

SUBMITTAL REVIEW



CLIENT NAME: _____

PROJECT TITLE: _____

SUBMITTAL No.: _____ H2M PROJECT No.: _____

SUBMITTAL NAME: _____

SUBMITTAL REVIEW	
REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS	
<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: _____

Rev.: 2020-05-20

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:	___ No		___ Yes
<p>KEY CONSTRUCTION SERVICES, LLC</p> <p>Project No: VGFD2001</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><u>SUBJECT TO ARCHITECT AND OR ENGINEER APPROVAL</u></p> <p>Signed <i>Joseph Manfredi</i>(PM) Date: 12/5/2023</p> <p>Contractor's Approval Stamp with Signature & 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
Website: 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: 11.28.23	JOB NO.
ATTENTION: Joe Manfredi	
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 SIESMIC RESTRAINTS

THESE ARE TRANSMITTED as checked below:

- | | | |
|---|---|---|
| <input type="checkbox"/> For approval | <input type="checkbox"/> No Exceptions Taken | <input type="checkbox"/> Resubmit _____ copies for review |
| <input type="checkbox"/> For your use | <input type="checkbox"/> Make Corrections Noted | <input type="checkbox"/> Submit _____ copies for distribution |
| <input type="checkbox"/> As requested | <input type="checkbox"/> Rejected | <input type="checkbox"/> Return _____ corrected prints |
| <input type="checkbox"/> For review and comment | <input type="checkbox"/> _____ | |
| <input type="checkbox"/> FOR BIDS DUE _____ 20 ____ <input type="checkbox"/> 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

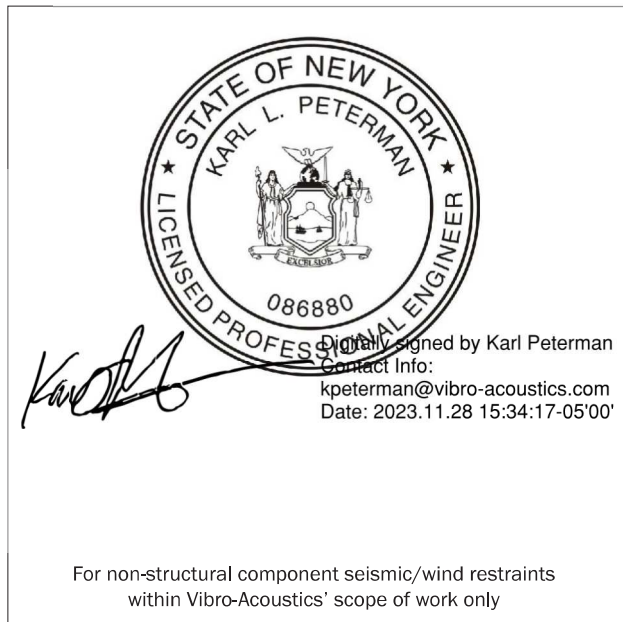
V-A Order #: 233298

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
Total sheets		41



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

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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_{DS}** = 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_p Component Importance factor

a_p Component amplification factor

R_p Response modification factor

W_p Operating weight of equipment [lb]

z Equipment location floor level⁽¹⁾

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

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

Vertical seismic design force [lbf]: **F_{pv}** = $0.2S_{DS}W_p$

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

Sesimic restraints NOT required for $I_p=1$ 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

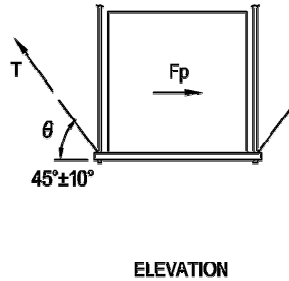
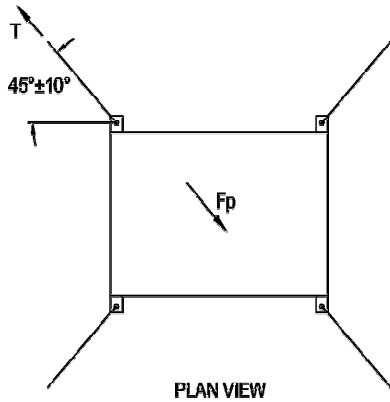
A8-4.22

EQUIPMENT TAG #	QTY	EQUIPMENT DESCRIPTION	ISOL. SHEET #	CALC. SHEET #	ISOLATORS		RESTRAINTS		ANCHORS		OTHER COMPONENTS		
					MODEL	QTY	MODEL	QTY	MODEL ^(5, 6) (Ø), (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	Infra-red 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	20	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	4	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	4	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	4	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	16	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	16	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	EJ2-1.50	4	SIPS-1.5-125	4	DeWalt SD1 1/2"x3-3/4" (2-1/2") (4") (4")	8	30"x22"x6"	CIB	2
		Pump+CIB to floor	106 401	223	SFS-2N-300	8	-	-	DeWalt SD1 1/2"x3-3/4" (2-1/2") (4") (4")	16			
BL-1,2	2	Boiler	-	224	No isolation	-	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.
- Approval drawings must be returned marked "approved" prior to release for fabrication.

VIBRATION ISOLATION & SEISMIC RESTRAINT SUMMARY FOR EQUIPMENT				VIBRO-ACOUSTICS®			
Project : Vails Gate Fire District VGFD2001				Noise Control Vibration Isolation Restraint Systems			
Customer: Tower Enterprises of NY & NJ				Drawing No			
Consultant:				Drawn by: SM			
Customer P.O. No.: 13580				Checked by:			
V-A Order No.: 233298		V-A PM: Arakel D.		Date: Nov.17, 2023		Date:	
						233298- 200	
						0	



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

Infrared heater

Equipment location floor level+1 z see below

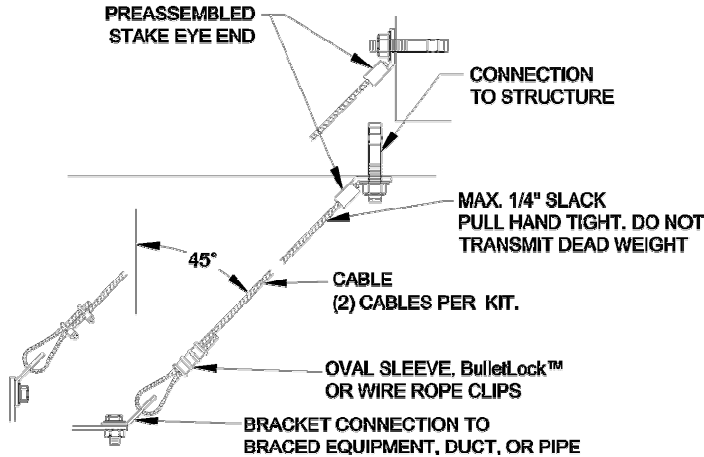
Installation type: **Rigid, Steel components**

Component amplification factor: **ap= 1.0**

Response modification factor: **Rp= 2.5**

Cable Tension: **T= Fp/Cos45**

Cable layout: **Four cables (one at each corner)**



Equipment Tag.	Ip	Wp	z	Fp	g	T	Fc
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]

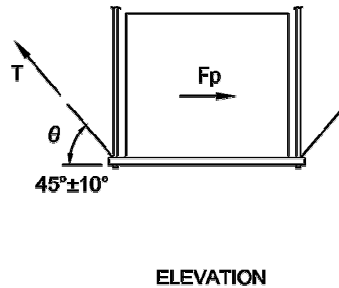
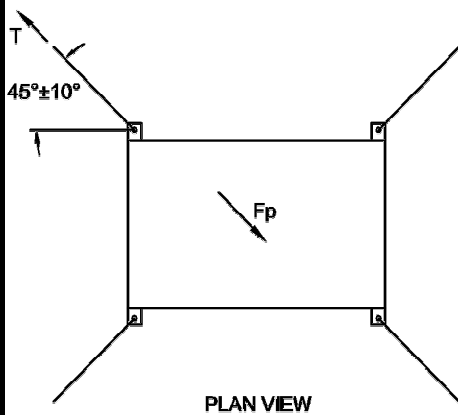
			BB/BBR-13 anchorage requirements	BB/BBR-19 anchorage requirements
			1/2" A307 bolt	5/8" A307 bolt
Max. allowed T [lb]			1000	2000
Restraint selection BulletBrace™				
1	AS	BB/BBR-13 or BB/BBR-19	X	X
2	GFRH-SB-1, 2, 3	BB/BBR-13 or BB/BBR-19	X	X
3				
4				
5				
6				
7				
8				
9				
10				

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.

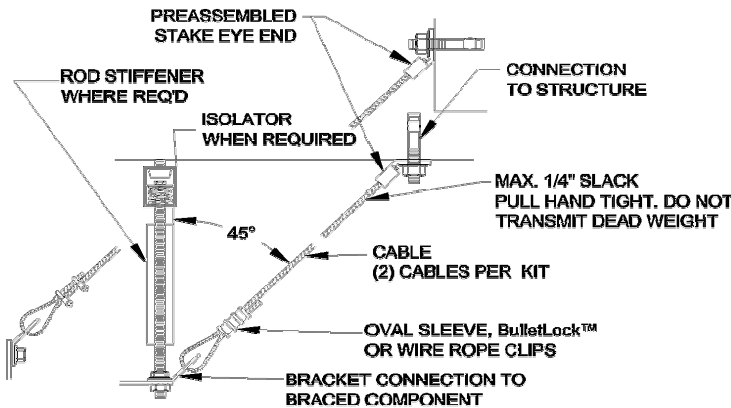
See drawing BB-AL for attachment level details.

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

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								

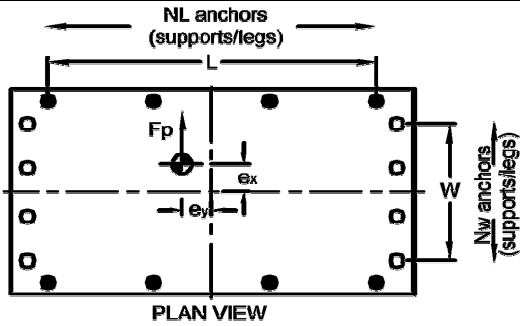
See page 233298-000 for definitions & formulas. Units of measure: Imperial [in, lb, lbf, psi]

Max. allowed T [lb]

			BB/BBR-13 anchorage requirements	BB/BBR-19 anchorage requirements
			1/2" A307 bolt	5/8" A307 bolt
			1000	2000
Restraint selection				
BulletBrace™				
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				

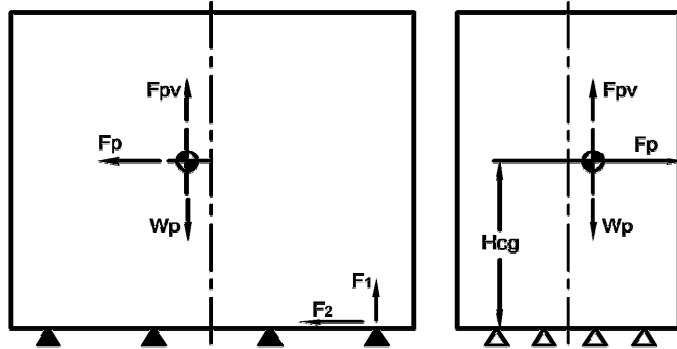
Notes: Other anchorage solutions available (e.g., shorter embedment; stainless steel). Min installation angle from vertical: 30 degrees
 Values shown determined per ACI 355.2 and ASHRAE 171.
 See drawing BB-AL for attachment level details.

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



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: $N_W \bigcirc / N_L \bullet$ & N

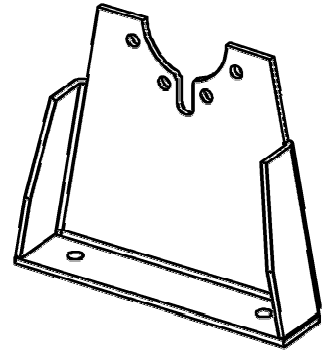
ADDITIONAL SUPPORTS (IF NEEDED) MUST BE LOCATED ALONG LONG EDGE

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	Ip	Wp	z	L	W	Hcg	ex	ey	NL	NW	N	g	Fp	Fpv	F1	F2
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]: **Ft**

Edge distance (in): **e**

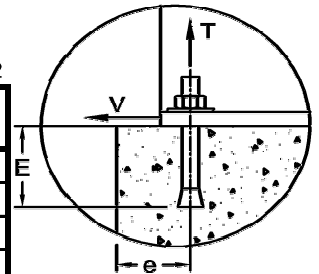
Anchor Shear [lbf]: **V**

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	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®

Noise Control | Vibration Isolation | Restraint Systems

Project: **Vails Gate Fire District VGFD2001**

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

Consultant:

Drawn by:

SM

Date:

Nov.17, 2023

Drawing No.:

233298-222

Rev.

0

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

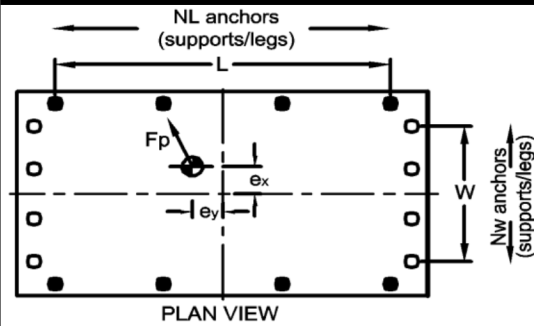
V-A Order #: **233298**

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

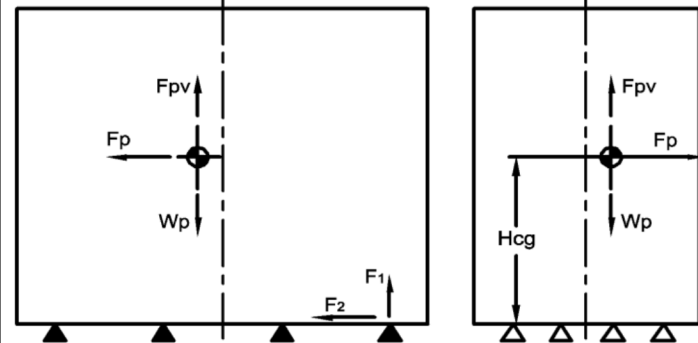
Checked by:

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

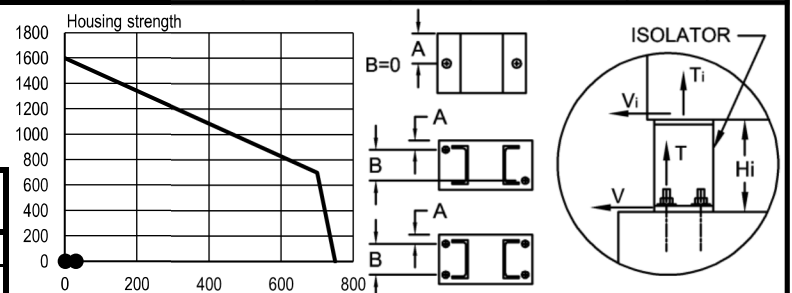
Restraints on Long/Short side/total: NL ●, Nw ○, N See page 233298-000 for definitions & formulas [in,lb,lb,psi]

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)

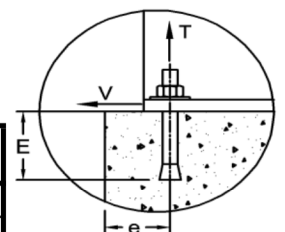
Stand-off: NO

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 : **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

233298-223

0

Customer P.O. No
13580

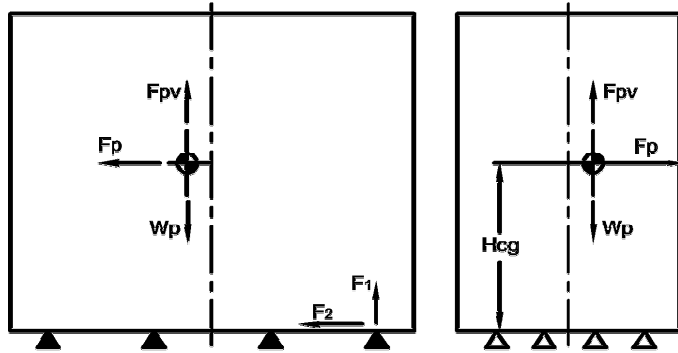
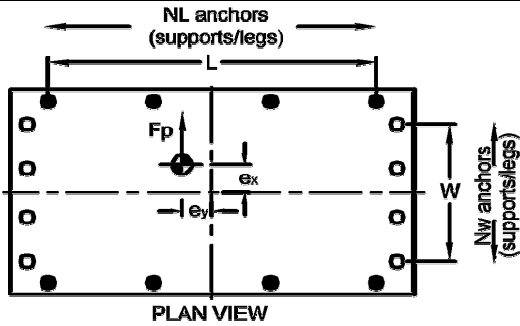
V-A Order No
233298

V-A PM:
Arakel D.

Checked by:

Date:

A8-4.22



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

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: $0.9D+1E$

Restraints along short/long side & total: $N_W \bigcirc / N_L \bullet$ & 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	Ip	Wp	z	L	W	Hcg	ex	ey	NL	NW	N	g	Fp	Fpv	F ₁	F ₂
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**
 Edge distance (in): **e**

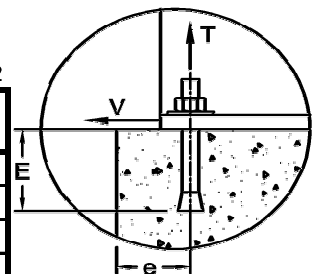
Anchor Tension [lbf]: **T**
 Anchor Shear [lbf]: **V**

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 $\Omega_0=2$

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								

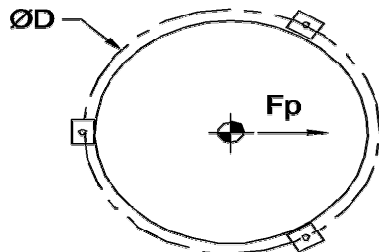


**IBC 2018 SEISMIC LOAD CALCULATION:
FLOOR-MOUNTED EQUIPMENT (RIGID CONNECTION)**

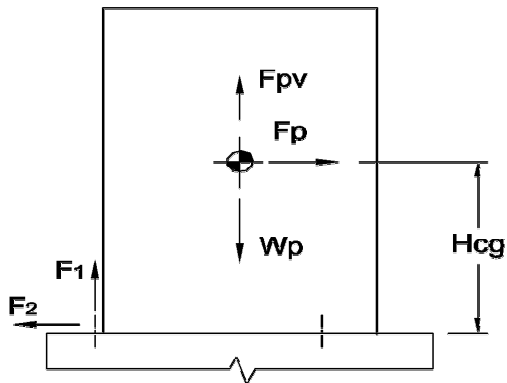
VIBRO-ACOUSTICS®
 Noise Control | Vibration Isolation | Restraint Systems

Project: **Vails Gate Fire District VGFD2001**
 Customer: **Tower Enterprises of NY & NJ**
 Consultant:
 Customer P.O. #: **13580** V-A Order #: **233298** V-A PM: **Arakel D.**

Drawn by: **SM** Date: **Nov.17, 2023** Drawing No.: **233298-224** Rev. **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: **F_p/F_{pv}**

Maximum Tension/Shear on restraints: **F_1/F_2**

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]

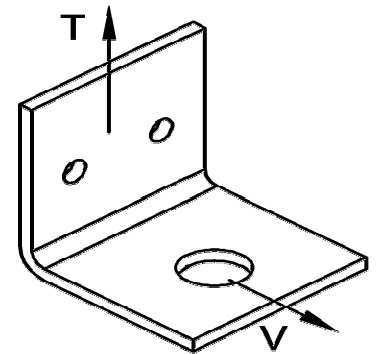
Tension load on bracket: **T**

Strength in Tension [lbf]: **F_t**

Shear load on bracket: **V**

Strength in Shear [lbf]: **F_v**

Equipment Tag	Bracket model	Attachment to equipment	max.T [lb]	max.V [lb]	F_t [lb]	F_v [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**

Anchor Tension [lbf]: **T**

Strength in Tension [lbf]: **F_t**

Edge distance (in): **e**

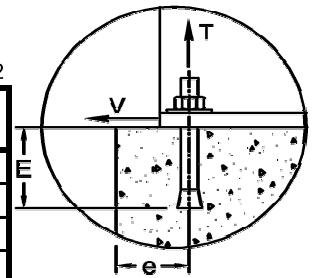
Anchor Shear [lbf]: **V**

Strength in Shear [lbf]: **F_v**

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

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

TAG	n	Ø (nominal embed. depth) (slab thk.)	e	Seismic load T(F1) & V(F2)	Seismic Strength F_t & F_v	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®

Noise Control | Vibration Isolation | Restraint Systems

Project : Vails Gate Fire District VGFD2001	Drawn by: SM	Date: Nov.20, 2023	Drawing No.: 233298-225	Rev. 0
Customer: Tower Enterprises of NY & NJ	Checked by:	Date:		
Consultant:				
Customer P.O. No: 13580	V-A Order No: 233298	V-A PM: Arakel D.		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	Ip	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%) [lb]	Fp [lb]	g = Fp/Wp	T [lb]	F _c [lb]
1	VA-PL110.10	80	1520	159	0.10	159	0
2							
3							
4							
5							
6							

		Max. allowed T [lb]		BB/BBR-13 anchorage requirements	BB/BBR-19 anchorage requirements
				1/2" A307 bolt	5/8" A307 bolt
				1000	2000
		Restraint selection BulletBrace™			
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: **V-A Order No**

V-A PM:

13580

233298

Arakel D.

VIBRO-ACOUSTICS®
A Swegon Group company

Drawn by:

SM

Date:

21-Nov-2023

Drawing No.:

233298- 320

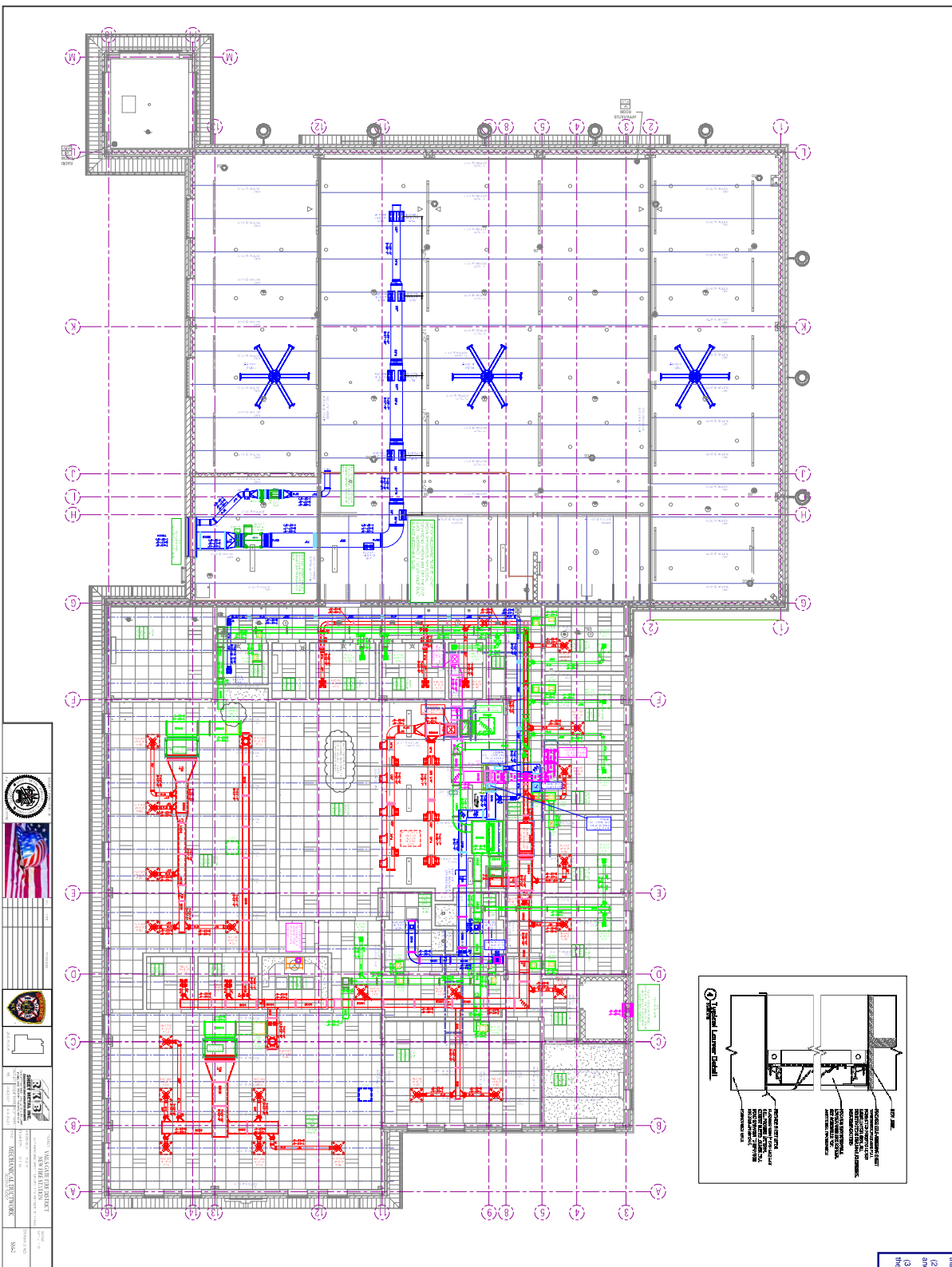
Rev.

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Checked by:

Date:

A06.6/26/16



NOTES:

- (1) No seismic restraints required for ductwork shown on this plan if 9" x 20" bare.
- (2) Educts shown (2) with Vibro-Acoustics scope of work not assumed to be adequately restrained.
- (3) If final duct system installation varies significantly from these drawings, consult Vibro-Acoustics for additional work.

PROJECT: VAB Gas Fire District (VAB2021)

CUSTOMER: VAB Gas Fire District

CONSULTANT: VAB Gas Fire District

PROJECT NO.: 233288

PROJECT MANAGER: AD

DATE: 11-28-2023

SCALE: NTS

PROJECT NO.: 233288

PROJECT MANAGER: AD

DATE: 11-28-2023

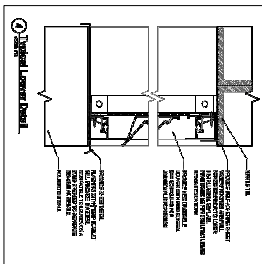
SCALE: NTS

DATE	NO	REVISION	BY	PROJECT NO.	PROJECT MANAGER	AD	DATE	SCALE	PROJECT NO.	PROJECT MANAGER	AD	DATE	SCALE

FOR RESTRAINTS ONLY

VIBRO-ACOUSTICS

15000 N. 15th Ave. Suite 100
Tampa, FL 33607
Tel: 813-281-7371
Fax: 813-281-7372
www.vibro-acoustics.com
info@vibro-acoustics.com



- FOR RESTRAINTS ONLY

PROJECT		Vibro Case First Edition 02/2020		MEDICAL INQUIRY		Severe Headache without	
CUSTOMER		Tower Enterprise of NY & NJ		DISEASE		SN	
CONSULTANT		-		SCALE		MIS	
PROJECT NO.		202048		DATE		11-20-2021	
PROJECT MANAGER		AD		CHECKED		DATE	
BY		PROJECT NO. 202048		FILE #		0162619771-4000856407	
REVISION				DATE		14-08-2021	
NO				WEB		www.vibroacoustics.com	
VibroAcoustics Head Office - 1600 Madison St. #400 - CHICAGO, IL 60604				DWGNO.		VAS-04	
				TOWERS ENTERPRISE (P) INC. / NEW YORK		REV. 0	

- NOTES:
- (1). No seismic restraints required.
 - (2). All piping and equipment shall be properly braced in accordance with Vibro-Acoustics scope of work and assumed to be adequately restrained.
 - (3). If final piping / ductwork system installation varies significantly from these drawings contact Vibro-Acoustics for approval.

ABBREVIATIONS

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

COLOR LEGEND
MECHANICAL PIPING

PROJECT TITLE:
**VALLS GATE
FIRE DISTRICT**
8722 BLOOMING
GROVE TURNPIKE
NEW WINDSOR, NY
12553

MECHANICAL CONTRACTORS

MECHANICAL NOTES

BIM SERVICES
FOR THE MECHANICAL CONTRACTORS

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[illegible]

APPENDIX 2

Heads	-	HOT WATER SUPPLY
Heads	-	HOT WATER RETURN
BCP	-	BOTTOM OF PILE
RL	-	RETENTION DRAIN
NS	-	NON-SATURATED ZONE
CRF	-	CORRECTION FACTOR

PROJECT TITLE:
VALENTINE'S FIRE DIS
872 BLOOMINGDALE
GROVE TOWER
NEW WINDS

- (2) Use BB-13 cable kits at all locations shown on drawings unless otherwise noted.
Quantities used:
8 pcs. BB-13 cable kits
- (3) For cable installation instructions refer to drawings: IN-BS-10, BS-58, IN-BS-58, Hanger and Rods. Hanger and Rods may be required, out of drawing IN-BS-10.
- (4) Hanger rods, impasse and wall cutting screws by others.
- (5) Restraint selections and locations only valid for piping routing shown. If final pipe system installation varies significantly from these drawings contact Vibro-Acoustics for additional work.
- (6) Existing piping not within Vibro-Acoustics scope of work and assumed to be adequately restrained.

NOTES:

[illegible]

#6-MECHANICAL
PIPING - SHOP
DWG - PHASE 2
BLDG 2 - LEVEL-1
PLAN

A key plan map showing the district of Breda. The study area is highlighted in a shaded box in the center of the district.

PROJECT: Valt Gas Film Direct USD5000		Mechanical Process Phase 2, Stage 2 - Level 1	
CUSTOMER: Tonne Enterprises of NY & NJ		Strong Relations Mktg & Sales	
CONSULTANT: -		DRYAN, SM	
SCALE: N/A		11-20-2023	
DATE		BY PROJECT NO. 253268	
NO		REVISION	
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FOR RESTRAINTS ONLY

- NOTES:
- (1) No seismic restraints required.
 - (2) All piping / ductwork system installation within Vibro-Acoustics scope of work and assumed to be adequately restrained.
 - (3) If final piping / ductwork system installation varies from that shown on these drawings contact Vibro-Acoustics for additional work.

ABBREVIATIONS

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

COLOR LEGEND
MECHANICAL PIPING

PROJECT TITLE:
**VALLS GATE
FIRE DISTRICT**
8722 BLOOMING
GROVE TURNPIKE
NEW WINDSOR, NY
12553

MECHANICAL CONTRACTORS

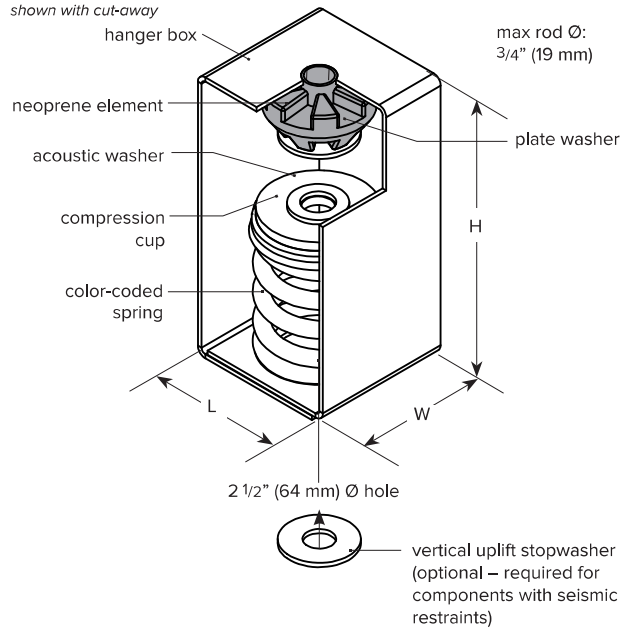
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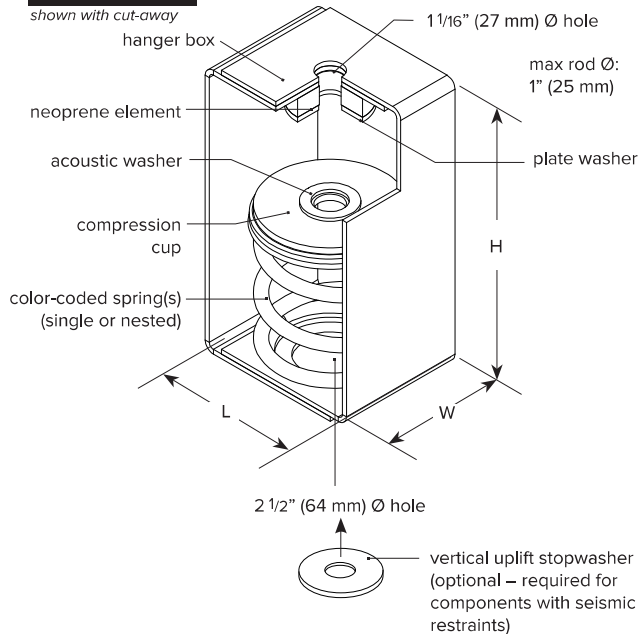
SHR 2N

shown with cut-away



SHR 2S

shown with cut-away



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

PERFORMANCE

Model	Spring Color outer-inner	Element Color	Rated Load		Deflection at rated load	Isolator Weight †	
			lb	kN		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 in mm	W in mm	H in mm
SHR-2N			
50-1000	5 127	4 1/2 114	10 1/8 257

DIMENSIONS: SHR-2S

Model	L in mm	W in mm	H in mm
SHR-2S			
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

Customer: Tower Enterprises of NY & NJ

Consultant:

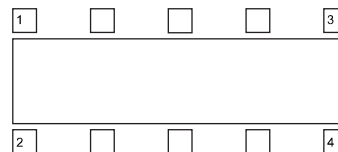
Dwg No.: 233298-100 Rev: 0 Drawn by: SM

V-A Project Manager: Arakel Dakessian

TAG: TX-2, 3, ERFX-122

COMMENTS:

Plan view of mount locations:



EQUIPMENT: Inline fan(s) - ACME - 85 lbs

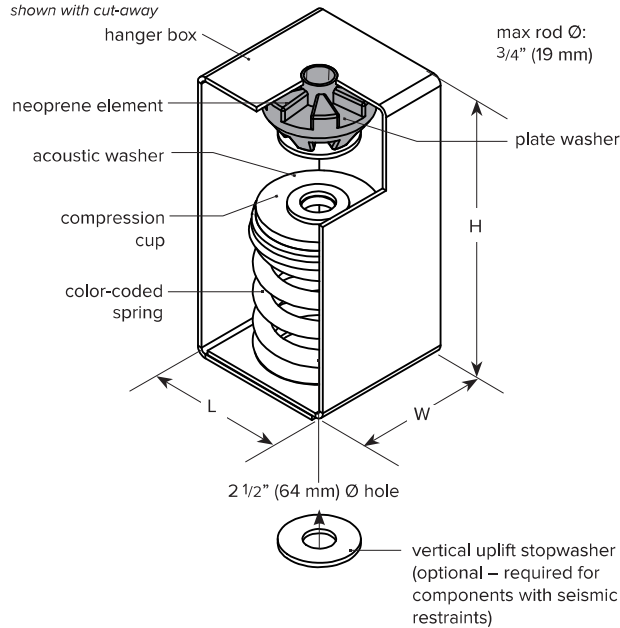
1. SHR-2N-50
2. SHR-2N-50
3. SHR-2N-50
4. SHR-2N-50
5.
6.
7.
8.
9.
10.

QTY of sets required: 3

DATE: 2023-11-21

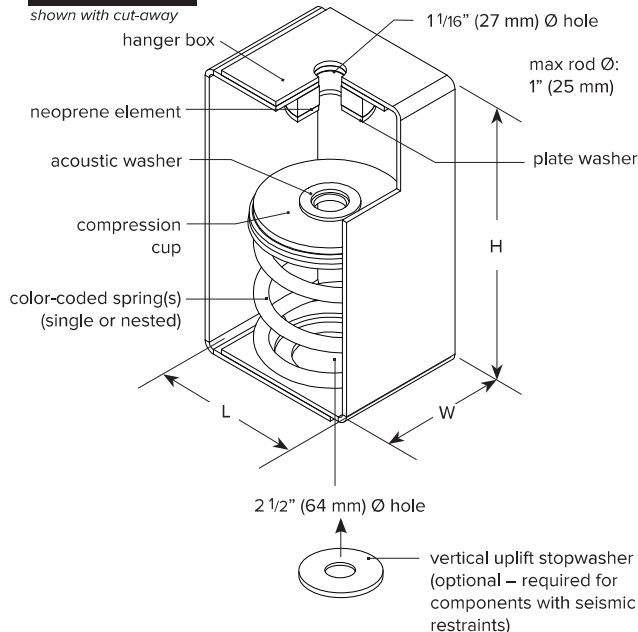
SHR 2N

shown with cut-away



SHR 2S

shown with cut-away



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

PERFORMANCE

Model	Spring Color outer-inner	Element Color	Rated Load		Deflection at rated load	Isolator Weight †	
			lb	kN		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 in mm	W in mm	H in mm
SHR-2N			
50-1000	5 127	4 1/2 114	10 1/8 257

DIMENSIONS: SHR-2S

Model	L in mm	W in mm	H in mm
SHR-2S			
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

Customer: Tower Enterprises of NY & NJ

Consultant:

Dwg No.: 233298-101

Rev: 0

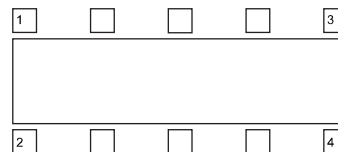
Drawn by: SM

V-A Project Manager: Arakel Dakessian

TAG: GX-2,3

COMMENTS:

Plan view of mount locations:



1. SHR-2N-50

6.

2. SHR-2N-50

7.

3. SHR-2N-50

8.

4. SHR-2N-50

9.

5.

10.

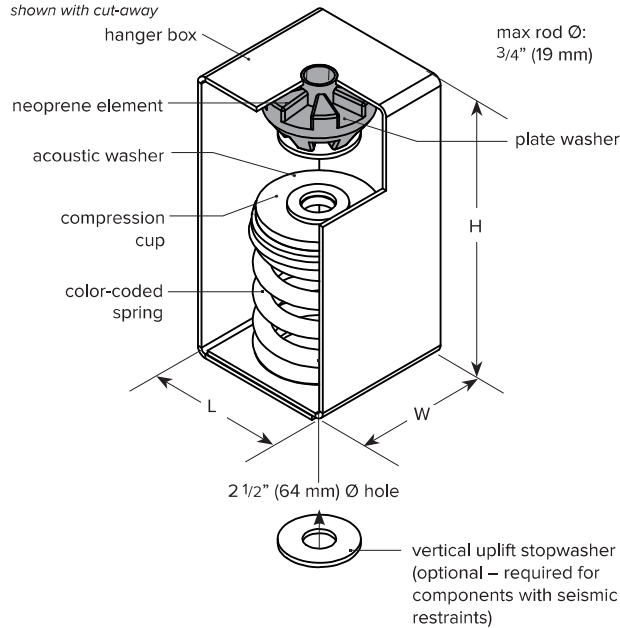
QTY of sets required: 2

EQUIPMENT: Inline fan(s) - ACME - 85 lbs

DATE: 2023-11-21

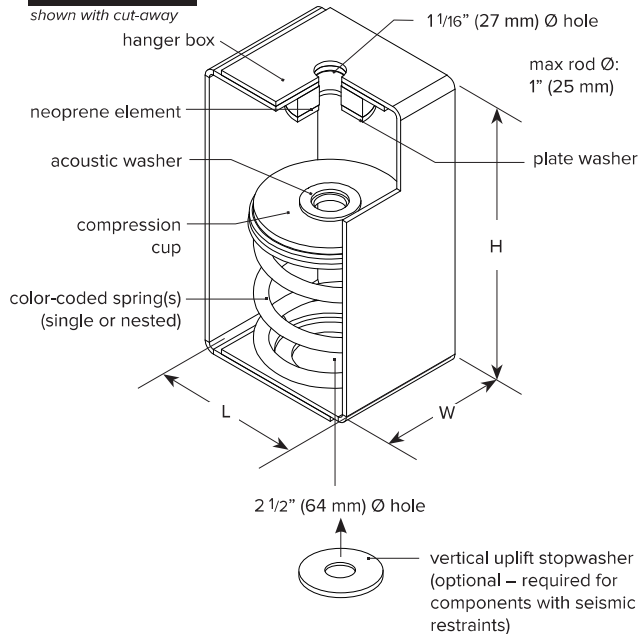
SHR 2N

shown with cut-away



SHR 2S

shown with cut-away



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

PERFORMANCE

Model	Spring Color outer-inner	Element Color	Rated Load		Deflection at rated load	Isolator Weight †	
			lb	kN		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 in mm	W in mm	H in mm
SHR-2N			
50-1000	5 127	4 1/2 114	10 1/8 257

DIMENSIONS: SHR-2S

Model	L in mm	W in mm	H in mm
SHR-2S			
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

Customer: Tower Enterprises of NY & NJ

Consultant:

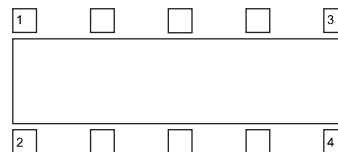
Dwg No.: 233298-102 Rev: 0 Drawn by: SM

V-A Project Manager: Arakel Dakessian

TAG: GX-1

COMMENTS:

Plan view of mount locations:



EQUIPMENT: Inline fan(s) - ACME - 263 lbs

1. SHR-2N-100 6.

2. SHR-2N-100 7.

3. SHR-2N-100 8.

4. SHR-2N-100 9.

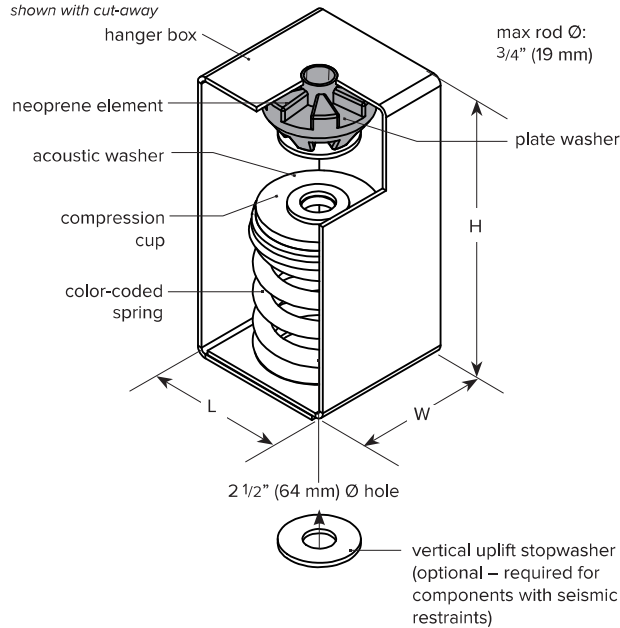
5. 10.

QTY of sets required: 1

DATE: 2023-11-21

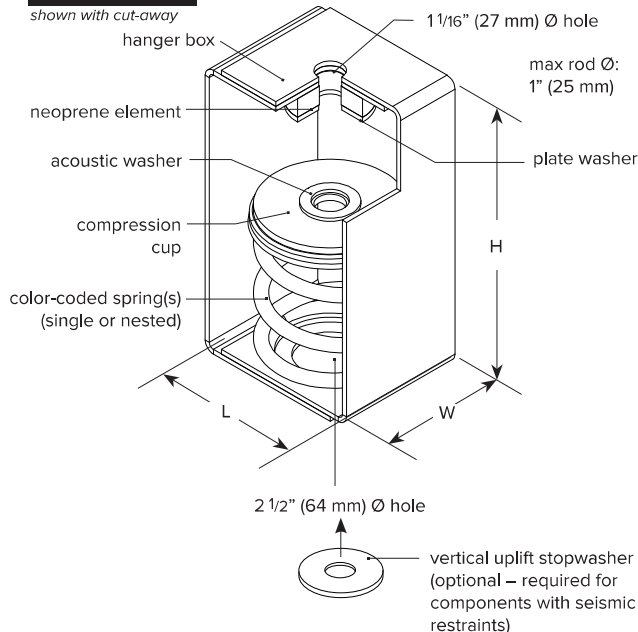
SHR 2N

shown with cut-away



SHR 2S

shown with cut-away



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

PERFORMANCE

Model	Spring Color outer-inner	Element Color	Rated Load		Deflection at rated load	Isolator Weight †	
			lb	kN		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 in mm	W in mm	H in mm
SHR-2N			
50-1000	5 127	4 1/2 114	10 1/8 257

DIMENSIONS: SHR-2S

Model	L in mm	W in mm	H in mm
SHR-2S			
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

Customer: Tower Enterprises of NY & NJ

Consultant:

Dwg No.: 233298-103

Rev: 0

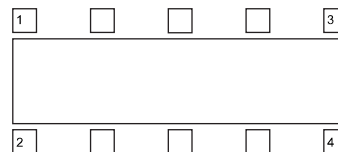
Drawn by: SM

V-A Project Manager: Arakel Dakessian

TAG: GXF-SB-1

COMMENTS:

Plan view of mount locations:



1. SHR-2N-50

6.

2. SHR-2N-50

7.

3. SHR-2N-50

8.

4. SHR-2N-50

9.

5.

10.

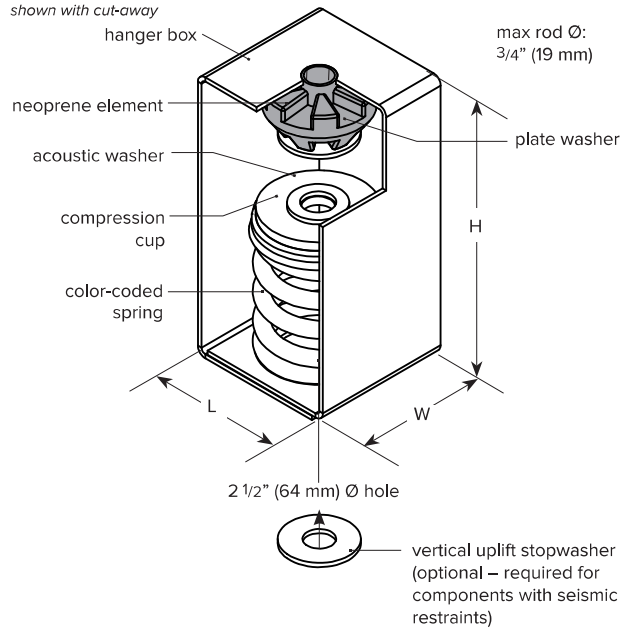
QTY of sets required: 1

EQUIPMENT: Fan(s) - ACME - 160 lbs

DATE: 2023-11-21

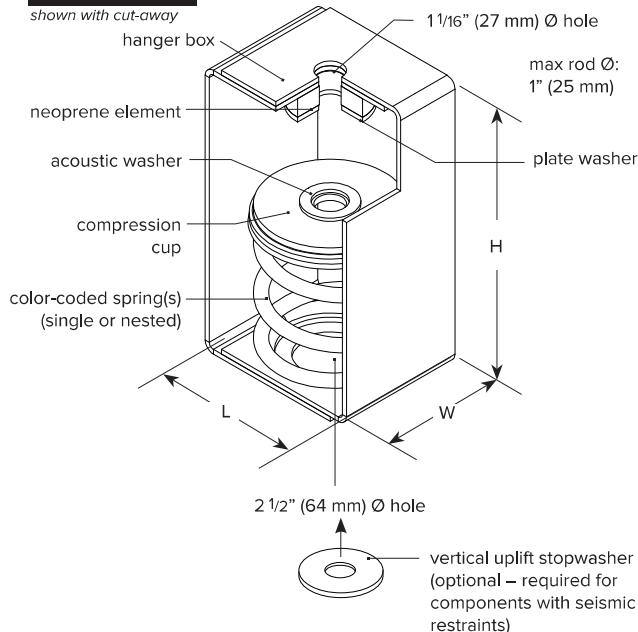
SHR 2N

shown with cut-away



SHR 2S

shown with cut-away



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

PERFORMANCE

Model	Spring Color	Element Color	Rated Load	Deflection at rated load	Isolator Weight †
	outer-inner		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 in mm	W in mm	H in mm
SHR-2N			
50-1000	5 127	4 1/2 114	10 1/8 257

DIMENSIONS: SHR-2S

Model	L in mm	W in mm	H in mm
SHR-2S			
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

Customer: Tower Enterprises of NY & NJ

Consultant:

Dwg No.: 233298-104

Rev: 0

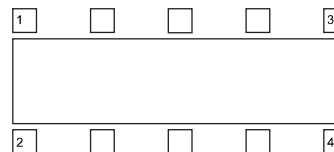
Drawn by: SM

V-A Project Manager: Arakel Dakessian

TAG: GXF-SB-2

COMMENTS:

Plan view of mount locations:



1. SHR-2N-50

6.

2. SHR-2N-50

7.

3. SHR-2N-50

8.

4. SHR-2N-50

9.

5.

10.

QTY of sets required: 1

EQUIPMENT: Fan(s) - ACME - 85 lbs

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

1" (25 mm) Deflection SHR Spring Hangers with Neoprene

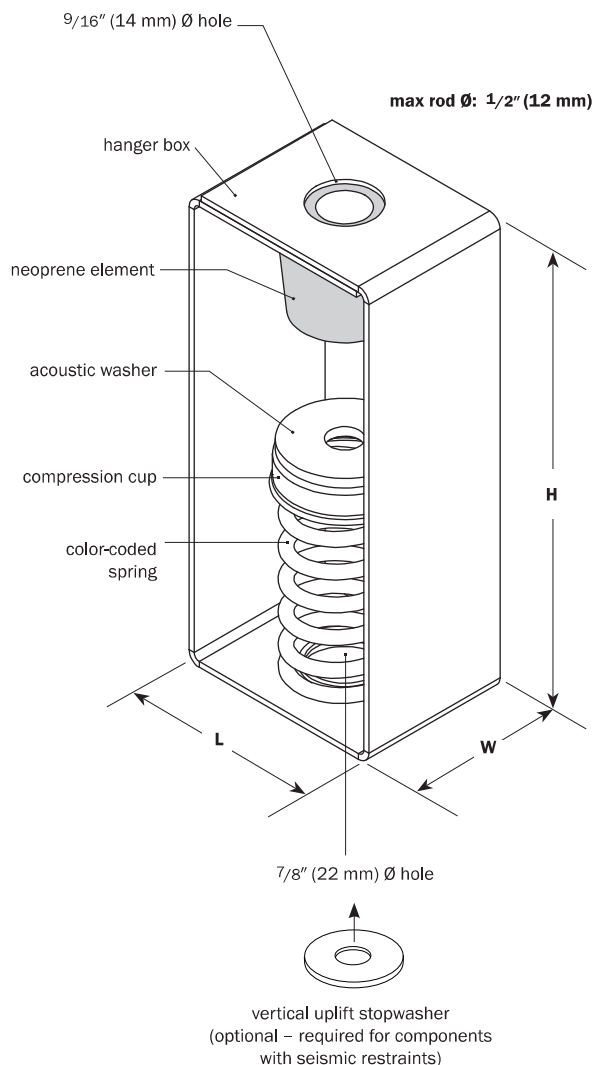
SHR-SN

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 lb kN	Deflection at rated load in mm	Isolator Weight † 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 in mm	W in mm	H in mm
SHR-SN			
15-200	2 3/4 70	2 51	6 1/4 152

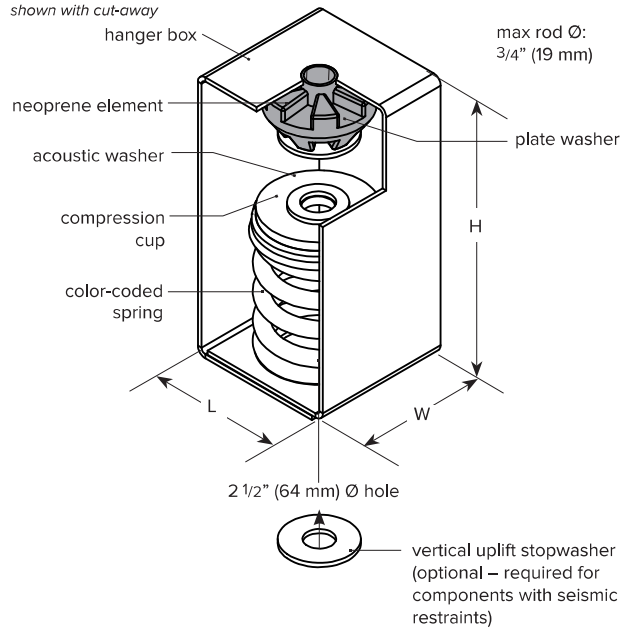
NOTES

- 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		
COMMENTS:	QTY of sets required: 4		
			DATE: 2023-11-21

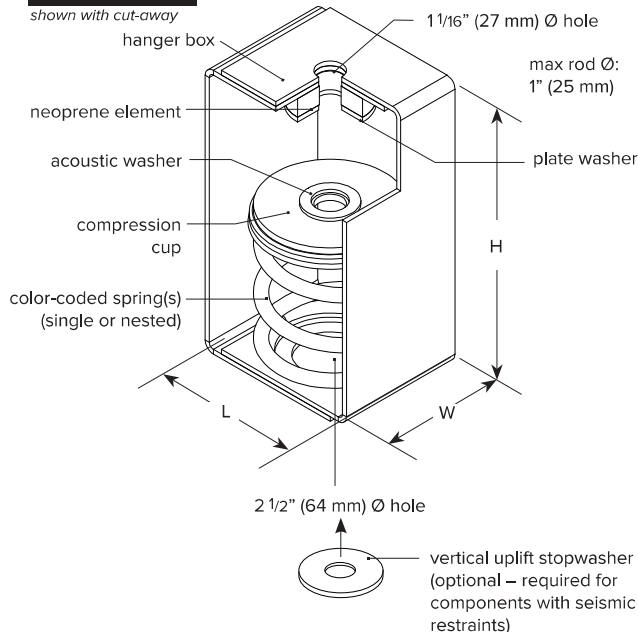
SHR 2N

shown with cut-away



SHR 2S

shown with cut-away



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

PERFORMANCE

Model	Spring Color	Element Color	Rated Load	Deflection at rated load	Isolator Weight †
	outer-inner		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 in mm	W in mm	H in mm
SHR-2N			
50-1000	5 127	4 1/2 114	10 1/8 257

DIMENSIONS: SHR-2S

Model	L in mm	W in mm	H in mm
SHR-2S			
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

Customer: Tower Enterprises of NY & NJ

Consultant:

Dwg No.: 233298-106

Rev: 0

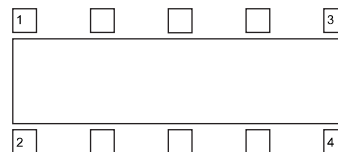
Drawn by: SM

V-A Project Manager: Arakel Dakessian

TAG: UH-1 to 4

COMMENTS:

Plan view of mount locations:



1. SHR-2N-50

6.

2. SHR-2N-50

7.

3. SHR-2N-50

8.

4. SHR-2N-50

9.

5.

10.

QTY of sets required: 4

EQUIPMENT: Unit Heater(s) - Modine - 92 lbs

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

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

SFS-2N

File No.: DS-SFS2N-013

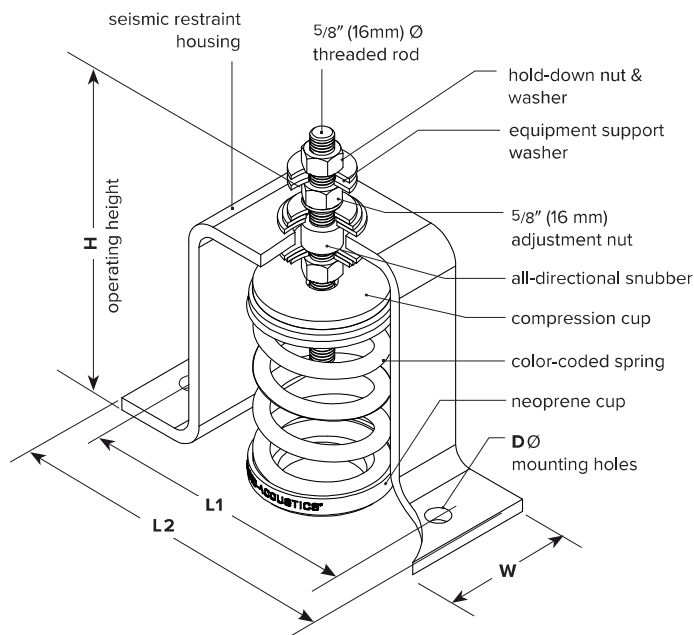
Date: 30 Apr 2020

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

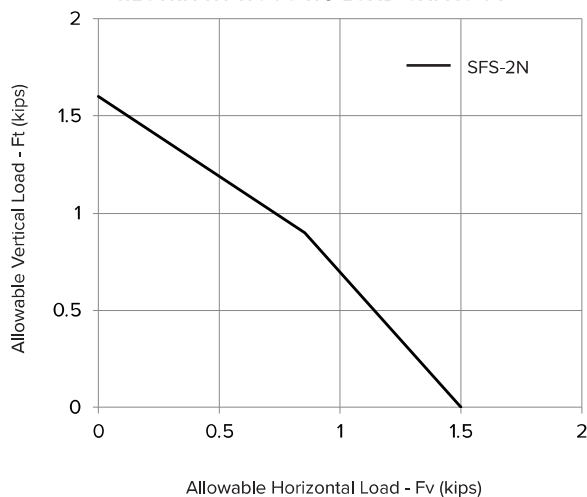
DIMENSIONS

Model	L1	L2	W	H	D Ø
SFS-2N	in mm	in mm	in mm	in mm	in mm
50—1000	8¼ 210	10¼ 260	4 102	8½ 216	11/16 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

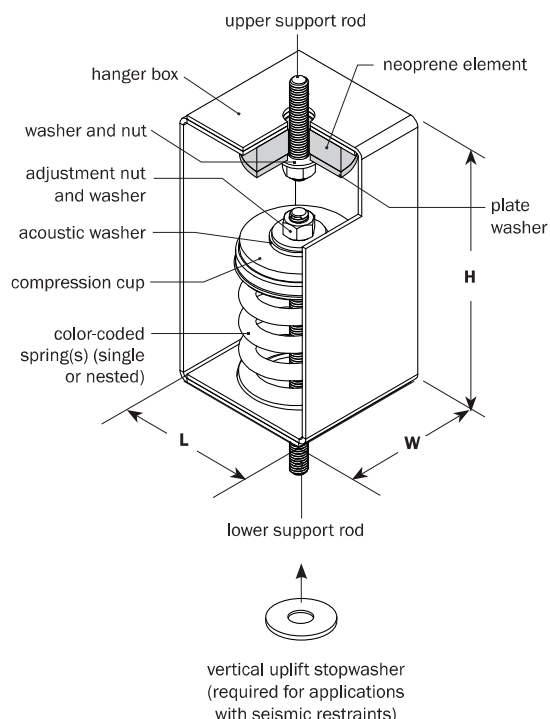


This load capacity envelope shows the maximum force that can be applied to the isolator housing with appropriate attachment to structure.

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

INSTRUCTIONS

Model shown with cut-away



For Applications with Seismic Restraints Only

fig. 1

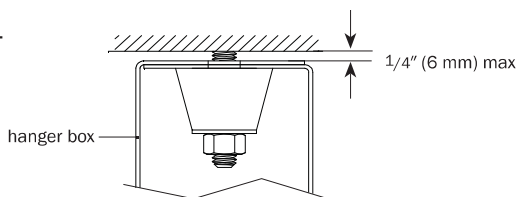
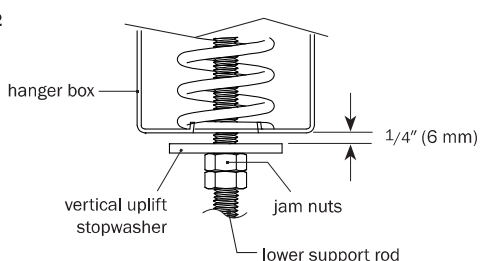


fig. 2



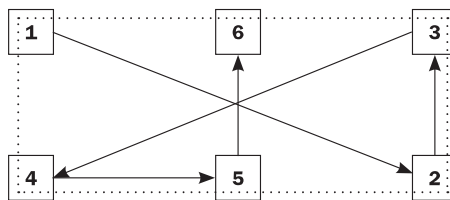
Option A: After system/equipment has been hung

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).

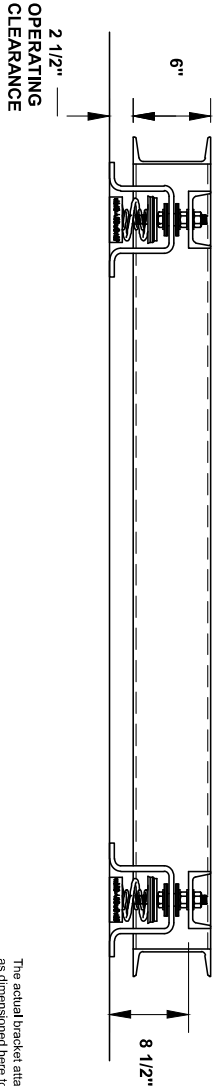
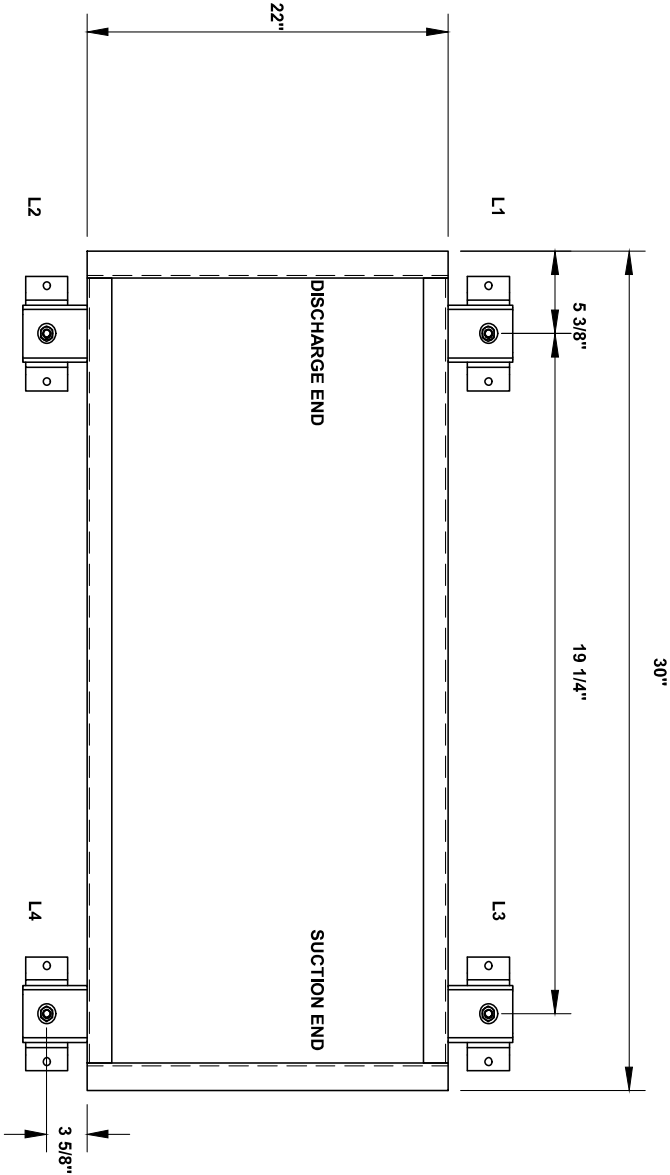
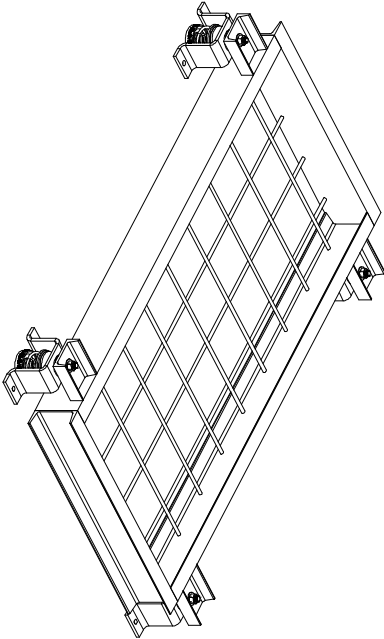
Option B: Before system/equipment is installed

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.



The actual bracket attachment may vary as dimensioned here to match the isolator, base and operating clearance requirements.

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)

PROJECT: Vails Gate Fire District VGFD2001		CIB-INERTIA BASE		QTY: 2	
CUSTOMER: Tower Enterprises of NY & NJ		BY: SM		SCALE: N/A	
CONSULTANT:		CHECK:		DATE: 17-Nov-23	
V/A PROJECT MANAGER: Arakel D.		DWG NO.: 233298-401		REV: 0	

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	

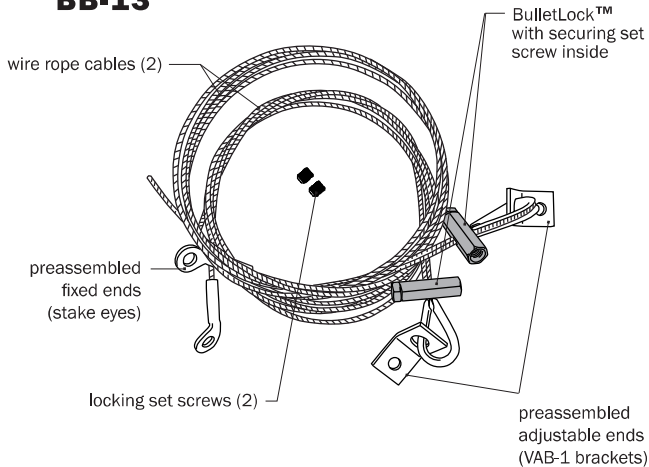
Eqt. Type: Vertical Inline Pump
Manufacturer: Taco
Model: SKV1506
Tag: HHWP-1.2
Motor: 3
RPM: 3500
Oper. Wt.: 262 lbs
Total Wt. (4): 770 lbs

- 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

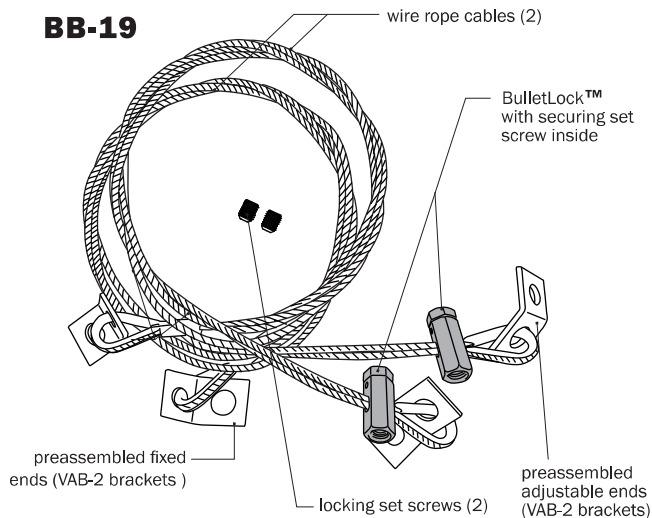
Restraint Bracing Details: Piping - Cable restrains	
Project	V-A Order
Customer	Customer P.O.
Consultant	V-A PM

<div>1</div> <div>Scale: none</div> <div>Transverse cable restraint</div> <div>PSCT</div>	<div>2</div> <div>Scale: none</div> <div>Longitudinal cable restraint</div> <div>PSCL</div>	<div>3</div> <div>Scale: none</div> <div>Compound angle restraint</div> <div>PSCC</div>	<div>4</div> <div>Scale: none</div> <div>Transverse angle restraint for pipe on trapeze</div> <div>PSCT</div>	<div>5</div> <div>Scale: none</div> <div>Compound angle restraint for pipe on trapeze</div> <div>PSCT</div>
<div>6</div> <div>Scale: none</div> <div>Transverse cable restraint for pipe on rollers</div> <div>PSCT-R</div>	<div>7</div> <div>Scale: none</div> <div>Cable ends and anchor detail</div> <div>PSCT</div>	<div>8</div> <div>Scale: none</div> <div>Attaching BB kit to trapeze</div> <div>PSCT</div>	<div>9</div> <div>Scale: none</div> <div>Alternate cable arrangements</div> <div>PSCT</div>	<div>10</div> <div>Scale: none</div> <div>Installation notes</div> <div>PSCT</div>

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

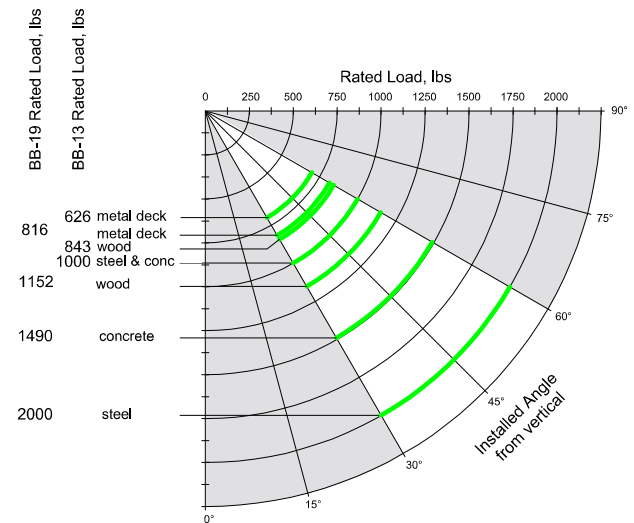
Rated loads based on:

- 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 †
	ft m	in mm	in mm	in mm	in mm	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
- Restraints have been tested and rated in accordance with ASHRAE 171.
- 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:			QTY of sets required:			
COMMENTS:			EQUIPMENT:			
			DATE:			

Standard BB or BBR Kit Arrangement

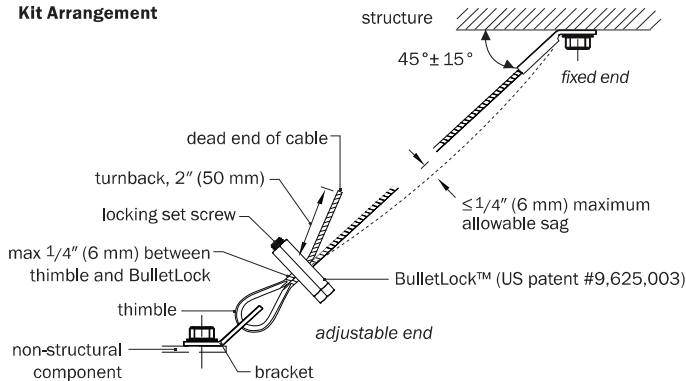
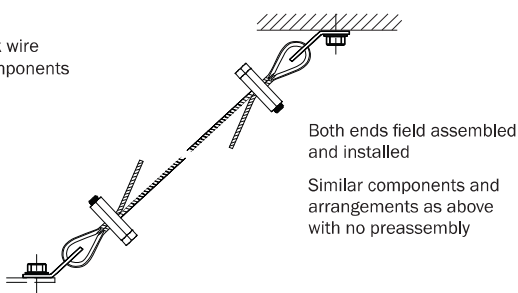


Fig.1

Optional bulk wire rope and components arrangement

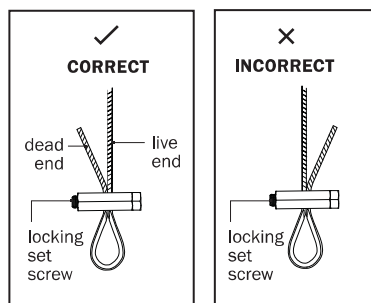


Both ends field assembled and installed
Similar components and arrangements as above with no preassembly

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

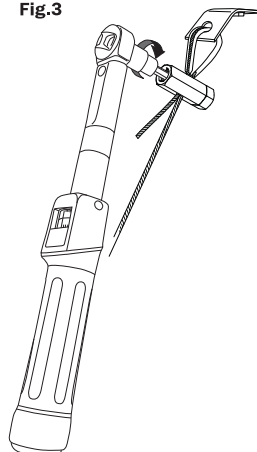
Fig.2



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.

Rod Stiffener for Suspended Components Installation Instructions

RS-1

File No.: INS-RS1-007

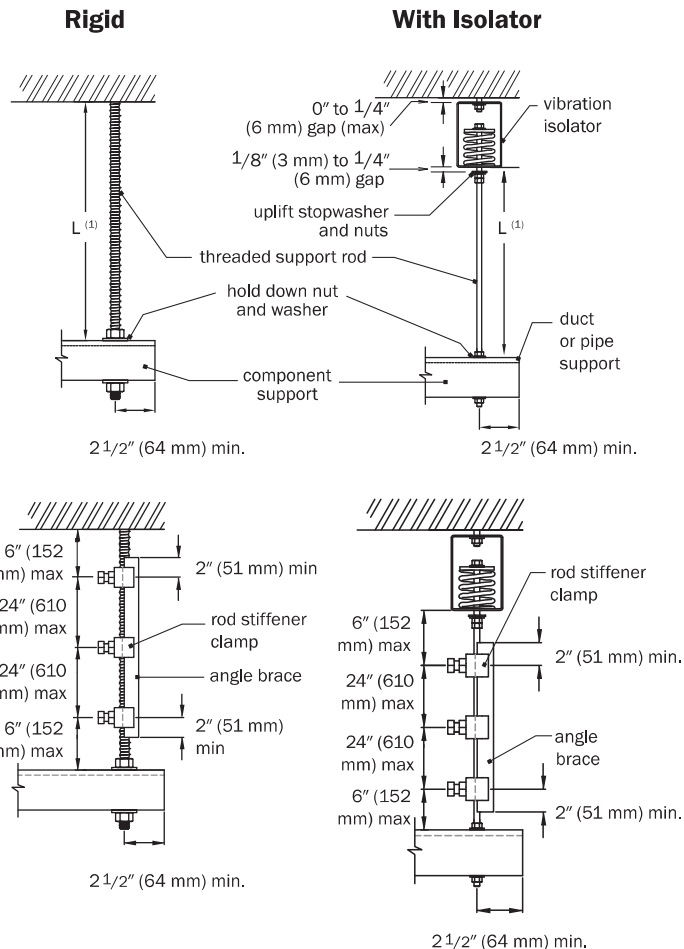
Date: 9 Oct 2014

Supersedes: INS-RS1-006

Date: 13 Nov 2013

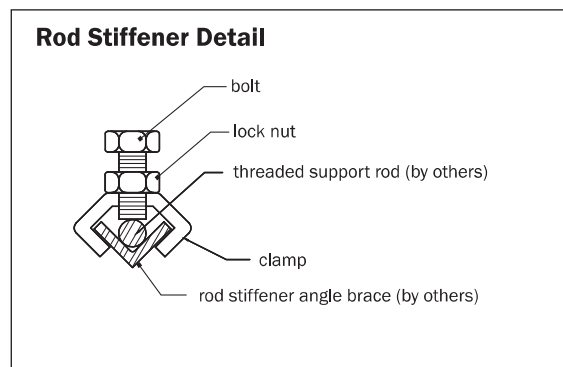
INSTRUCTIONS

- 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 ⁽¹⁾		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

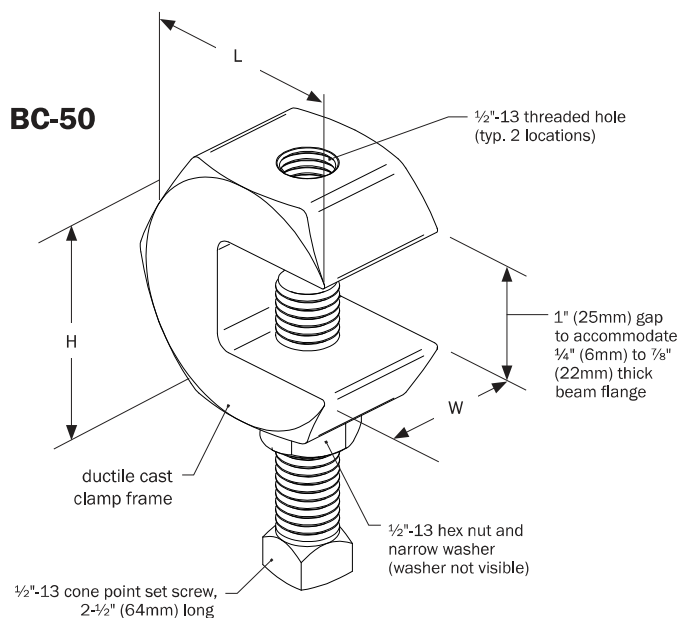
BC

File No.: DS-BC-001

Date: 18 Apr 2017

Supersedes: New

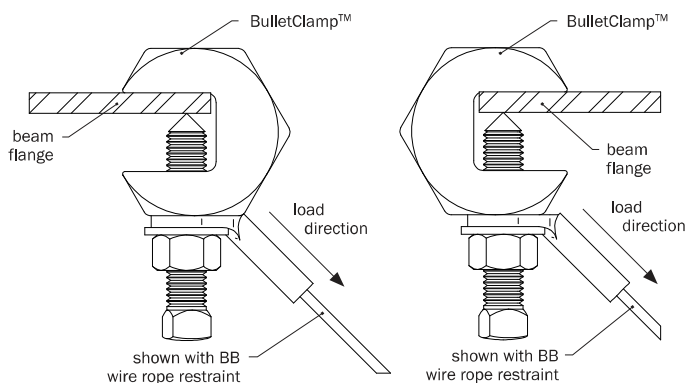
Date: New



INSTALLATION DETAILS

ORIENTATION 1 - AWAY FROM BEAM

ORIENTATION 2 - TOWARDS BEAM



PERFORMANCE

Transverse Restraint Tension Capacity	Longitudinal Restraint Tension Capacity	V-Anchor Method Tension Capacity
lbs kN	lbs kN	lbs kN
2500 11.1	2500 11.1	2500 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		lbs kg	lbf-ft N-m
in mm	in mm	in mm	in mm		
2-3/16" 56	1-1/4" 32	2-1/8" 54	2-1/2" 64	0.9 0.4	25 34

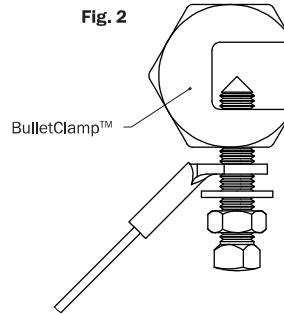
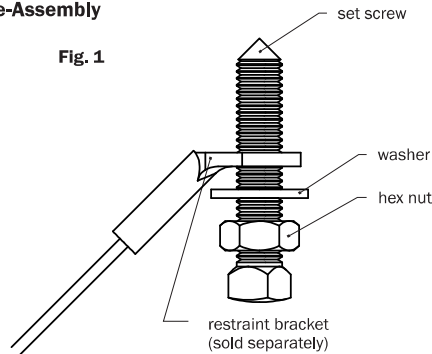
NOTES

- 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:	Drawn by:	4:		9:
V-A Project Manager:			5:		10:
			QTY of sets required:		
TAG:			EQUIPMENT:		
COMMENTS:			DATE:		

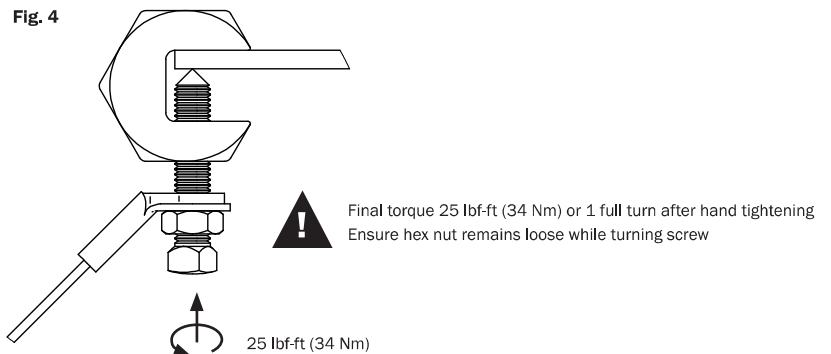
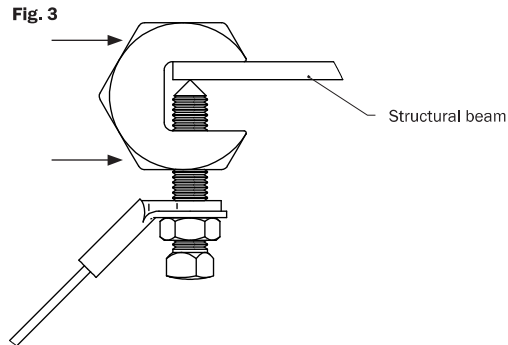
INSTRUCTIONS

Pre-Assembly



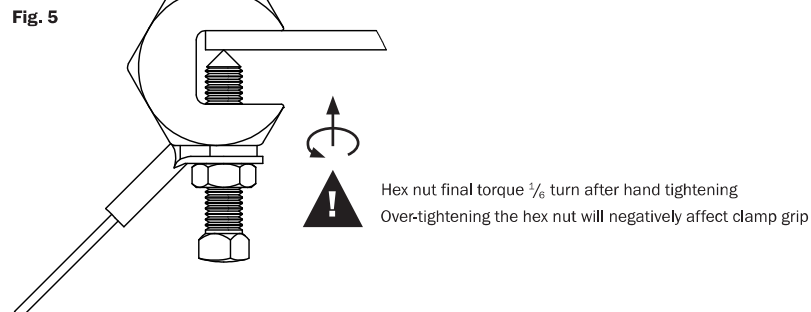
1. Loosely assemble the provided set screw, hex nut and washer, then add the restraint end bracket (sold separately) (Fig. 1).
2. Finish pre-assembly by loosely screwing the set screw onto the BulletClamp™ as shown (Fig. 2).

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



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

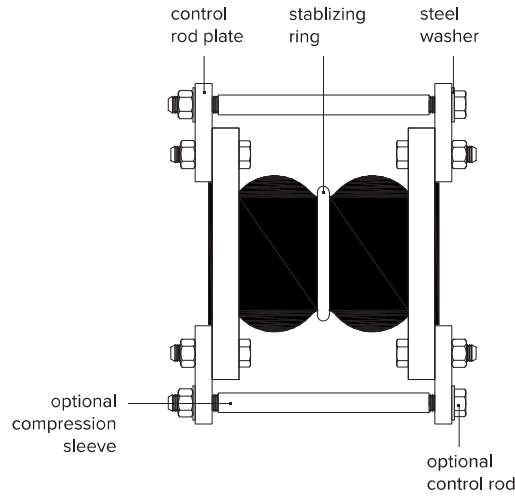
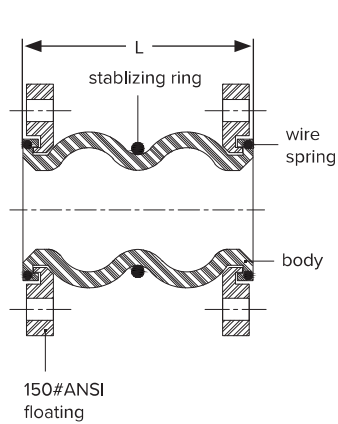
web: www.vibro-acoustics.com
eml: info@vibro-acoustics.com

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

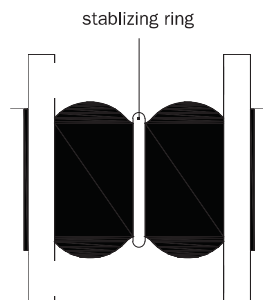
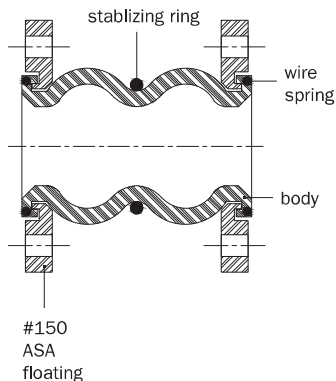
NOTES

- 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

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

INSTRUCTIONS



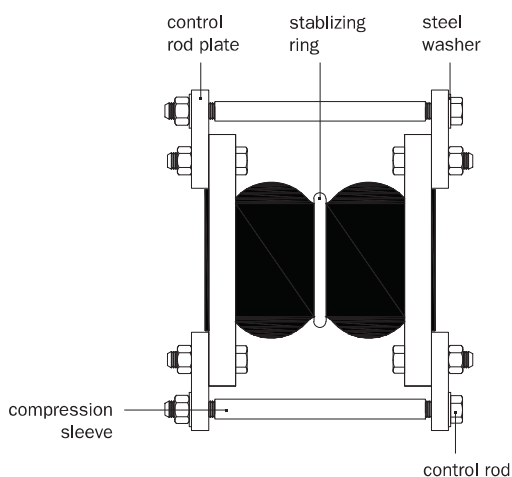
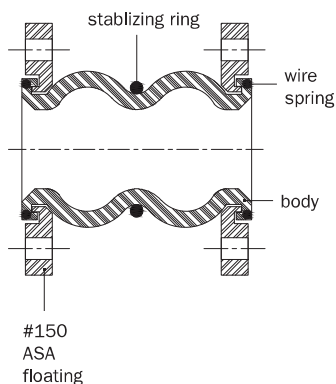
1. Make sure that the expansion joint temperature, pressure, vacuum, movements and elastomer type matches the system requirements. Vacuum rating is based on neutral installed length without external load. Contact Vibro-Acoustics if the system requirements exceed those of the expansion joint selected.
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~~ ^{all} 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.

**SIPS Seismic Inline
Pump Stands**

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

SIPS-125

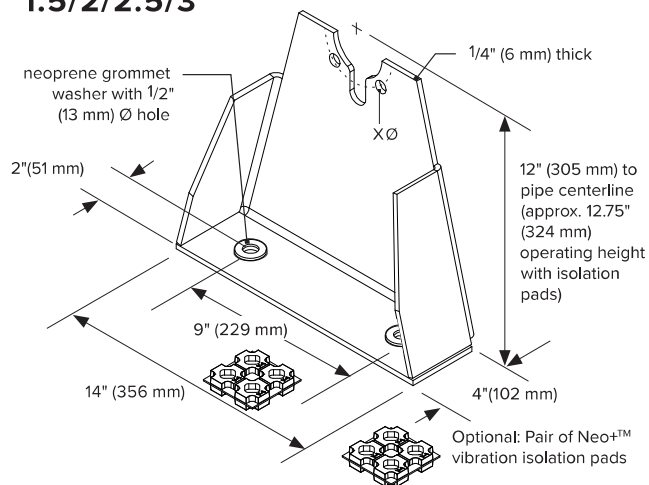
File No.: DS-SIPS-125-001

Date: 03 Sep 2020

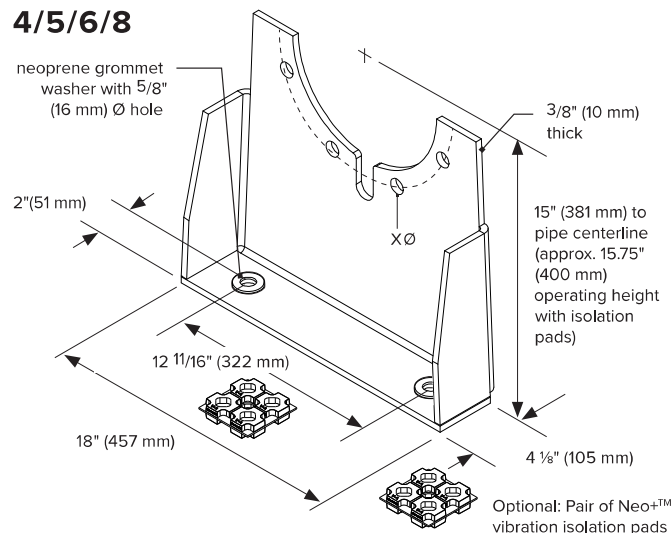
Supersedes: New

Date: New

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



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

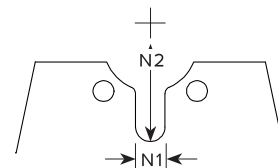


DIMENSIONS

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

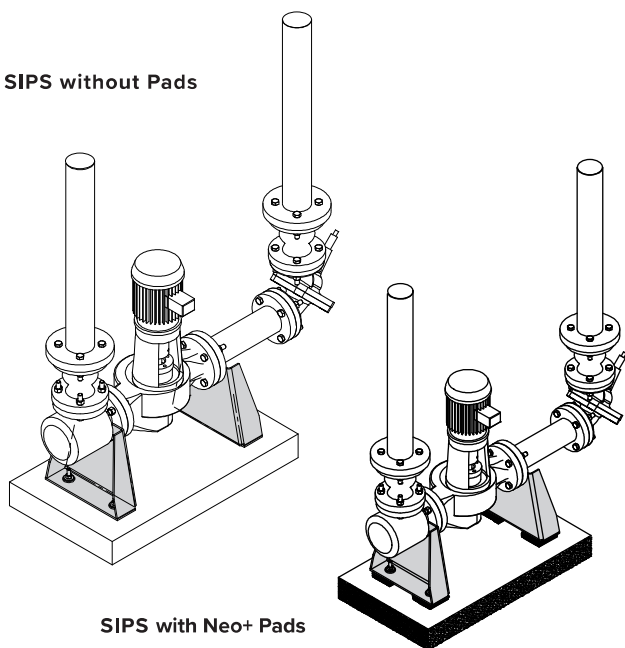
* Max allowed load requires correct attachment to structure

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

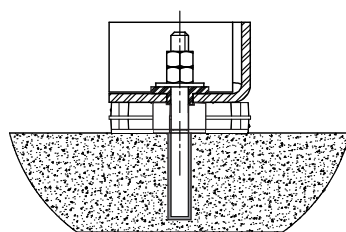
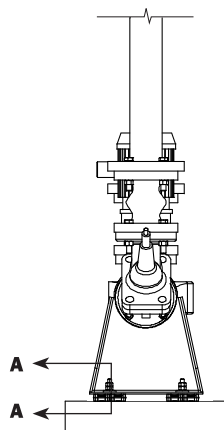
OPTION <input type="checkbox"/> VIBRATION ISOLATION PADS					
Project:			plan view of stand locations 	Model SIPS-	
Customer:					
Consultant:					
Dwg No.:	Rev:	Drawn by:			
V-A Project Manager:					
TAG:			EQUIPMENT:		
COMMENTS:			DATE:		

SIPS without Pads

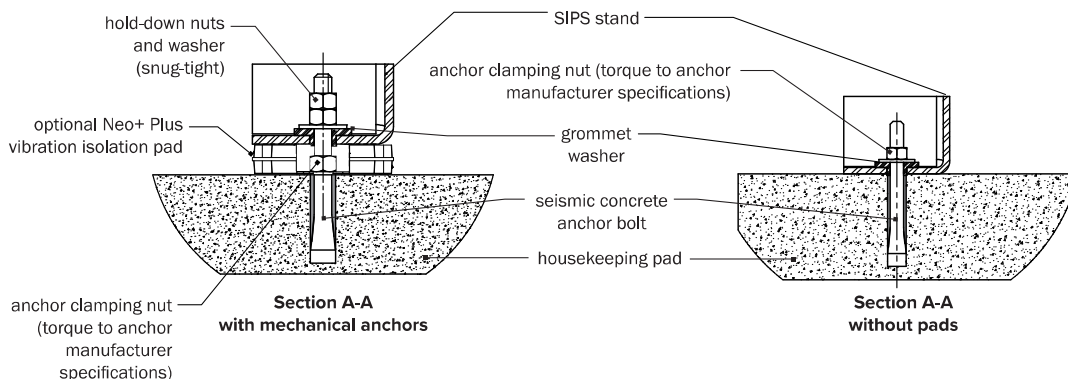


SIPS with Neo+ Pads

Anchor Details



**Section A-A
with adhesive anchors**
(anchor clamping nut not required)



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).

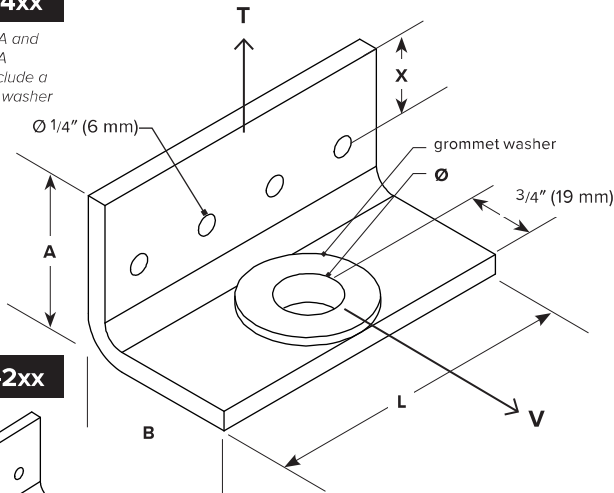
tel: 416-291-7371
fax: 416-291-8049

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

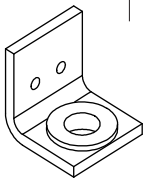
web: www.vibro-acoustics.com
eml: info@vibro-acoustics.com

SRB-4xx

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



SRB-2xx

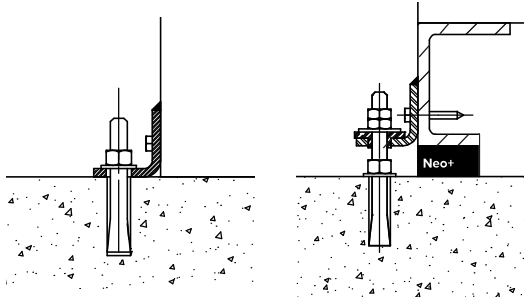


Rigid

w/ Neo+ Pad

SRB-222 SRB-422

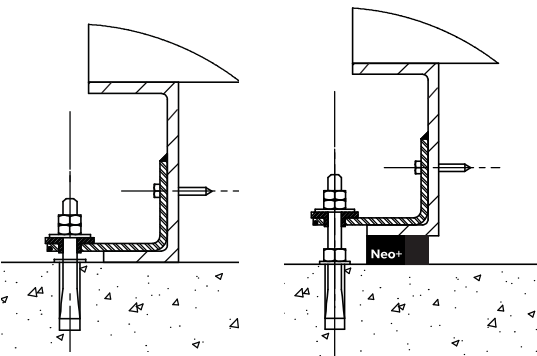
Neo+ Pad not
available for
SRB-222A or
SRB-422A



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:

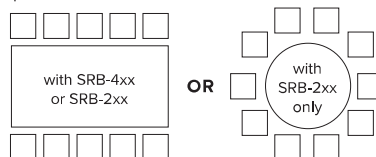
V-A Project Manager:

Tag:

Date:

Comments:

plan view of bracket locations



Unless otherwise specified, install brackets equally spaced along the long sides of the equipment.

Equipment:

1:

6:

2:

7:

3:

8:

4:

9:

5:

10:

QTY of sets required:

Attachment Method:

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

SRB Seismic Restraint Bracket Installation Instructions

SRB

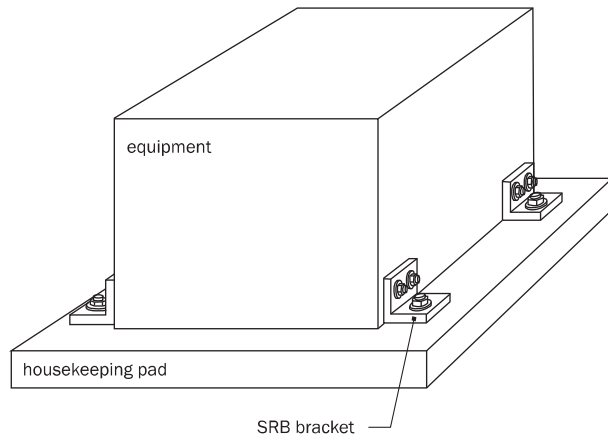
File No.: INS-SRB-003

Date: 6 July 2016

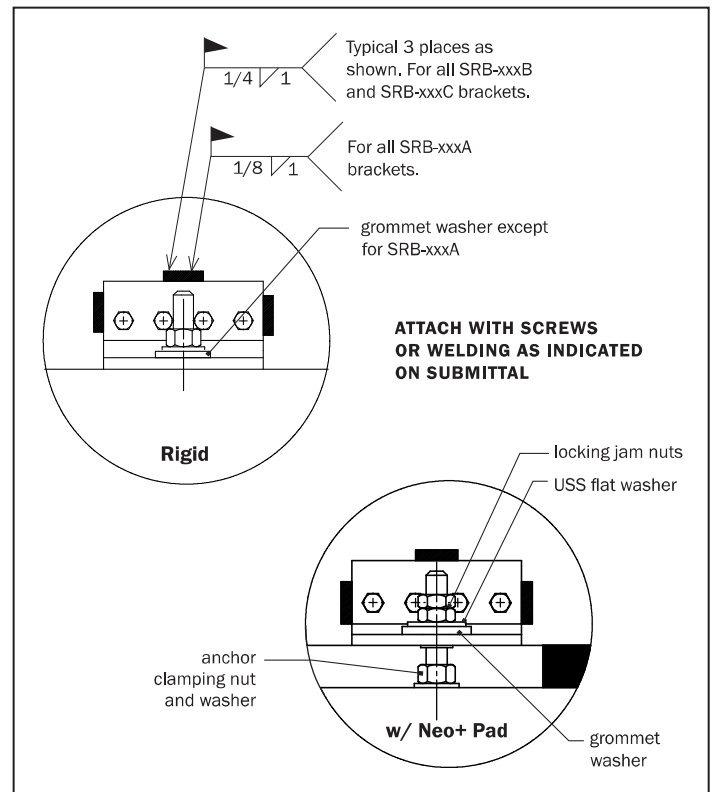
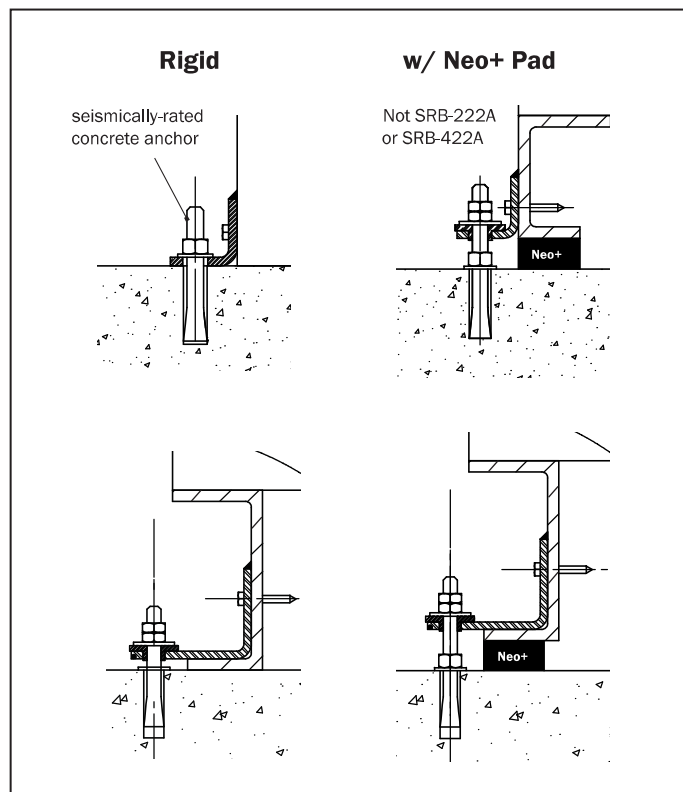
Supersedes: INS-SRB-012

Date: 28 Apr 2016

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.



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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

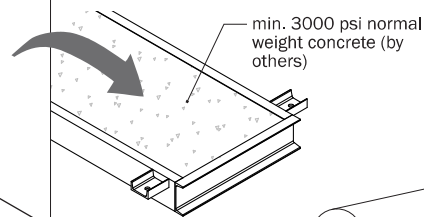
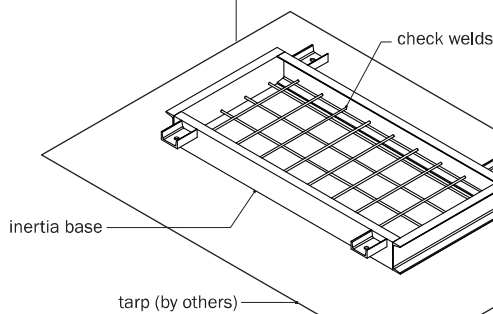
Date: 26 Apr 2013
Date: New

INSTRUCTIONS

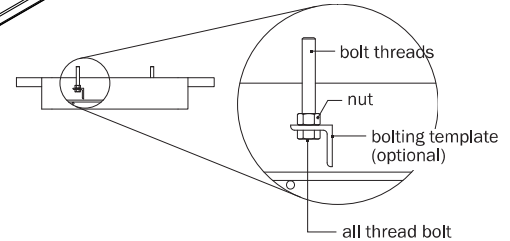
1. Lay tarp (or polyethylene sheets or fiberboard) on a flat floor where the concrete will be poured and cured.

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.



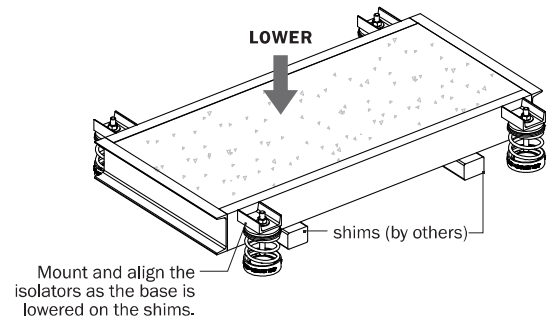
! Install the equipment mounting bolts before pouring the concrete for the bases with bolting template option. Try to keep bolt threads as clean as possible while pouring the concrete.



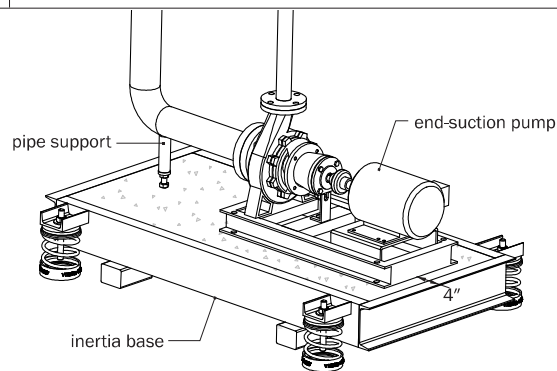
4. Once the concrete is fully dried and cured, lift the base either by floor jacks, a hoist or similar means. If the base is being lifted by a hoist mechanism where the height-saving brackets are used, make sure that the base is level at all times in order to prevent bracket failure.

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.

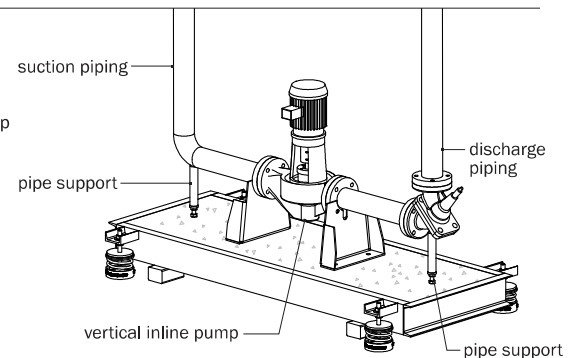
As a rule, use at least the same quantity of shims as isolator brackets and place them within the vicinity of the isolators.



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.

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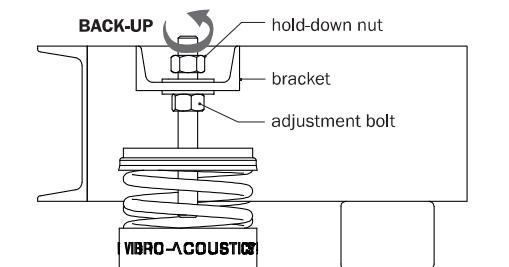
Date: 26 Apr 2013

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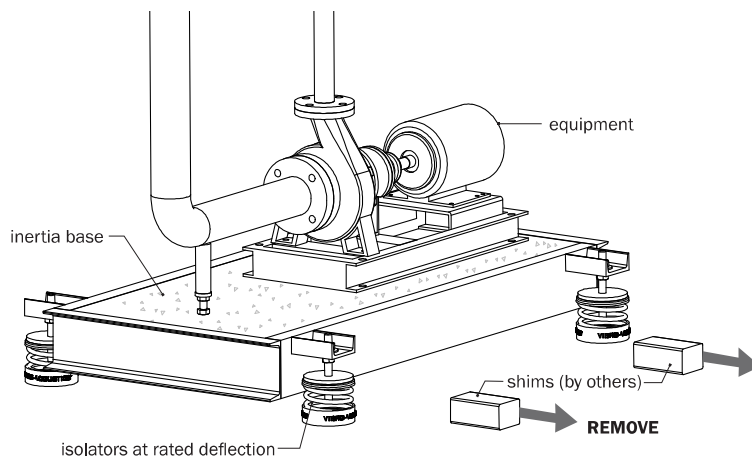
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INSTRUCTIONS

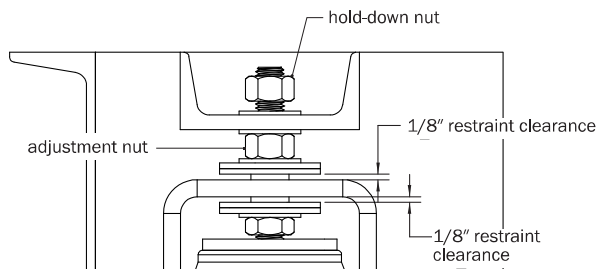
7. Back up the hold-down nut about a 1/4 of a turn. Adjust isolators. At this point, refer to the installation instructions of the isolator that is being used with the inertia base for further instructions on adjustment. Follow the isolator adjustment sequence below (Fig. 1).



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.



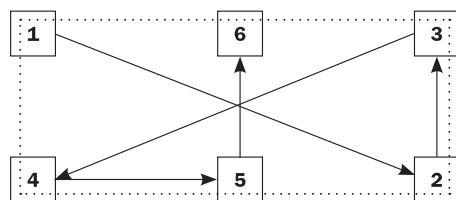
9. (For SFS isolators only)
Check the restraint clearance with SFS isolators, and fine-adjust the springs until proper restraint clearance of 1/8" on each side of the housing is achieved.



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.