



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP – 0322

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Beacon Medaes (Atlas Copco Compressors, LLC)

Manufacturer's Technical Representative: Tim Conner, Engineering Manager, Medical Gas Products

Mailing Address: 1059 Paragon Way, Rock Hill, SC 29730

Telephone: 803-817-5600

Email: tim.conner@beaconmedaes.com

Product Information

Product Name: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Product Type: Mechanical Equipment

Product Model Number: See attached

(List all unique product identification numbers and/or part numbers)

General Description: Medical vacuum systems

Mounting Description: Rigid base mount

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780

Email: john.giuliano@thevmcgroup.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

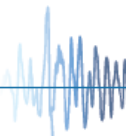
Signature of Applicant: _____

Date: 3/29/19

Title: President

Company Name: The VMC Group

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: The VMC Group

Name: Kenneth Tarlow California License Number: SE-2851

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: ken.tarlow@thevmcgroup.com

Supports and Attachments Preapproval

- Supports and attachments are preapproved under OPM- _____
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- Supports and attachments are not preapproved

Certification Method

- Testing in accordance with: ICC-ES AC156
- Other (Please Specify): _____

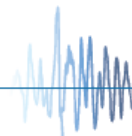
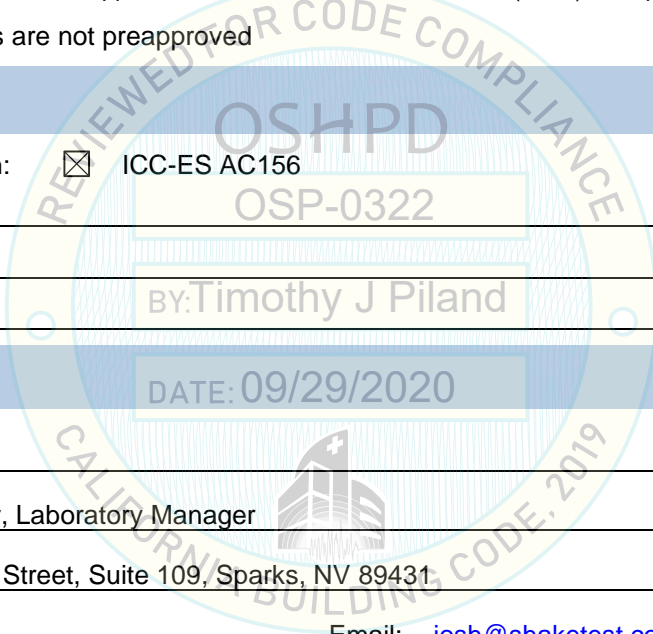
Testing Laboratory

Company Name: DCL Labs

Contact Name: Josh Sailer, Laboratory Manager

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085 Email: josh@shaketest.com





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Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: [X] Yes [] No

Design Basis of Equipment or Components (Fp/Wp) = 4.79

Sds (Design spectral response acceleration at short period, g) = 2.13

ap (In-structure equipment or component amplification factor) = 2.5

Rp (Equipment or component response modification factor) = 2.0

Omega_0 (System overstrength factor) = 2.0

Ip (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See attachment

Overall dimensions and weight (or range thereof) = See attachment

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: [] Yes [X] No

Design Basis of Equipment or Components (V/W) =

Sds (Design spectral response acceleration at short period, g) =

Sd1 (Design spectral response acceleration at 1 second period, g) =

R (Response modification coefficient) =

Omega_0 (System overstrength factor) =

Cd (Deflection amplification factor) =

Ip (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component Natural Frequencies (Hz) =

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2015: [X] Yes [] No

List of Attachments Supporting Special Seismic Certification

[] Test Report(s) [] Drawings [] Calculations [] Manufacturer's Catalog

[] Other(s) (Please Specify):

OSHPD Approval (For Office Use Only) - Approval Expires on December 31, 2025

Signature: [Signature] Date: September 29, 2020

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to: Sds (g) = 2.13 z/h = 1

Condition of Approval (if applicable):

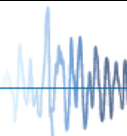


Table 1 - Certified Components - Lubricated Rotary Vane

Manufacturer: Beacon Medaes, LLC

Certified Level: $S_{DS} = 2.13g$, $z/h = 1.0$

Model Number	Description	Max. Dimensions (in)			Max. Weight (lb)	Mounting	Unit
		Depth	Width	Height			
Tank Mount							
VLT01D-080H-DCD	1.5 HP, Tank Mount	65	33	62	740	Rigid Base Mount	UUT 2
VLT02D-XXXH-DXD	2 HP, Tank Mount	65 to 73	33 to 34	62 to 72	740-1,250	Rigid Base Mount	Interpolated
VLT03D-XXXH-DXD	3 HP, Tank Mount	65 to 73	33 to 34	62 to 72	740-1,250	Rigid Base Mount	Interpolated
VLT05D0200H-DCD	5 HP, Tank Mount	73.0	34.0	72.0	1,250	Rigid Base Mount	UUT 6
Vertical SPC (Single Point Connection) Base Mount Systems							
VLV01D-030V-DCD	1.5 HP, Vertical SPC	33	28	60	610	Rigid Base Mount	UUT 7
VLV01D-XXXV-XXD	1.5 HP, Vertical SPC	33 to 63	28 to 34	60 to 80	610 to 1,780	Rigid Base Mount	Interpolated
VLV02D-XXXV-XXD	2 HP, Vertical SPC	33 to 63	28 to 34	60 to 80	610 to 1,780	Rigid Base Mount	Interpolated
VLV03D-XXXV-XXD	3 HP, Vertical SPC	33 to 63	28 to 34	60 to 80	610 to 1,780	Rigid Base Mount	Interpolated
VLV05D-XXXV-XXD	5 HP, Vertical SPC	33 to 63	28 to 34	60 to 80	610 to 1,780	Rigid Base Mount	Interpolated
VLV07D-XXXV-XXD	7.5 HP, Vertical SPC	33 to 63	28 to 34	60 to 80	610 to 1,780	Rigid Base Mount	Interpolated
VLV07D-060H-DCD	7.5 HP, Tank Mount	63.0	34.0	80.0	1,780	Rigid Base Mount	UUT 1
Modular Base Mount Systems							
VLM05X-XXXV-XXD	5 HP, Modular and Expandable Modular	63 to 69	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ²
VLM07X-XXXV-XXD	7.5 HP, Modular and Expandable Modular	63 to 69	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ²
VLM10X-XXXV-XXD	10 HP, Modular and Expandable Modular	63 to 69	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ²
VLM10T-240V-QCD	10 HP, Modular	99	81	94	3260	Rigid Base Mount	UUT8a,b

Notes:

1. The dimensions and weights vary for the listed units because the number of pumps installed can vary from the number of pumps tested
2. Within the confines of tested options. Units are certified based upon testing of the 5.4 HP modular and SPC systems in UUT 3a,b and UUT 4

Table 2 - Nomenclature Chart - Lubricated Vane

Certified Level: $S_{DS} = 2.13g$, $z/h = 1.0$

Nomenclature: A B C D - E F - G H J			
Variable	Definition	Allowable Value	Allowable Value Description
A	Technology	VL	Scroll Medical Air Compressor
B	System Type	T	Tank Mount
		V	Vertical Single Point Connection
		S	Single Point Connection
		M	Modular
C	HP	01	1.5 HP
		02	2 HP
		03	3 HP
		05	5 HP
		07	7.5 HP
		10	10 HP
		15	15 HP
		20	20 HP
D	System Size	D	Duplex
		T	Triplex
		Q	Quadruplex
E	Tank Size	030	30 Gallon
		060	60 Gallon
		080	80 Gallon
		120	120 Gallon
		200	200 Gallon
		240	240 Gallon
F	Tank Orientation	H	Horizontal
		V	Vertical
G	Panel Size	D	Duplex Control Panel
		T	Triplex Control Panel
		Q	Quadruplex
H	Voltage	A	208V / 3 Ph / 60A
		B	230V / 3 Ph / 60A
		C	460V / 3 Ph / 60A
J	Starting Method	D	Direct on Line

Table 3 - Certified Options - Rotary Vane

Certified Level: $S_{DS} = 2.13g$, $z/h = 1.0$

Allowable Value	Description	Unit
Technology		
VL	Lubricated Rotary Vane System	UUT 1,2,6,7,8(a,b)
System Type		
T	Tank Mount	UUT 2, 6
V	Vertical Single Point Connection	UUT 1, 7
S	Single Point Connection	Same as UUT 4, 10
M	Modular	UUT 8a,b
HP		
01	1.5 HP	UUT 2, 7
02	2 HP	Interpolated
03	3 HP	Interpolated
05	5 HP	UUT 6
07	7.5 HP	UUT 1
10	10 HP	UUT 8(a,b)
System Size		
D	Duplex	UUT 1,2,6,7
T	Triplex	UUT 8(a,b)
Q	Quadruplex	Extrapolated ¹
Tank Size		
030	30 Gallon	UUT 7
060	60 Gallon	UUT 1
080	80 Gallon	UUT 2
120	120 Gallon	Interpolated
200	200 Gallon	UUT 6
240	240 Gallon	UUT 8(a,b)
Tank Orientation		
H	Horizontal	UUT 1, 2, 6
V	Vertical	UUT 7, 8(a,b)
Panel Size		
D	Duplex Control Panel	UUT 1,2,6,7
T	Triplex Control Panel	Interpolated
Q	Quadruplex	UUT 8(a,b)
Voltage		
A	208V / 3 PH / 60A	Extrapolated ²
B	230V / 3 PH / 60A	Extrapolated ²
C	460V / 3 PH / 60A	UUT 1,2,6,7,8(a,b)
Starting Method		
D	Direct on Line	UUT 1,2,6,7,8(a,b)

Notes:

1. Within the confines of the tested options. Quadruplex consists of two duplex modeules.
2. Within the confines of the tested options. 208V unit tested in UUT 10

Table 4 - Certified Components - Claw

Manufacturer: Beacon Medaes, LLC

Certified Level: $S_{DS} = 2.13g$, $z/h = 1.0$

Model Number	Description	Max. Dimensions (in)			Max. Weight (lb)	Mounting	Unit
		Depth	Width	Height			
Vertical SPC (Single Point Connection) Base Mount Systems							
VHV-02D-060H-DXX	2 HP, Vertical SPC	63	31	80	1,629	Rigid Base Mount	Extrapolated ²
VHV-03D-060H-DXX	3 HP, Vertical SPC	63	31	80	1,663	Rigid Base Mount	Extrapolated ²
VHV-04D-060H-DXX	4 HP, Vertical SPC	63	31	80	1,637	Rigid Base Mount	Extrapolated ²
VHV-05D-060H-DXD	5.4 HP, Vertical SPC	63	31	80	1,678	Rigid Base Mount	Extrapolated ²
VHV-05D-060H-DXV	5.4 HP, Vertical SPC	63	31	80	1,703	Rigid Base Mount	Extrapolated ²
SPC (Single Point Connection) Base Mount Systems							
VHS05D-120V-DCV	5.4 HP, SPC	66	62	81	2,020	Rigid Base Mount	UUT 4
VHS05X-XXXV-XXX	5.4 HP, SPC and Expandable SPC	Varies ¹	62 to 69	81 to 97	Varies ¹	Rigid Base Mount	Interpolated
VHS06X-XXXV-XXX	6.4 HP, SPC and Expandable SPC	Varies ¹	62 to 69	81 to 97	Varies ¹	Rigid Base Mount	Interpolated
VHS07X-XXXV-XXX	7.4 HP, SPC and Expandable SPC	Varies ¹	62 to 69	81 to 97	Varies ¹	Rigid Base Mount	Interpolated
VHS08X-XXXV-XXX	8.7 HP, SPC and Expandable SPC	Varies ¹	62 to 69	81 to 97	Varies ¹	Rigid Base Mount	Interpolated
VHS10X-XXXV-XXX	10 HP, SPC and Expandable SPC	Varies ¹	62 to 69	81 to 97	Varies ¹	Rigid Base Mount	Interpolated
VHS15X-XXXV-XXX	15 HP, SPC and Expandable SPC	Varies ¹	62 to 69	81 to 97	Varies ¹	Rigid Base Mount	Interpolated
VHS15D-240V-HAV	15 HP, SPC	82	69	97	3,920	Rigid Base Mount	UUT 10
Modular Base Mount Systems							
VHM05D-120V-DCV	5.4 HP, Modular	65	73	79	1,840	Rigid Base Mount	UUT 3a,b
VHM05X-XXXV-XXX	5.4 HP, Modular and Expandable Modular	60 to 80	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ³
VHM06X-XXXV-XXX	6.4 HP, Modular and Expandable Modular	60 to 80	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ³
VHM07X-XXXV-XXX	7.4 HP, Modular and Expandable Modular	60 to 80	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ³
VHM08X-XXXV-XXX	8.7 HP, Modular and Expandable Modular	60 to 80	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ³
VHM10X-XXXV-XXX	10 HP, Modular and Expandable Modular	60 to 80	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ³
VHM15X-XXXV-XXX	15 HP, Modular and Expandable Modular	60 to 80	Varies ¹	79 to 94	Varies ¹	Rigid Base Mount	Extrapolated ³

Notes:

1. The dimensions and weights vary for the listed units because the number of pumps installed can vary from the number of pumps tested
2. Within the confines of the tested options. Vertical SPC systems certified based upon testing of UUT 1 and UUT 7
3. Within the confines of the tested options. Units are certified based upon the testing of the 10 HP Modular System in UUT 8a,b and the 15 HP SPC system in UUT 10

Table 5 - Nomenclature Chart - Claw

Certified Level: $S_{DS} = 2.13g$, $z/h = 1.0$

Nomenclature: A B C D - E F - G H J			
Variable	Definition	Allowable Value	Allowable Value Description
A	Technology	VH	Scroll Medical Air Compressor
		V	Vertical Single Point Connection
		S	Single Point Connection
		M	Modular
C	HP	02	2 HP
		03	2 HP
		04	3 HP
		05	5.4 HP
		06	6.4 HP
		07	7.4 HP
		08	8.7 HP
		10	10 HP
		15	15 HP
		D	System Size
T	Triplex		
Q	Quadruplex		
E	Tank Size	060	60 Gallon
		120	120 Gallon
		200	200 Gallon
		240	240 Gallon
F	Tank Orientation	H	Horizontal
		V	Vertical
G	Panel Size	D	Duplex Control Panel
		T	Triplex Control Panel
		Q	Quadruplex Control Panel
		P	Pentaplex Control Panel
		H	Hexaplex Control Panel
H	Voltage	A	208V / 3 Ph / 60A
		B	230V / 3 Ph / 60A
		C	460V / 3 Ph / 60A
J	Starting Method	D	Direct on Line
		V	Variable Speed Drive

Table 6 - Certified Options - Claw

Certified Level: $S_{DS} = 2.13g$, $z/h = 1.0$

Allowable Value	Description	Unit
Technology		
VH	Claw Vacuum System	UUT 3(a,b),4,10
System Type		
V	Vertical Single Point Connection	Extrapolated ¹
S	Single Point Connection	UUT 4, 10
M	Modular	UUT 3a,b
HP		
02	2 HP	Extrapolated ²
03	3 HP	Extrapolated ²
04	4 HP	Extrapolated ²
05	5.4 HP	UUT 3(a,b),4
06	6.4 HP	Interpolated
07	7.4 HP	Interpolated
08	8.7 HP	Interpolated
10	10 HP	Interpolated
15	15 HP	UUT 10
System Size		
D	Duplex	UUT 3(a,b),4,10
T	Triplex	Extrapolated ³
Q	Quadruplex	Extrapolated ⁴
P	Pentaplex	Extrapolated ⁴
H	Hexaplex	Extrapolated ⁴
Tank Size		
060	60 Gallon	Extrapolated ⁵
120	120 Gallon	UUT 3(a,b),4
200	200 Gallon	Interpolated
240	240 Gallon	UUT 10
Tank Orientation		
H	Horizontal	Extrapolated ⁶
V	Vertical	UUT 3(a,b),4
Panel Size		
D	Duplex Control Panel	UUT 3(a,b),4
T	Triplex Control Panel	Interpolated
Q	Quadruplex Control Panel	Interpolated
P	Pentaplex Control Panel	Interpolated
H	Hexaplex Control Panel	UUT 10
Voltage		
A	208V / 3 PH / 60A	UUT 10
B	230V / 3 PH / 60A	Interpolated
C	460V / 3 PH / 60A	UUT 3(a,b),4
Starting Method		
D	Direct on Line	Extrapolated ⁷
V	Variable Speed Drive	UUT 3(a,b),4,10

Notes:

1. Within the confines of the tested options. Certified based on testing of UUT 1 and UUT 7
2. Within the confines of the tested options. Certified based on testing of UUT 2 and UUT 7
3. Within the confines of the tested options. Triplex system size tested in UUT 8a,b
4. Within the confines of the tested options. Consists of two or more vacuum models tested in UUT 3(a,b),4,10
5. Within the confines of the tested options. 60 gallon tank orientation tested in UUT 1
6. Within the confines of the tested options. Horizontal tank orientation tested in UUT 1, UUT 2, and UUT 6
7. Within the confines of the tested options. Direct on Line starting method testing in UUT 1, 2, 6, 7

Table 7 - Certified Subcomponents

Certified Level: $S_{DS} = 2.13g$, $z/h = 1.0$

Subcomponent (Manufacturer)	Model Number	Description	Material	Unit
Lubricated Rotary Vane Vacuum Pump (Busch)	RC0025	1.5 HP	Carbon Steel and Copper	UUT 2, 7
	RC0040	2 HP	Carbon Steel and Copper	Interpolated
	RC0063	3 HP	Carbon Steel and Copper	Interpolated
	RC0101	5 HP	Carbon Steel and Copper	Interpolated
	RC0155	5 HP	Carbon Steel and Copper	Interpolated
	RC0205	7.5 HP	Carbon Steel and Copper	UUT 1
	RC0305	10 HP	Carbon Steel and Copper	UUT 8a
Claw Vacuum Pump (Busch)	MM1104	2 HP	Carbon Steel and Copper	Extrapolated
	MM1144	3 HP	Carbon Steel and Copper	Extrapolated
	MM1102	4 HP	Carbon Steel and Copper	Extrapolated
	MM1142	5.4 HP	Carbon Steel and Copper	UUT 3a, 4
	MM1202	6.4 HP	Carbon Steel and Copper	Interpolated
	MM1252	7.5 HP	Carbon Steel and Copper	Interpolated
	MM1322	8.7 HP	Carbon Steel and Copper	Interpolated
	MM1402	10 HP	Carbon Steel and Copper	Interpolated
	MM1502	15 HP	Carbon Steel and Copper	Interpolated
	MI1502	15 HP	Carbon Steel and Copper	10
Horizontal Tank (MPV)	4107652453	60 Gallon Horizontal	Carbon Steel	UUT 1
	4107653153	80 Gallon Horizontal	Carbon Steel	UUT 2
	4107653218	120 Gallon Horizontal	Carbon Steel	Interpolated
	4107653219	200 Gallon Horizontal	Carbon Steel	UUT 6
Vertical Tank (MPV)	4107653152	30 Gallon Vertical	Carbon Steel	UUT 7
	4107651105	120 Gallon Vertical	Carbon Steel	UUT 3b,4
	4107651104	200 Gallon Vertical	Carbon Steel	Interpolated
	4107651100	240 Gallon Vertical	Carbon Steel	UUT 8b

Table 8 - Certified Subcomponents - Continued

Certified Level: S_{DS} =2.13g, z/h=1.0

Subcomponent (Manufacturer)	Model Number	Description	Material	Unit
Enclosure (Hoffman)	CSD362008	NEMA 4	Carbon Steel	UUT 1, 2, 7
	CSD423010	NEMA 4	Carbon Steel	UUT3a, 4
	CSD483010	NEMA 4	Carbon Steel	Interpolated
	CSD522408	NEMA 4	Carbon Steel	UUT 8a
	CSD543008	NEMA 4	Carbon Steel	Interpolated
	CSD543608	NEMA 4	Carbon Steel	Interpolated
	CSD563010	NEMA 4	Carbon Steel	Interpolated
	CSD603610	NEMA 4	Carbon Steel	UUT 10
Power Supply (Lutze)	WRA/DRAN120	Power Supply	Copper	UUT 1,2,3a,4,7,8a,10
Circuit Boards (Atlas Copco)	4107651184	Pump Dryer 10 I/O	PCB	UUT 1,2,7,8a
	4107651183	Pump Dryer 16 I/O	PCB	UUT 3a,4,10
	4107651191	Master 19 I/O	PCB	UUT 1, 2,3a,4,7,8a,10
	4107651180	Circuit Board 5.7 Display	PCB	UUT 1,2,3a,4,7,8a,10
	4107651181	Circuit Board 3.5 Display	PCB	UUT 1,2,3a,4,7,8a,10
	4107651542	5.7 Display	LCD	UUT 1,2,3a,4,7,8a,10
	4107651543	3.5 Display	LCD	UUT 1,2,3a,4,7,8a,10
Ethernet Switch (Phoenix)	SFN 5TX	Ethernet Switch	Copper	UUT 1,2,3a,4,7,8a
	SFN 8TX	Ethernet Switch	Copper	UUT 10
Inverter (Mitsubishi)	FR-F720/740	Inverter	Copper, PCB	UUT3a, 4, 10
Reactor (Hammond Power)	RM00	Reactor	Copper, PCB	UUT3a, 4, 10

Table 9 - Tested Units

Manufacturer: Beacon Medaes, LLC

Certified Level: $S_{DS} = 2.13g$, $z/h = 1.0$

Model Number	Description	Max. Dimensions (in)			Max. Weight (lb)	Mounting	Unit
		Depth	Width	Height			
VLV07D-060H-DCD	7.5 HP, Tank Mount	63	34	80	1,780	Rigid Base Mount	UUT 1
VLT01D-080H-DCD	1.5 HP, Tank Mount	65	33	62	740	Rigid Base Mount	UUT 2
VHM05D-120V-DCV	5.4 HP, Modular, Motor Skid	65	33	60	1,420	Rigid Base Mount	UUT 3a
VHM05D-120V-DCV	5.4 HP, Modular, Receiver Skid	24	40	79	420	Rigid Base Mount	UUT 3b
VHS05D-120V-DCV	5.4 HP, SPC	66	62	81	2,020	Rigid Base Mount	UUT 4
VLT05D0200H-DCD	5 HP, Tank Mount	73	34	72	1,250	Rigid Base Mount	UUT 6
VLV01D-030V-DCD	1.5 HP, Vertical SPC	33	28	60	610	Rigid Base Mount	UUT 7
VLM10T-240V-QCD	10 HP, Modular, Motor Skid	69	35	84	2,540	Rigid Base Mount	UUT 8a
VLM10T-240V-QCD	10 HP, Modular, Receiver Skid	30	46	94	720	Rigid Base Mount	UUT 8b
VHS15D-240V-HAV	15 HP, SPC	82	69	97	3,920	Rigid Base Mount	UUT 10



UUT1

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VLV07D-060H-DCD

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Lubricated Rotary Vane Medical Vacuum Vertical Duplex System, 7.5 HP, 60 gallon receiver tank, horizontal tank orientation, duplex control panel, 460V, direct on line starting method.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
1,780	63	34	80	6.8	7.3	13.3

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with four 1/2-inch diameter Grade 5 bolts spaced approximately 40" in length and 27" in width on center.

UUT2

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VLT01D-080H-DCD

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Lubricated Rotary Vane Medical Vacuum Tank Mount Duplex System, 1.5 HP, 80 gallon receiver tank, horizontal tank orientation, duplex control panel, 460V, direct on line starting method.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
740	65	33	62	12.8	11.0	31.0

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with four 1/2-inch diameter Grade 5 bolts spaced approximately 40" in length and 30" in width on center.

UUT3a

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VHM05D-120V-DCV (vacuum module)

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Oil-Less Claw Medical Vacuum Base Mount Modular Duplex System, 5.4 HP, 120 gallon receiver tank (separate receiver module), vertical tank orientation, duplex control panel, 460V, variable speed drive.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
1,420	65	33	60	9.8	8.0	14.8

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with four 1/2-inch diameter Grade 5 bolts spaced approximately 40" in length and 27" in width on center.

UUT3b

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VHM05D-120V-DCV (receiver module)

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Oil-Less Claw Medical Vacuum Base Mount Modular Duplex System 120 gallon receiver tank.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
420	24	40	79	15.8	18.0	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with four 1/2-inch diameter Grade 5 bolts spaced approximately 24" in leght and 24" in wdith on center.

UUT4

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VHS05D-120V-DCV

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Oil-Less Claw Medical Vacuum Base Mount Single Point Connection (SPC) Duplex System, 5.4 HP, 120 gallon receiver tank, vertical tank orientation, duplex control panel, 460V, variable speed drive.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

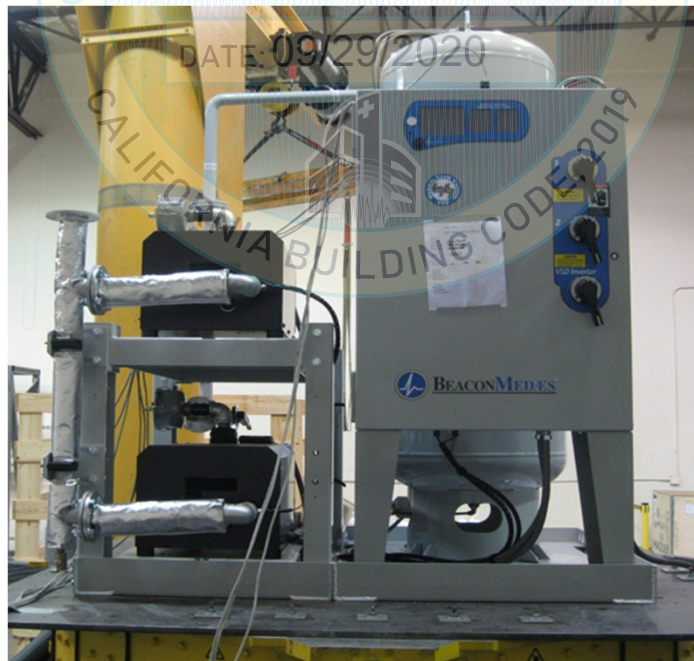
UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
2,020	66	62	81	12.3	8.5	15.3

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with eight 1/2-inch diameter Grade 5 bolts. Bolts were spaced at approximately 27", 2", and 30" on center from left to right and 40" in depth on center.

UUT6

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VLT05D-200H-DCD

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Lubricated Rotary Vane Medical Vacuum Tank Mount Duplex System, 5 HP, 200 gallon receiver tank, horizontal tank orientation, duplex control panel, 460V, direct on line starting method.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
1,250	73	34	72	11.3	8.0	24.3

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.13	1.0	1.5	3.41	2.56	1.42	0.57

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with four 1/2-inch diameter Grade 5 bolts spaced approximately 60" in length and 30" in width on center.

UUT7

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VLV01D-030V-DCD

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Lubricated Rotary Vane Medical Vacuum Vertical Duplex System, 1.5 HP, 30 gallon receiver tank, vertical tank orientation, duplex control panel, 460V, direct on line starting method.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
610	33	28	60	26.5	26.0	29.5

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with four 1/2-inch diameter Grade 5 bolts spaced approximately 30" in leght and 27" in width on center.

UUT8a

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VLM10T-240V-QCD (vacuum module)

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Lubricated Rotary Vane Medical Vacuum Modular Triplex System, 10 HP, 240 gallon receiver tank (separate receiver module), vertical tank orientation, quadruplex control panel, 460V, direct on line starting method.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
2,540	69	35	84	6.3	7.3	12.8

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with four 1/2-inch diameter Grade 5 bolts spaced approximately 48" in length and 30" in width on center.

UUT8b

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VLM10T-240V-QCD (receiver module)

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Lubricated Rotary Vane Medical Vacuum Modular Triplex System 240 gallon receiver tank.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
720	30	46	94	8.3	8.3	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with four 1/2-inch diameter Grade 5 bolts spaced approximately 30" in length and 30" in width on center.

UUT10

Unit Under Test Summary Sheet



Manufacturer: Atlas Copco Compressors LLC (Beacon Medaes)

Product Line: LifeLine Lubricated Rotary Vane and LifeLine "Oil-Less" Claw Medical Vacuum Systems

Model Number: VHS15D-240V-HAV

Product Construction Summary:

Powder-coated carbon steel frame

Options / Component Summary:

LifeLine Oil-Less Claw Medical Vacuum Base Mount Single Point Connection (SPC) Duplex System, 15 HP, 240 gallon receiver tank, vertical tank orientation, hexaplex control panel, 208V, variable speed drive.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
3,920	82	69	97	4.8	5.8	15.3

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



Unit base-mounted to the DCL steel shake table interface plate with eight 1/2-inch diameter Grade 5 bolts. Bolts were spaced at 32", 2", 32" on center in length and 56" on center in width.