



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR HCAI PREAPPROVAL OF
MANUFACTURER'S CERTIFICATION (OPM)

OFFICE USE ONLY

APPLICATION #: OPM-0685

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: New Renewal/Update

Manufacturer Information

Manufacturer: VMC Group

Manufacturer's Technical Representative: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780

Email: john.giuliano@thevmcgroup.com

Product Information

Product Name: VMC Group Spring Vibration Isolators OPM-0685

Product Type: AMSR

Product Model Number: AMSR-1C, AMSR-2D

General Description: Spring Vibration Isolators

Applicant Information

Applicant Company Name: VMC Group

Contact Person: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780

Email: john.giuliano@thevmcgroup.com

Title: President

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STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

Registered Design Professional Preparing Engineering Recommendations

Company Name: THE VMC GROUP
Name: Kenneth Tarlow California License Number: S2851
Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814
Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

HCAI Special Seismic Certification Preapproval (OSP)

Special Seismic Certification is preapproved under OSP OSP Number: OSP-0211, OSP-0242

Certification Method

Testing in accordance with: ICC-ES AC156 FM 1950-16
 Other(s) (Please Specify): OPM-0685

*Use of criteria other than those adopted by the California Building Standards Code, 2022 (CBSC 2022) for component supports and attachments are not permitted. For distribution system, interior partition wall, and suspended ceiling seismic bracings, test criteria other than those adopted in the CBSC 2022 may be used when approved by HCAI prior to testing.

Analysis
 Experience Data
 Combination of Testing, Analysis, and/or Experience Data (Please Specify): test data

HCAI Approval

Date: 9/28/2023
Name: Timothy Piland Title: Senior Structural Engineer
Condition of Approval (if applicable): _____

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STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY





VMC GROUP
THE POWER OF TOGETHER™

VMC GROUP OPM-0685-22

Seismic Rated Spring Vibration Isolators



BY: Timothy Piland

DATE: 09/28/2023



Ken A. Tarlow

Date: 09/28/2023



OPM-0685-22

VMC Group Seismic Rated
Spring Vibration Isolators

OPM-0685-22 Reviewed for Code Compliance by Timothy Piland

Mr. John P. Giuliano

John P. Giuliano

Page 81

1. General Notes and Seismic Capacity Determination

- a. HCAI Pre-Approval of Manufacturer's Certification (OPM) is based on the 2022 California Building Code (CBC).
- b. The S_{DS} level from an HCAI approved component shake table test is the basis for determining the seismic demands and limiting isolator capacities.
- c. Per ASCE 7-16 (ASCE7) Chp 13 equations, lateral and vertical seismic demands are applied at the isolators and are calculated as follows:
 - i. Horizontal Force, F_p (§13.3.3.1 Equation 13.3-1)

$$F_p = \frac{0.4a_p S_{DS} W_p}{\left(\frac{R_p}{I_p}\right)} \left(1 + 2\frac{z}{h}\right)$$

Where per ASCE7 Table 13.6-1 for isolated applications:

Amplification factor (a_p) = 2.5

Component Response Modification factor (R_p) = 2.0

Component importance factor (I_p) = 1.5

Component operating weight (W_p) = Dead load plus operating contents

- ii. Vertical Force, F_v (§13.3.1.2)

$$F_v = \pm 0.2 S_{DS} D$$
 - iii. Overstrength factor (Ω_0) is not pertinent to supports (only concrete attachments) and was not included in the demand calculations.
 - iv. Utilizing ASCE7 §2.3.6 Basic Combinations with Seismic Load Effects:
 - LRFD Load Combination 6. $1.2D + E_v + E_h$
 - LRFD Load Combination 7. $0.9D - E_v + E_h$
 Where:
 - D = Dead Load
 - $E_v = F_v$
 - $E_h = F_p$
 - v. Component seismic demands applied at the center of gravity (CG), relative to the center of rigidity (CR), using the basic principles of structural mechanics, $P/A \pm Mc/I$ in all orthogonal directions are resisted by the isolators (see 2a.ii) to determine the isolator vertical and lateral demands.

Where (if applicable):

$$I = I_0 + Ad^2 \text{ (Parallel Axis Theorem for rotation about edge of component)}$$
- d. Isolator capacities are limited to the maximum calculated demands from 1c.
 - e. It is the responsibility of the Registered Design Professional (RDP) in responsible charge to submit to the Structural Engineer of Record (SEOR) the following:
 - i. Project specific isolator demands \leq OPM listed capacities.
 - ii. Component attachment to the isolator and isolator attachment to the structure are in compliance with CBC and corresponding anchor attachments ICC-ES Reports.
 - iii. Component assembly installation, e.g., component, isolator, and attachments are in compliance with CBC and details within the OPM.
 - f. Environmental factors, e.g., wind, snow, rain/floods, etc., are beyond the scope of the OPM.



Ken H. Tarlow

DATE: 09/28/2023



9/28/2023

OPM-0685-22

Seismic Rated

Spring Vibration Isolators

Mr. John P. Giuliano

John P. Giuliano

Page 82

2. General Isolator Design Procedure

a. The isolator selection process is as follows:

- i. Based upon project requirements, select the appropriate isolator family.
- ii. Lateral and vertical seismic demands are resisted per isolator.
- iii. Calculate the seismic demands for each isolator support supporting the equipment per 1c.
- iv. Select an isolator whose:
 - 1. Tested seismic capacities \geq the maximum calculated lateral and vertical seismic demands using the interaction force equation:
 $(T_u/T_s)^2 + (V_u/V_s)^2 \leq 1.0$
 Where:
 T_u = Maximum Tension Demand
 T_s = Tested Tension Capacity
 V_u = Maximum Shear Demand
 V_s = Tested Shear Capacity
 - 2. And whose static spring capacity \geq the static load requirements for the point loads of the equipment.

3. Anchorage and Attachment Requirements

- a. It is the responsibility of the Registered Design Professional (RDP) in responsible charge to submit to the Structural Engineer of Record (SEOR) the following:
 - i. Equipment attachment to the isolator.
 - ii. Anchorage of the isolator to building structure.

4. Tested Isolator Capacities

a. Maximum Tested Capacities

Overall Summary of Maximum Reactions

Isolator	R shear	Rz tension	Rz compression
AMSR-1C	860 lbs	1310 lbs	1725 lbs
AMSR-1E/2D	5030 lbs	4390 lbs	6930 lbs

Shear capacity is any horizontal direction

AMSR 1E and 2D housings are structurally similar, only static spring change.



Handwritten signature: Ken H. Tarlow



5. Typical Isolator Submittal Drawings
a. AMSR-1C

180R-101843	REV:13	7/19/23	DESCRIPTION	DATE	BY
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TYPE AMSR-1C SEISMICALLY RESTRAINED SPRING VIBRATION ISOLATORS				
MODEL	STATIC LOAD (LBS)	STATIC DEFLECTION (IN)	STATIC RATE (LB/IN)	SPRING COLOR CODE
AMSR-1C-50	50	1.00	50	BLUE
AMSR-1C-100	100	1.00	100	TAN
AMSR-1C-150	150	1.00	150	RED
AMSR-1C-250	250	0.83	300	BLACK
AMSR-1C-300	300	0.75	400	DK YELLOW
AMSR-1C-370	370	0.75	493	YELLOW
AMSR-1C-520N1	520	0.75	693	YELLOW/GREEN

TABLE NOTES:
1. TWO NESTED SPRINGS YIELD THIS LOAD.

NOTES

- ALL DIMENSIONS ARE IN INCHES. INTERPRET PER ANSII Y14.
- FINISH HOUSING: ONE COAT BLACK PAINT, SPRING: POWDER COAT, HARDWARE: ZINC ELECTROPLATE.
- INNER NESTED SPRING, WHEN USED, NOT SHOWN. SEE SPRING TABLE, NOTE 1.
- ALL SPRINGS DESIGNED WITH 50% OVER-TRAVEL.
- PRIOR TO MOUNTING EQUIPMENT, THE INTERNAL VERTICAL RESTRAINT WILL BE AGAINST THE HOUSING TOP PLATE AND THE ADJUSTING NUT WILL BE 1/4" ABOVE THE BLOCK AT THE "FREE HEIGHT." WHEN THE EQUIPMENT IS MOUNTED, THE SPRING WILL DEPRESS AND REST ON THE SHIM AT THE "OPERATING HEIGHT."
- STATIC RATED DEFLECTIONS ARE WITHIN 25% OF NOMINAL. HIGHER DEFLECTIONS ARE ALLOWED IF THEY MEET SPECIFICATIONS.

ISOLATOR SELECTIONS

LOC 1:	
LOC 2:	
LOC 3:	
LOC 4:	
LOC 5:	
LOC 6:	
LOC 7:	
LOC 8:	

CUSTOMER EQPT. TAG: _____

NOTE: MATERIAL SHOWN IS FOR (1) SET.

OTHER MATERIALS, COMPOUNDS, OR FINISHES WITH EQUAL OR SUPERIOR PROPERTIES MAY BE SUBSTITUTED AS THEY BECOME AVAILABLE.

REGISTERED PROFESSIONAL ENGINEER
KENNETH TARLOCK
S 2851
EXP 6/30/24
STRUCTURAL
STATE OF CALIFORNIA

MODEL AMSR-1C
[50-520 STATIC LBS.]
SEISMIC ISOLATORS
1 INCH DEFLECTION

SCALE: NONE

SHEET: _____

DRAWING NO.: _____

REVISION: _____

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Spring Vibration Isolators

Mr. John P. Giuliano

b. AMSR-2D

REV.	DESCRIPTION	DATE	BY
180R-101845	REV:15 7/19/23		

(2) 7/8 DIA HOLE

OPM-0685

BY: Timothy Piland

DATE: 09/28/2023

TYPE AMSR-2D SEISMICALLY RESTRAINED SPRING VIBRATION ISOLATORS			
SEISMIC MODEL SIZE	STATIC LOAD (LBS)	STATIC DEFLECTION (IN)	STATIC SPRING RATE (LB/IN)
AMSR-2D-75	75	2.42	31
AMSR-2D-160	160	2.29	70
AMSR-2D-230	230	2.30	100
AMSR-2D-355	355	2.15	165
AMSR-2D-435	435	1.89	230
AMSR-2D-600N	600	1.88	319
AMSR-2D-725	725	1.63	445
AMSR-2D-845	845	1.58	535
AMSR-2D-1000N	1000	1.60	625
AMSR-2D-1320N	1320	1.51	875
AMSR-2D-1435N	1435	1.51	950
AMSR-2D-1640N	1640	1.62	1015

SEISMIC MODEL SIZE	SPRING RATE (LB/IN)	SPRING COLOR CODE
AMSR-2D-75	31	WHITE
AMSR-2D-160	70	YELLOW
AMSR-2D-230	100	GREEN
AMSR-2D-355	165	DK BROWN
AMSR-2D-435	230	RED
AMSR-2D-600N	319	RED/BLACK
AMSR-2D-725	445	TAN
AMSR-2D-845	535	PINK
AMSR-2D-1000N	625	PINK/BLACK
AMSR-2D-1320N	875	PINK/GRAY
AMSR-2D-1435N	950	PINK/GRAY/ ORANGE
AMSR-2D-1640N	1015	PINK/GRAY/ DK BROWN

TABLE NOTES:
 1. TWO NESTED SPRINGS YIELD THIS LOAD. THE COLOR CODE INDICATED IS FOR OUTER SPRING/
 INNER SPRING
 2. THREE NESTED SPRINGS YIELD THIS LOAD

ISOLATOR SELECTIONS

LOC 1: _____

LOC 2: _____

LOC 3: _____

LOC 4: _____

LOC 5: _____

LOC 6: _____

LOC 7: _____

LOC 8: _____

CUSTOMER EOPT. TAG: _____

ISOLATOR SELECTIONS

LOC 1: _____

LOC 2: _____

LOC 3: _____

LOC 4: _____

LOC 5: _____

LOC 6: _____

LOC 7: _____

LOC 8: _____

CUSTOMER EOPT. TAG: _____

ISOLATOR SELECTIONS

LOC 1: _____

LOC 2: _____

LOC 3: _____

LOC 4: _____

LOC 5: _____

LOC 6: _____

LOC 7: _____

LOC 8: _____

CUSTOMER EOPT. TAG: _____

NOTE: MATERIAL SHOWN IS FOR (1) SET.

OTHER MATERIALS, COMPOUNDS, OR FINISHES WITH EQUAL OR SUPERIOR PROPERTIES MAY BE SUBSTITUTED AS THEY BECOME AVAILABLE.

VMC GROUP
 THE POWER OF TOGETHERSM
 Bloomington, NJ 07403
 Houston, TX 77041

SCALE: NONE

SHEET: _____

DRAWING NO: _____

REVISION: _____

MODEL AMSR-2D
 [75-1640 STATIC LBS.]
 SEISMIC ISOLATORS
 2 INCH DEFLECTION

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c. AMSR-1E

REV.	DESCRIPTION	DATE	BY
150R-101844	REV: 13 7/20/23		

(2) 7/8 DIA HOLE

OPM-0685

BY: Timothy Piland

DATE: 09/28/2023

TYPE AMSR-1E SEISMICALLY RESTRAINED SPRING VIBRATION ISOLATORS				
MODEL	STATIC LOAD (LBS)	STATIC DEFLECTION (IN)	STATIC SPRING RATE (LB/IN)	SPRING COLOR CODE
AMSR-1E-195	195	1.95	100	DK BLUE
AMSR-1E-400	400	1.32	303	BLACK
AMSR-1E-530N ¹	530	1.17	453	BLACK/ DK BLUE
AMSR-1E-650	650	1.05	620	RED
AMSR-1E-825N ¹	825	1.07	770	RED/ DK BLUE
AMSR-1E-1000	1000	1.00	1000	TAN
AMSR-1E-1200N ¹	1200	1.04	1150	TAN/ DK BLUE
AMSR-1E-1400	1400	1.00	1400	PINK
AMSR-1E-1700N ¹	1700	1.10	1550	PINK/ DK BLUE
AMSR-1E-2000	2000	1.11	1800	WHITE
AMSR-1E-2330N ¹	2330	1.11	2100	WHITE/ RED
AMSR-1E-2575N ¹	2575	1.11	2313	WHITE/ DK PURPLE
AMSR-1E-2990N ¹	2990	1.12	2681	WHITE/ DK GREEN
AMSR-1E-3260N ¹	3250	1.04	3127	WHITE/ GRAY

TABLE NOTES
 1. TWO NESTED SPRINGS YIELD THIS LOAD.

ISOLATOR SELECTIONS

LOC 1: _____

LOC 2: _____

LOC 3: _____

LOC 4: _____

LOC 5: _____

LOC 6: _____

LOC 7: _____

LOC 8: _____

CUSTOMER EQPT. TAG: _____

NOTE: MATERIAL SHOWN IS FOR (1) SET.

OTHER MATERIALS, COMPOUNDS, OR FINISHES WITH EQUAL OR SUPERIOR PROPERTIES MAY BE SUBSTITUTED AS THEY BECOME AVAILABLE.

MODEL AMSR-1E

[195-3250 STATIC LBS.]

SEISMIC ISOLATORS

1 INCH DEFLECTION

THE POWER OF TOGETHERSM

Bloomington, IN 47403

Evansville, IN 47701

SCALE: NONE

SHEET: _____

DRAWING NO: _____

REVISION _____

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