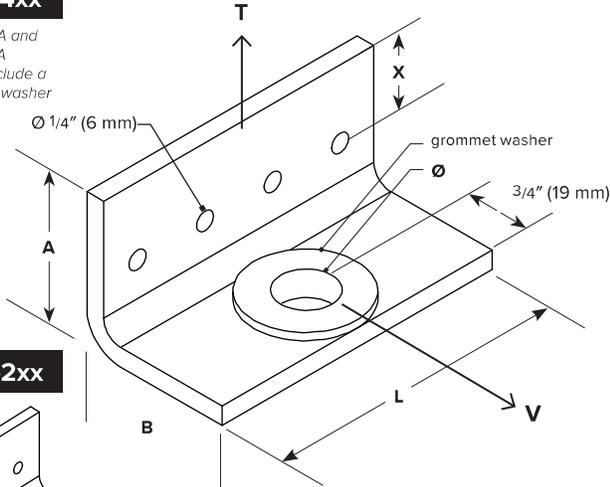
tel: 416-291-7371  
fax: 416-291-8049

1-800-565-8401  
1-888-811-2264

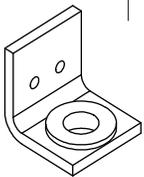
web: www.vibro-acoustics.com  
eml: info@vibro-acoustics.com

## SRB-4xx

SRB-222A and SRB-422A do not include a grommet washer



## SRB-2xx

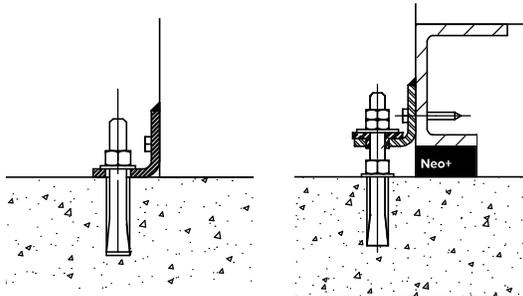


Rigid

w/ Neo+ Pad

## SRB-222 SRB-422

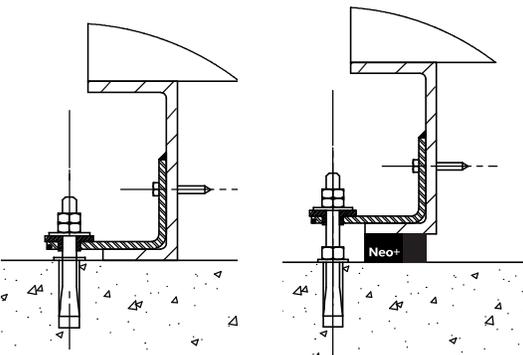
Neo+ Pad not available for SRB-222A or SRB-422A



## SRB-423 SRB-434

SRB-423 for toe-out channel base frames using standard structural C6 or smaller channel.

SRB-434 for larger sizes.



## SRB Seismic Restraint Bracket

# SRB

File No.: DS-SRB-009

Date: 11 May 2021

Supersedes: DS-SRB-009

Date: 29 Nov 2019

### DIMENSIONS AND WEIGHT

Model	L		A		B		Ø*		X		Weight	
	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
SRB-222A	2	51	2	51	2	51	1/2	13	1	25	0.3	0.14
SRB-222B	2	51	2	51	2	51	3/8	10	1	25	0.5	0.23
SRB-222C	2	51	2	51	2	51	1/2	13	1	25	0.5	0.23
SRB-422A	4	102	2	51	2	51	1/2	13	1	25	0.6	0.27
SRB-422B	4	102	2	51	2	51	3/8	10	1	25	1.0	0.45
SRB-422C	4	102	2	51	2	51	1/2	13	1	25	1.0	0.45
SRB-423B	4	102	2	51	3	76	3/8	10	1	25	1.2	0.5
SRB-423C	4	102	2	51	3	76	1/2	13	1	25	1.2	0.5
SRB-434C	4	102	3	76	4	102	1/2	13	1 1/2	38	1.8	0.82
SRB-434D	4	102	3	76	4	102	3/8	19	1 1/2	38	1.8	0.82

\*Hole diameter for A models is through metal bracket since grommet washer is not included.

### PERFORMANCE

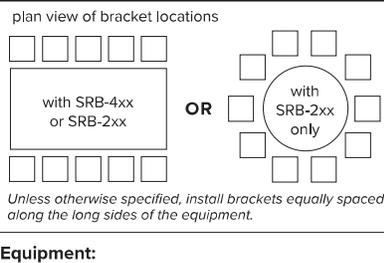
Model	Attach with Screws*				Attach with Welding			
	Allowable T		Allowable V		Allowable T		Allowable V	
	lb	kN	lb	kN	lb	kN	lb	kN
SRB-222A	282	1.25	265	1.18	282	1.25	529	2.35
SRB-222B	970	4.31	500	2.22	990	4.40	2488	11.07
SRB-222C	970	4.31	500	2.22	990	4.40	2488	11.07
SRB-422A	564	1.81	529	2.35	564	1.81	1411	6.28
SRB-422B	1940	8.63	1000	4.45	1980	8.81	2781	12.77
SRB-422C	1940	8.63	1000	4.45	1980	8.81	2781	12.77
SRB-423B	1940	8.63	1000	4.45	1980	8.81	2781	12.77
SRB-423C	1940	8.63	1000	4.45	1980	8.81	2781	12.77
SRB-434C	1940	8.63	1000	4.45	2045	9.10	1856	8.26
SRB-434D	1940	8.63	1000	4.45	2045	9.10	1856	8.26

\*Allowable loads are maximums based on 1/4" (6mm) HILTI self-drilling screws installed on minimum 16 ga base material for SRB-222A and SRB-422A and 10 ga for all other models

### NOTES

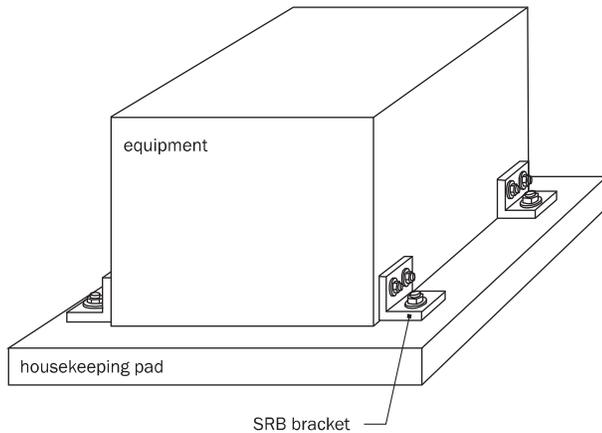
- Allowable loads do not account for anchor bolt capacity. Contact Vibro-Acoustics for selection.
- Brackets must be installed in accordance with installation instructions to provide above performance.
- If mounted on a housekeeping pad, the pad must be seismically doweled to the structural slab and there must be sufficient edge distance and concrete thickness to properly install seismically-rated concrete anchors.
- SRB-222A and 422A brackets are galvanized; all other bracket sizes are powder-coated enamel or zinc plated for corrosion protection.
- Anchor bolts, self-drilling screws, and Neo + vibration isolation pads available separately from Vibro-Acoustics.
- Minimum diameter of round equipment support is 12" (305 mm) for using SRB-2xx brackets.

Project:		
Customer:		
Consultant:		
Dwg No.:	Rev:	Drawn by:
V-A Project Manager:		
Tag:	Date:	
Comments:		

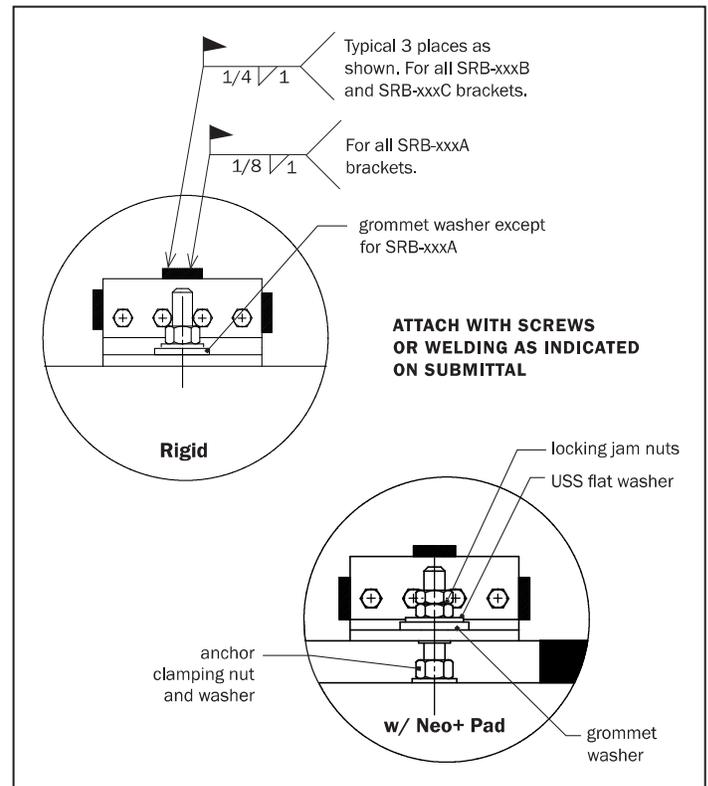
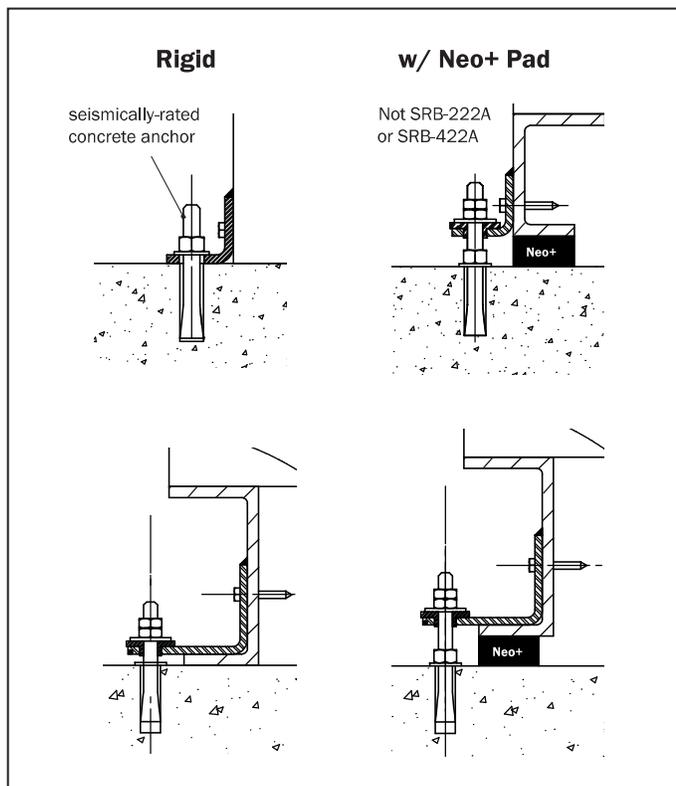


1:	6:
2:	7:
3:	8:
4:	9:
5:	10:
QTY of sets required:	
Attachment Method:	

## INSTRUCTIONS



1. If mounting SRB brackets to a housekeeping pad, ensure pad is thick enough and large enough to accommodate anchor bolts and sufficiently doweled in or connected to structural slab to transfer seismic loads to the structure.
2. Mount equipment in its final position, including neoprene pads if provided. Ensure adequate space is allowed where anchors will be installed to maintain edge distance required by anchor bolt manufacturer.
3. Confirm bracket attachment locations on equipment will accommodate attachment method (screws or welding) indicated on Vibro-Acoustics' submittal.
4. Mark locations for brackets as indicated in the submittal package and drill holes as necessary.
5. For installation without neoprene pads (rigid installation) secure bracket to floor using the anchor size indicated in the submittal, and then attach to equipment as shown below. For SRB-xxxB and -xxxC brackets, ensure grommet washer stays in place.
6. For installation with neoprene pads, install the anchor bolt first, and then place the bracket over the bolt, making sure the grommet washer stays in place. Mount the bracket to the equipment and install locking jam nuts and a USS flat washer on the anchor bolt as shown below. Ensure the bracket does not touch the clamping nut and that the locking jam nuts are secure.
7. For installation with and without neoprene pads: Use the appropriate number of 1/4" (6 mm) diameter self-drilling screws – one for each hole in the bracket – or welds as shown in the diagram below and the submittal.
  - a. Ensure self-drilling screws are long enough for threads to pass through both material layers.
  - b. Welding may be substituted for screws, but screws may not be used in place of welding without approval from Vibro-Acoustics.



tel: 416-291-7371 1-800-565-8401  
fax: 416-291-8049 1-888-811-2264

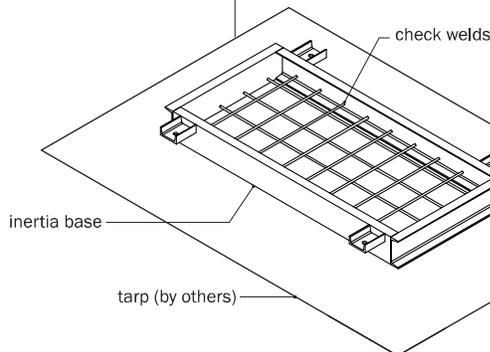
web: www.vibro-acoustics.com  
eml: info@vibro-acoustics.com

File No.: INS-CIB-001  
Supersedes: New

Date: 26 Apr 2013  
Date: New

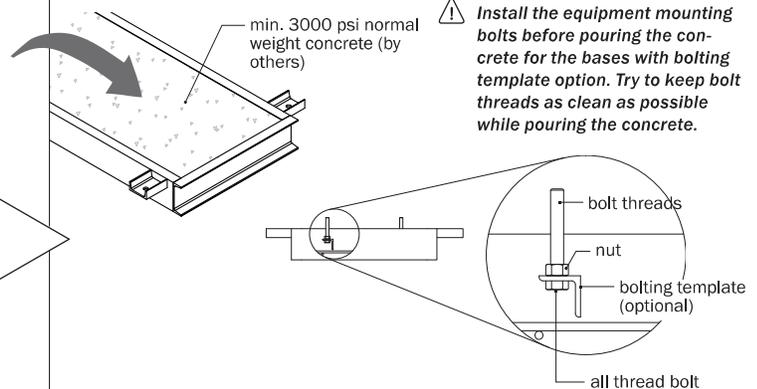
## INSTRUCTIONS

1. Lay tarp (or polyethylene sheets or fiberboard) on a flat floor where the concrete will be poured and cured.



2. Place the inertia base on the tarp. Check rebar-to-perimeter channel welds, and repair those welds if necessary.

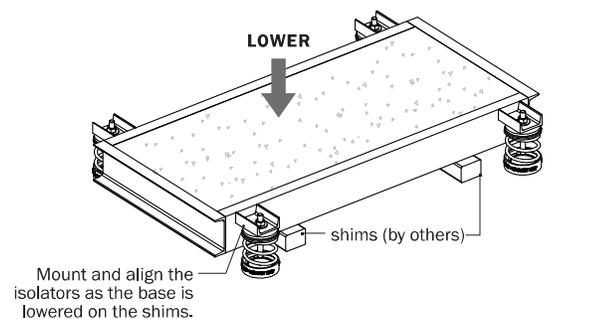
3. Pour 3000 psi normal weight concrete inside the inertia base unless otherwise specified in the submittal drawings. The concrete surface should be flat, smooth and level with the frame of the base.



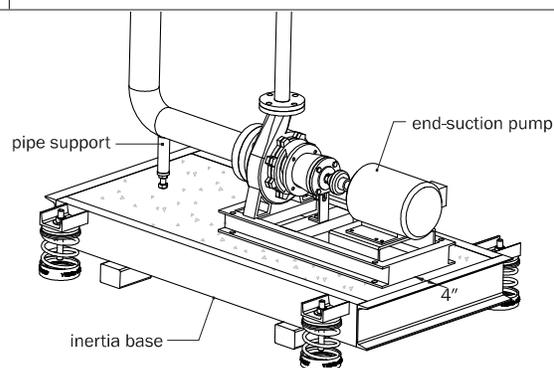
4. Once the concrete is fully dried and cured, lift the base either by floor jacks, a hoist or similar means. If the base is being lifted by a hoist mechanism where the height-saving brackets are used, make sure that the base is level at all times in order to prevent bracket failure.

5. Start lowering the inertia base on shims. See submittal drawings for required operating clearance from the floor. As the base is being lowered, make sure that the isolators are mounted to the brackets. As the base gets closer to sitting on the shims, align the isolators. Once all isolators are in proper position, completely lower the base on shims.

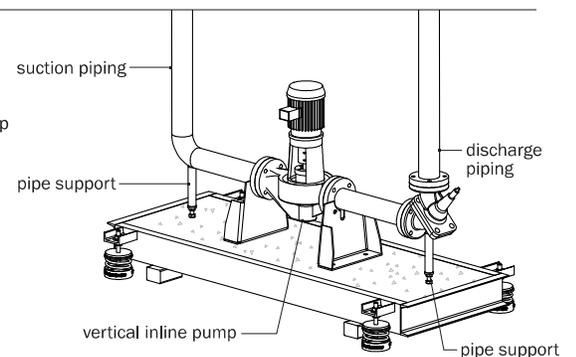
As a rule, use at least the same quantity of shims as isolator brackets and place them within the vicinity of the isolators.



6. Place and anchor the equipment on base either with post-installed anchors or by using the optional cast-in-place bolts. See seismic calculations for embedment and edge distance requirements on anchors. Make sure that the orientation of the equipment is in agreement with the submittal drawing (motor end, pump end, etc.)



⚠ The pump shaft centerline should align with the centerline of the base width when installed. For end suction pumps, leave about 4" clearance from the motor end of the skid in order to leave room on the other end of the inertia base for the suction piping support.



⚠ Position vertical inline pumps in such a way that the piping on both suction and discharge sides are supported on the inertia base. Ensure piping centerline aligns with the centerline of the base width.

Continue on the next page →

tel: 416-291-7371 1-800-565-8401  
fax: 416-291-8049 1-888-811-2264

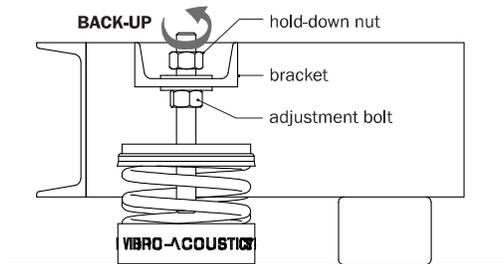
web: www.vibro-acoustics.com  
eml: info@vibro-acoustics.com

File No.: INS-CIB-001  
Supersedes: New

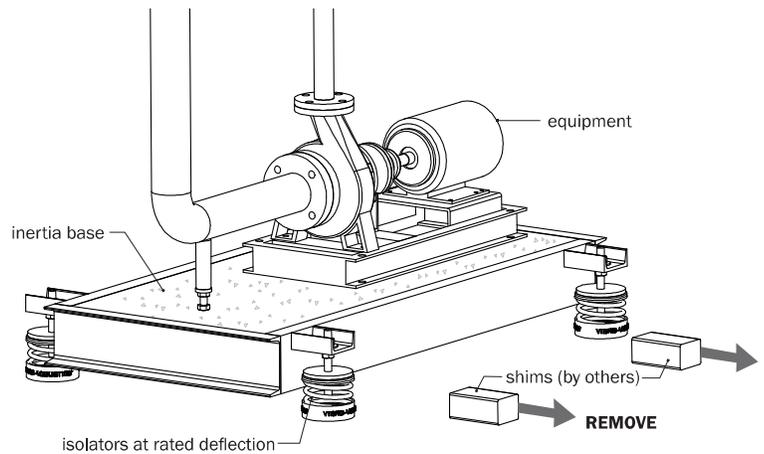
Date: 26 Apr 2013  
Date: New

## INSTRUCTIONS

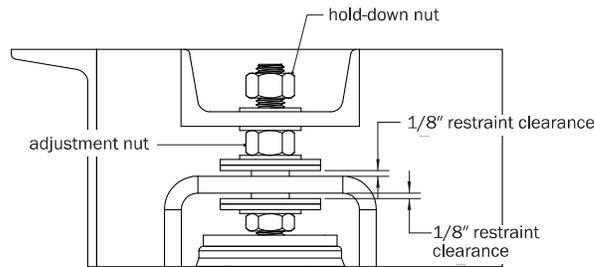
7. Back up the hold-down nut about a 1/4 of a turn. Adjust isolators. At this point, refer to the installation instructions of the isolator that is being used with the inertia base for further instructions on adjustment. Follow the isolator adjustment sequence below (Fig. 1).



8. As the base is lifted off the shims, stop adjusting. The shims can then be removed. Make sure that the inertia base is level.



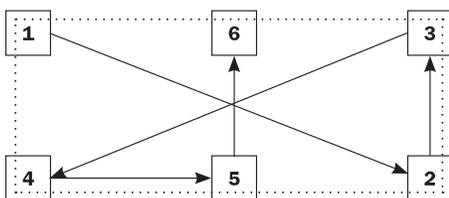
9. (For SFS isolators only) Check the restraint clearance with SFS isolators, and fine-adjust the springs until proper restraint clearance of 1/8" on each side of the housing is achieved.



10. Tighten the hold down nut for all isolators. Perform a final check for the base to see if it is level. Perform final adjustments if needed.

**Installation complete.**

**Fig. 1. Isolator adjustment sequence example**



Isolator adjustment sequence is similar for other quantities and configurations.