APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0717

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Beacon Medaes (Atlas Copco Compressors, LLC.)

Manufacturer's Technical Representative: Tim Conner

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

Telephone: (803) 817-5656 Email: tim.conner@beaconmedaes.com

Product Information

Product Name: LifeLine "Oil-Free" Rotary Tooth Medical Air Duplex and Triplex Modular Systems with Variable Speed Drives

Product Model Number(s): See attached

Product Category: Medical Gas and Vacuum Systems

Product Sub-Category: Medical Air and Vacuum Systems

General Description: Medical air system of a modular base mounted design consisting of two compressor modules (duplex) or three compressor modules (triplex), a dryer/control module, and an air receiver module.

Mounting Description: Base Mounted Rigid

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: DCL Labs, LLC

Contact Person: Nastya Veyngerova

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

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

Title: Seismic Test Engineer

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

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

Certification Method

☐ GR-63-Core ☒ ICC-ES AC156 ☐ IEEE 344 ☐ IEEE 693 ☐ NEBS 3

☐ Other (Please Specify):

Testing Laboratory

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)

Contact Person: Josh Sailer

Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431

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

Seismic Parameters

Certified Response Spectral Acceleration Factors:(F_p/W_p)

Horizontal	(A Flx-H), g=	2.40	(A Rig-H), g=	1.62
Vertical	(A Flx-V), g=	1.01	(A Rig-V), g=	0.41

S_{DS} (Design spectral response acceleration at short period, g) = 1.50

Hf (Force amplification height factor) = 3.5 at z/h=1.0; 1.0 at z/h=0

Ru (Structure ductility redution factor) = 1.3 at z/h=1.0; 1.0 at z/h=0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 0 and 1

HCAI Approval (For Office Use Only) - Approval Expires on 06/02/2032

Date: 6/2/2026

Name: Mohammad Karim Title: Supervisor, Health Facilities

Condition of Approval (if applicable):

Special Seismic Certification
Table 1 - Certified Components

DCL DYNAMIC CERTIFICATION LABORATORIES,LLC

DCL Project Number: 65917-2501

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Certified Product Construction: Carbon Steel, Aluminum

Mounting: Rigid Base Mount

Certified Seismic Levels: Sds=1.50 g with z/h=1.0 and 0.0

Factors for Force Amplification and Structure Ductility Reduction: H_f = 3.5 at z/h=1.0; 1.0 at z/h=0 and R_μ = 1.3 at z/h=1.0; 1.0 at z/h=0

Certified Medical Air Systems

Model Number	System Size	HP	Receiver Gallons	Max. Dimensions [in.][1]			Max. Weight [lb.]	Unit[2]
				Depth	Width	Height		
ZTM-22D-D240-DCV	Duplex	30	240	128	152	94	6,320	UUT-1a, UUT-1b[3], UUT-1c
ZTM-22D-D240-DCV		30	240	128	152	94	6,358	Interpolated
ZTM-22D-D400-DCV		30	400	128	158	102	6,658	Interpolated
ZTM-22D-D400-DCV		30	400	128	158	102	6,728	Interpolated
ZTM-30D-D240-FLX		40	240	79	274	94	8,232	Interpolated
ZTM-30D-D400-FLX		40	400	79	274	102	8,602	Interpolated
ZTM-37D-D240-FLX		50	240	79	274	94	8,844	Interpolated
ZTM-37D-D400-FLX		50	400	79	274	102	9,214	Interpolated
ZTM-37D-D240-DCV		50	240	130	180	94	9,242	Interpolated
ZTM-45D-D400-FLX		75	400	79	287	102	9,316	Interpolated
ZTM-55D-D400-FLX		75	400	79	287	102	9,316	Interpolated
ZTM-37D-D400-DCV		50	400	130	180	102	9,612	Interpolated
ZTM-55D-D400-DCV		75	400	130	186	102	9,642	Interpolated
ZTM-22T-D400-TCV	Triplex	30	400	142	243	102	10,633	Interpolated
ZTM-22T-D400-FLX		30	400	128	232	102	10,669	Interpolated
ZTM-30T-D400-FLX		50	400	79	366	102	12,230	Interpolated
ZTM-37T-D400-TCV		50	400	58	257	102	12,559	Interpolated
ZTM-37T-D400-FLX		50	400	79	375	102	12,908	Interpolated
ZTM-45T-D400-FLX		50	400	79	375	102	13,061	Interpolated
ZTM-55T-D400-FLX		50	400	79	379	102	13,581	Interpolated
ZTM-55T-D400-TCV		75	400	69	271	102	13,980	UUT-2a, UUT-2b, UUT-2c

Certified Medical Air Modules

Model Number	HP	Receiver Gallons	Max. Dimensions [in.]			Max. Weight [lb.]	Unit[2]
			Depth	Width	Height		
ZT22VSD Compressor module	30	N/A	46	87	64	2,450	UUT-1a
ZT22VSD-MED Compressor module	30	N/A	46	87	64	2,370	UUT-4
ZT30FLX Compressor module	40	N/A	40	79	75	2,454	UUT-5
ZT37FLX Compressor module	50	N/A	40	79	75	2,454	Interpolated
ZT45FLX Compressor module	60	N/A	40	79	75	2,500	Interpolated
ZT55FLX Compressor module	75	N/A	40	79	75	2,500	UUT-6
ZT37VSD Compressor module	50	N/A	46	96	74	3,155	Interpolated
ZT55VSD Compressor module	75	N/A	46	96	74	3,160	UUT-2a
CD65 Dryer/control module	N/A	N/A	53	34	67	890	UUT-1b[3]
CD110 Dryer/control module	N/A	N/A	54	50	72	1,750	UUT-3
CD150 Dryer/control module	N/A	N/A	58	56	72	2,362	Interpolated
CD185 Dryer/control module	N/A	N/A	58	59	74	2,402	Interpolated
CD250 Dryer/control module	N/A	N/A	68	65	77	3,080	Interpolated
CD300 Dryer/control module	N/A	N/A	69	68	79	3,600	UUT-2b
240G Receiver tank	N/A	240	32	32	93	530	UUT-1c
400G Receiver tank	N/A	400	36	36	102	900	UUT-2c

Notes:

1. The maximum dimensions and weights of the certified systems represent those of the full system configurations, including the tested medical air modules. Maximum dimensions for the Certified Medical Air Systems are calculated, assuming the Duplex systems contain (2) compressor modules, (1) dryer/control module, and (1) receiver tank. The Triplex systems contain (3) compressor modules, (1) dryer/control module, and (1) receiver tank. The maximum dimensions are reference dimensions from the manufacturer-provided drawings to use as a guideline to provide room around the equipment for maintenance. The spacing between each module is variable based on the length of the flexible connections between each unit. Only a single compressor module was tested in UUT-1a and UUT-2a, due to the modules being structurally independent and flexibly attached.
2. The compressor module, dryer/control module, and receiver tank module are structurally independent and flexibly attached.
3. UUT-1b was tested without the dryer cover panels. The dryer cover panels shall not be part of the field installation.

Special Seismic Certification
Table 2 - Nomenclature Chart

DCL Project Number: 65917-2501

Product Line: Z MED Medical Air Systems

Product Type: Medical Air Modular Systems

Mounting: Rigid Base Mount

Certified Seismic Levels: Sds=1.50 g with z/h=1.0 and 0.0

Model Number Layout

			-			-			-			
	A	B		C	D		E	F		G	H	J

Character	Category	Allowable Value	Description	Unit
A	Technology	ZT	Z-Med Compressor- Air Cooled	UUT-1a,b,c and UUT-2a,b,c
B	System Type	M	Modular	UUT-1a,b,c and UUT-2a,b,c
C	HP	22	22kW	UUT-1a, UUT-1b, UUT-1c
		37	37kW	Interpolated
		45	45KW	Interpolated
		55	55kW	UUT-2a, UUT-2b, UUT-2c
D	System Size	D	Duplex	UUT-1a, UUT-1b, UUT-1c
		T	Triplex	UUT-2a, UUT-2b, UUT-2c
E	Dryer Type	D	Desiccant Dryer	UUT-1a,b,c and UUT-2a,b,c
F	Tank Size	000	No Tank	Extrapolated
		240	240 Gallon (Galvanized)	UUT-1a, UUT-1b, UUT-1c
		400	400 Gallon (Galvanized)	UUT-2a, UUT-2b, UUT-2c
G	Panel Size	D	Duplex Control Panel	UUT-1a, UUT-1b, UUT-1c
		T	Triplex Control Panel	UUT-2a, UUT-2b, UUT-2c
H	Voltage	C	460/3/60	UUT-1a,b,c and UUT-2a,b,c
J	Starting Method	V	Variable Speed System	UUT-1a,b,c and UUT-2a,b,c
GHJ	Alternate configuration	FLX	FLEX 460/3/60 DOL/VSD	Option tested on UUT-5 & UUT-6

Special Seismic Certification
Table 3 - Certified Subcomponents

DCL DYNAMIC CERTIFICATION LABORATORIES,LLC

DCL Project Number: 65917-2501

Product Line: Z MED Medical Air Systems

Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
Compressor Subassembly					
8153121482	Atlas Copco	ZT22VSD-MED WP 10 APC 460 60	Carbon steel, aluminum	2,450	UUT-1a
8153970358	Atlas Copco	ZT22VSD-MED WP 10 API 460 60	Carbon steel, aluminum	2,370	UUT-4
8153350289	Atlas Copco	ZT30FLX-MED WP 10 APC 460 60	Carbon steel, aluminum	2,454	UUT-5
8153350291	Atlas Copco	ZT37FLX-MED WP 10 APC 460 60	Carbon steel, aluminum	2,454	Interpolated
8153350293	Atlas Copco	ZT45FLX-MED WP 10 APC 460 60	Carbon steel, aluminum	2,500	Interpolated
8153350295	Atlas Copco	ZT55FLX-MED WP 10 APC 460 60	Carbon steel, aluminum	2,500	UUT-6
8153120281	Atlas Copco	ZT37VSD-MED WP 8,6 APC 460 60	Carbon steel, aluminum	3,155	Interpolated
8153120292	Atlas Copco	ZT55VSD-MED WP 8,6 APC 460 60	Carbon steel, aluminum	3,160	UUT-2a
Compressor Gearbox Assembly					
1622 5997 80	Atlas Copco	COMPRESSOR GEARBOX	Cast iron, carbon steel	385	UUT-1a, UUT-2a
1625 8805 41	Atlas Copco	COMPRESSOR GEARBOX	Cast iron, carbon steel	385	UUT-4
Compressor Element					
1616 7107 81	Atlas Copco	ZT22VSD ELEMENT HP	Cast iron, carbon steel	86	UUT-1a
1616 7107 91	Atlas Copco	ZT22VSD ELEMENT HP	Cast iron, carbon steel	86	UUT-4
1616 7117 81	Atlas Copco	ZT22VSD ELEMENT LP	Cast iron, carbon steel	117	UUT-1a
1616 7117 91	Atlas Copco	ZT22VSD ELEMENT LP	Cast iron, carbon steel	117	UUT-4
1616 7271 81	Atlas Copco	ZT37VSD/ZT55VSD ELEMENT HP	Cast iron, carbon steel	132	UUT-2a
1616 7273 87	Atlas Copco	ZT30-55FLX ELEMENT HP	Cast iron, carbon steel	132	UUT-5, UUT-6
1616 7275 81	Atlas Copco	ZT37-55VSD/ZT30-55FLX ELEMENT LP	Cast iron, carbon steel	198	UUT-2a, UUT-5, UUT-6
Compressor Motor					
1625 8804 94	Atlas Copco	ZT30-55FLX MOTOR ELEMENT LP	Cast iron, carbon steel, copper	205	UUT-5, UUT-6
1625 8804 94	Atlas Copco	ZT30-55FLX MOTOR ELEMENT HP	Cast iron, carbon steel, copper	205	UUT-5, UUT-6
1625 8800 03	WEG	MOTOR 22KW VSD 460V 60Hz	Cast iron, carbon steel, copper	262	UUT-1a, UUT-4
1625 8610 24	WEG	MOTOR 37KW VSD 460V 60Hz	Cast iron, carbon steel, copper	438	Interpolated
1625 8610 21	WEG	MOTOR 55KW VSD 460V 60Hz	Cast iron, carbon steel, copper	440	UUT-2a
Compressor Control Panel					
1900 5204 14	Atlas Copco	ZT30-55FLX MK5S CONTROLLER	Carbon steel	6	UUT-5, UUT-6
1900 5511 04	Atlas Copco	ZT30-37FLX DRIVE 35KVA	Carbon steel	48	UUT-5
1622 8996 80	Atlas Copco	CUBICLE ZT22VSD-P-ID	Carbon steel	78	UUT-4
1900 5511 06	Atlas Copco	ZT45-55FLX DRIVE 49KVA	Carbon steel	88	UUT-6
1625 8800 23	Atlas Copco	CUBICLE ZT22VSD-P-ID	Carbon steel	122	UUT-1a
1900 2193 01	Atlas Copco	CUBICLE ZT37VSD-P-ID	Carbon steel	138	Interpolated
1900 2193 02	Atlas Copco	CUBICLE ZT55VSD-P-ID	Carbon steel	143	UUT-2a
Compressor Fan					
1622 0103 33	Atlas Copco	ZT22 FAN ASSEMBLY 460V 60HZ	Carbon steel, copper	68	UUT-1a
1830 0989 14	Atlas Copco	ZT22 FAN ASSEMBLY 460V 60HZ	Carbon steel, copper	68	UUT-4
1830 1023 92	Atlas Copco	ZT30-55FLX FAN ASSEMBLY 460V 60HZ	Carbon steel, copper	87	UUT-5, UUT-6
1613 8532 10	Atlas Copco	ZT37/55 FAN ASSEMBLY 460V 60HZ	Carbon steel, copper	103	UUT-2a
Aftercooler					
1622 4935 00	Atlas Copco	ZT22 INTERCOOLER	Aluminum	25	UUT-1a
1094 1398 75	Atlas Copco	ZT22 INTERCOOLER	Aluminum	25	UUT-4
1622 4939 00	Atlas Copco	ZT30-55FLX INTERCOOLER	Aluminum	25	UUT-5, UUT-6
1622 4939 00	Atlas Copco	ZT37/55 INTERCOOLER	Aluminum	25	UUT-2a
1622 5284 80	Atlas Copco	ZT22 AFTERCOOLER	Aluminum	40	UUT-1a
1094 1398 76	Atlas Copco	ZT22 AFTERCOOLER	Aluminum	40	UUT-4
1622 5249 81	Atlas Copco	ZT37/55 AFTERCOOLER	Aluminum	68	UUT-2a
1625 8801 04	Atlas Copco	ZT30-55FLX AFTERCOOLER	Aluminum	68	UUT-5, UUT-6
Dryer Subassembly					
8102 3341 93	Atlas Copco	CD65S DESICCANT DRYER	Carbon steel, aluminum	370	UUT-1b
8102 2896 78	Atlas Copco	CD110+ DESICCANT DRYER	Carbon steel	800	UUT-3
8102 3662 87	Atlas Copco	CD110+ DESICCANT DRYER	Carbon steel	800	Interpolated
8102 2896 94	Atlas Copco	CD150+ DESICCANT DRYER	Carbon steel	1,050	Interpolated
8102 3662 89	Atlas Copco	CD150+ DESICCANT DRYER	Carbon steel	1,050	Interpolated
8102 2897 10	Atlas Copco	CD185+ DESICCANT DRYER	Carbon steel	1,070	Interpolated
8102 3662 91	Atlas Copco	CD185+ DESICCANT DRYER	Carbon steel	1,070	Interpolated
8102 3662 95	Atlas Copco	CD250+ DESICCANT DRYER	Carbon steel	1,270	Interpolated
8102 3662 97	Atlas Copco	CD300+ DESICCANT DRYER	Carbon steel	1,525	Interpolated
8102 2897 51	Atlas Copco	CD300+ DESICCANT DRYER	Carbon steel	1,525	UUT-2b
Dryer Controller					
4107 0081 88	Atlas Copco	MK5 CENTRAL CONTROLLER CD65	Carbon steel, aluminum, plastic	225	UUT-1b
4107 0081 89	Atlas Copco	MK5 CENTRAL CONTROLLER CD110-CD300	Carbon steel, aluminum, plastic	235	UUT-3, UUT-2b
Sensors					
4107 6554 19	Kahn	SSR SF72 2-WIRE DP SENSOR	Stainless steel, plastic, ceramic	1	UUT-1b, UUT-2b, UUT-3
4107 6511 42	GEMS	TDC PRESSURE 0-250 PSI 4-20MA	Stainless steel, plastic	1	UUT-1b, UUT-2b, UUT-3
4107 6564 27	GFG	SSR CO TRANSMITTER 4035-22C	Carbon steel	2	UUT-1b, UUT-2b, UUT-3

Special Seismic Certification
Table 4 - Certified Subcomponents

DCL Project Number: 65917-2501

Product Line: Z MED Medical Air Systems

Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
Receiver Tank					
4107 6559 47	SPV	TNK 240G VERT AIR W/2" NPT	Carbon steel epoxy coat	509	UUT-1c
4107 6566 59	SPV	TNK 240G VERT AIR W/2" NPT	Carbon steel galvanized coat	509	Interpolated
4107 6566 60	SPV	TNK 400G VERT AIR W/2" NPT	Carbon steel galvanized coat	791	Interpolated
4107 6559 48	SPV	TNK 400G VERT AIR W/2" NPT	Carbon steel epoxy coat	791	UUT-2c

Special Seismic Certification
Table 5 - Tested Units

DCL Project Number: 65917-2501

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Certified Product Construction: Carbon Steel, Aluminum

DCL Report Number: 13153-2101; 65917-2501

Mounting: Rigid Base Mount

Certified Seismic Levels: Sds=1.50 g with z/h=1.0 and 0.0

Factors for Force Amplification and Structure Ductility Reduction: H_f = 3.5 at z/h=1.0; 1.0 at z/h=0 and R_μ = 1.3 at z/h=1.0; 1.0 at z/h=0

Model Number	HP	Receiver Gallons	Dimensions [in.]			Weight [lb.]	Unit
			Depth	Width	Height		
ZT22VSD Compressor module	30	N/A	46	87	64	2,450	UUT-1a
CD65 Dryer/control module	N/A	N/A	53	34	67	890	UUT-1b
240G Receiver tank	N/A	240	32	32	93	530	UUT-1c
ZT55VSD Compressor module	75	N/A	46	96	74	3,160	UUT-2a
CD300 Dryer/control module	N/A	N/A	69	68	79	3,600	UUT-2b
400G Receiver tank	N/A	400	36	36	102	900	UUT-2c
CD110 Dryer/control module	N/A	N/A	54	50	72	1,750	UUT-3
ZT22VSD-MED Compressor module	30	N/A	46	87	64	2,370	UUT-4
ZT30FLX Compressor module	50	N/A	40	79	75	2,454	UUT-5
ZT55FLX Compressor module	75	N/A	40	79	75	2,500	UUT-6

UNIT UNDER TEST (UUT) Summary Sheet

UUT-1a

DCL Repot Number: 13153-2101

Test Dates: 7/26/21 - 8/3/21

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: ZT22VSD Compressor Module

Product Construction Summary: Powder-coated carbon steel enclosure

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Compressor Subassembly	8153121482	Atlas Copco	Carbon steel, aluminum
Compressor Gearbox Assembly	1622 5997 80	Atlas Copco	Cast iron, carbon steel
Compressor Element	1616 7107 81	Atlas Copco	Cast iron, carbon steel
Compressor Element	1616 7117 81	Atlas Copco	Cast iron, carbon steel
Compressor Motor	1625 8800 03	WEG	Cast iron, carbon steel, copper
Compressor Control Panel	1625 8800 23	Atlas Copco	Carbon steel
Compressor Fan	1622 0103 33	Atlas Copco	Carbon steel, copper
Aftercooler	1622 4935 00	Atlas Copco	Aluminum
Aftercooler	1622 5284 80	Atlas Copco	Aluminum

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 before and after the AC 156 test.

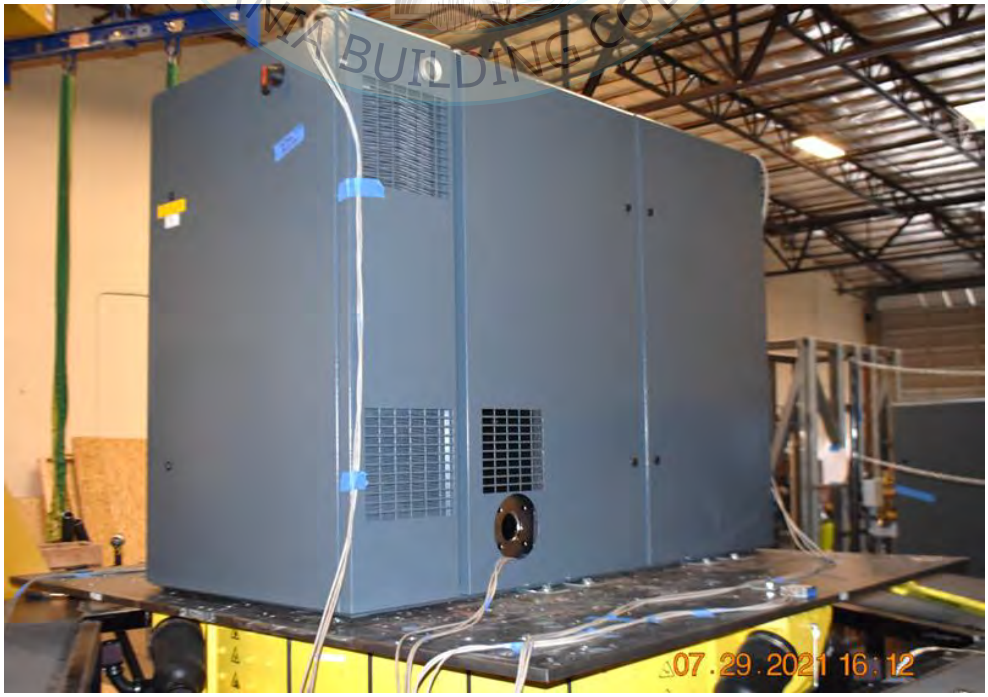
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2,450	46	87	64	5.5	7.5	10.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.15	N/A	N/A
		2.00	0.0	1.0	1.0		N/A	N/A	1.33	0.53

Unit Mounting Description: UUT-1a was rigidly base mounted to the shake table interface plate using the manufacturer's (4) carbon steel anchor pads (Beacon Medaes Part #8092290694). Each anchor pad was fastened to the mounting locations on UUT1a using (2) M10 Class 8.8 bolts. The anchor pads were bolted to the shake table interface plate using a total of (8) 5/8" Grade 5 bolts, (8) round washers, and (8) 4"x4"x1/4" carbon steel plate washers. The 5/8" bolts were spaced approximately 8" apart on center width-wise on each anchor pad. The furthest-most bolts were spaced approximately 43-1/2" apart on center width-wise while the innermost bolts were spaced approximately 27-1/2" on center width-wise. The bolts were spaced approximately 43" on center depth-wise. Each bolt was torqued to approximately 110ft-lb.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-1b

DCL Repot Number: 13153-2101

Test Dates: 7/26/21 - 8/3/21

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: CD65 Dryer/ Control Module

Product Construction Summary: Powder-coated carbon steel enclosure

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Dryer Subassembly	8102 3341 93	Atlas Copco	Carbon steel, aluminum
Dryer Controller	4107 0081 88	Atlas Copco	Carbon steel, aluminum, plastic
Sensors	4107 6554 19	Kahn	Stainless steel, plastic, ceramic
Sensors	4107 6511 42	GEMS	Stainless steel, plastic
Sensors	4107 6564 27	GFG	Carbon steel

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 before and after the AC 156 test.

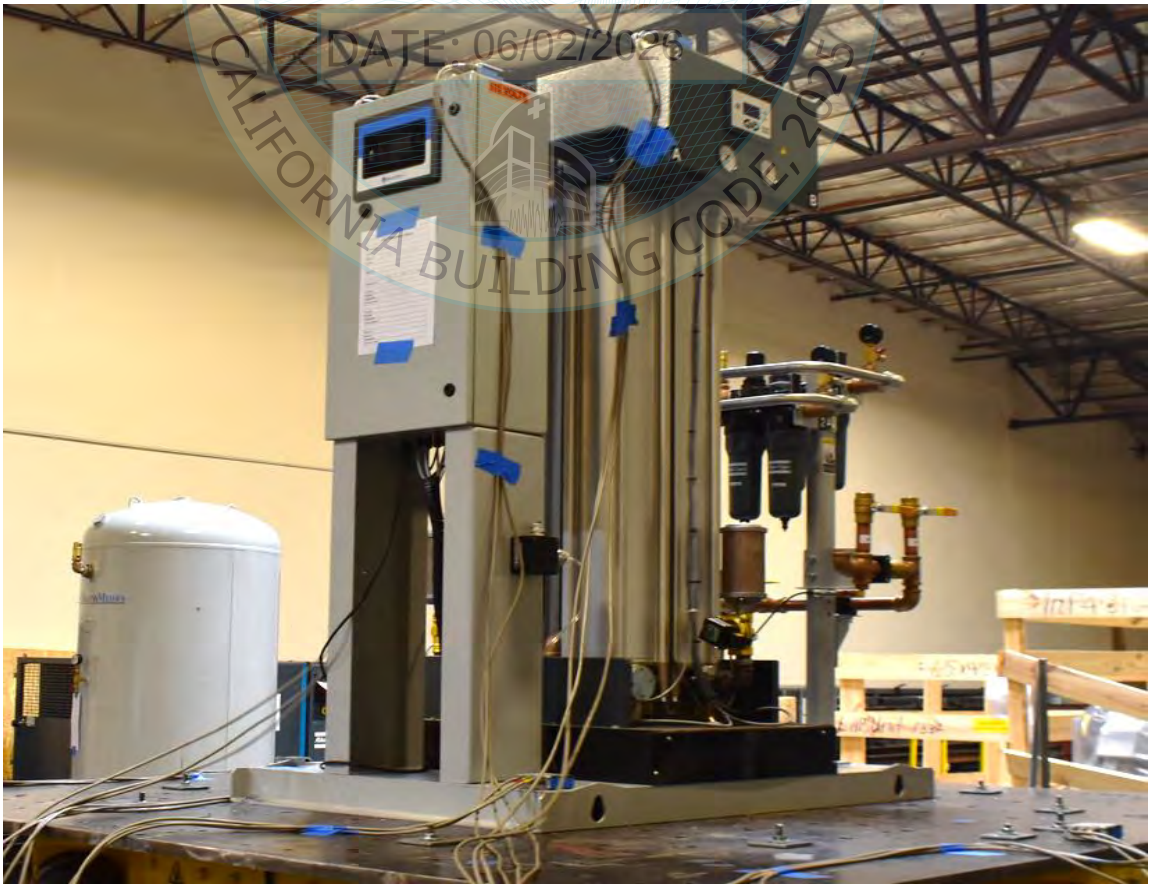
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
890	53	34	67	4.0	8.0	7.6

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.15	N/A	N/A
		2.00	0.0	1.0	1.0		N/A	N/A	1.33	0.53

Unit Mounting Description: UUT-1b was rigidly base mounted to the shake table interface plate using the manufacturer's mounting locations. (4) 5/8" Grade 5 bolts and round washers spaced approximately 30" on center width-wise and approximately 50-1/2" on center depth-wise were used. Each bolt was torqued to approximately 110ft-lb.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-1c

DCL Repot Number: 13153-2101

Test Dates: 7/26/21 - 8/3/21

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: 240G Receiver Tank

Product Construction Summary: Powder-coated carbon steel enclosure

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Receiver Tank	4107 6559 47	SPV	Carbon steel epoxy coat

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 before and after the AC 156 test.

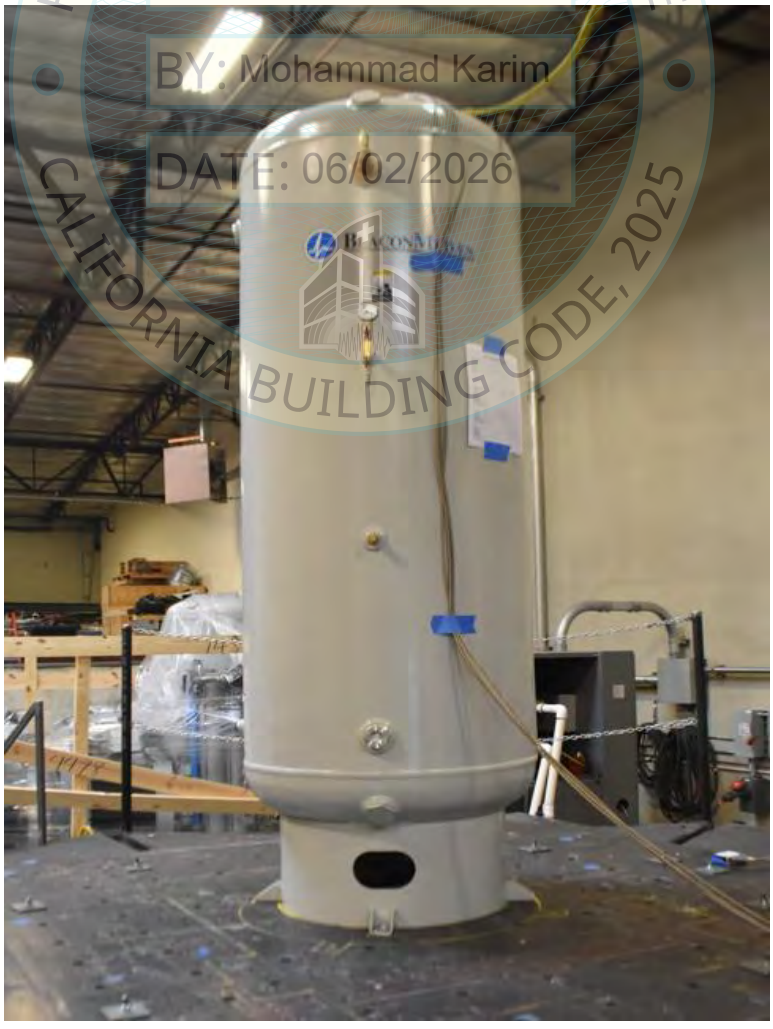
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
530	32	32	93	17.0	16.5	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.15	N/A	N/A
		2.00	0.0	1.0	1.0		N/A	N/A	1.33	0.53

Unit Mounting Description: UUT-1c was rigidly base mounted to the shake table interface plate using the manufacturer's mounting locations. (4) ½" Grade 5 bolts, (4) round washers, and (4) 1-1/4"x1-1/4"x1/4" galvanized steel plate washers were used. The bolts were spaced approximately 18-1/2" on center, both width-wise and depth-wise. Each bolt was torqued to approximately 55ft-lb.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-2a

DCL Repot Number: 13153-2101

Test Dates: 7/26/21 - 8/3/21

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: ZT55VSD Compressor Module

Product Construction Summary: Powder-coated carbon steel enclosure

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Compressor Subassembly	8153120292	Atlas Copco	Carbon steel, aluminum
Compressor Gearbox Assembly	1622 5997 80	Atlas Copco	Cast iron, carbon steel
Compressor Element	1616 7271 81	Atlas Copco	Cast iron, carbon steel
Compressor Element	1616 7275 81	Atlas Copco	Cast iron, carbon steel
Compressor Motor	1625 8610 21	WEG	Cast iron, carbon steel, copper
Compressor Control Panel	1900 2193 02	Atlas Copco	Carbon steel
Compressor Fan	1613 8532 10	Atlas Copco	Carbon steel, copper
Aftercooler	1622 4939 00	Atlas Copco	Aluminum
Aftercooler	1622 5249 81	Atlas Copco	Aluminum

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 before and after the AC 156 test.

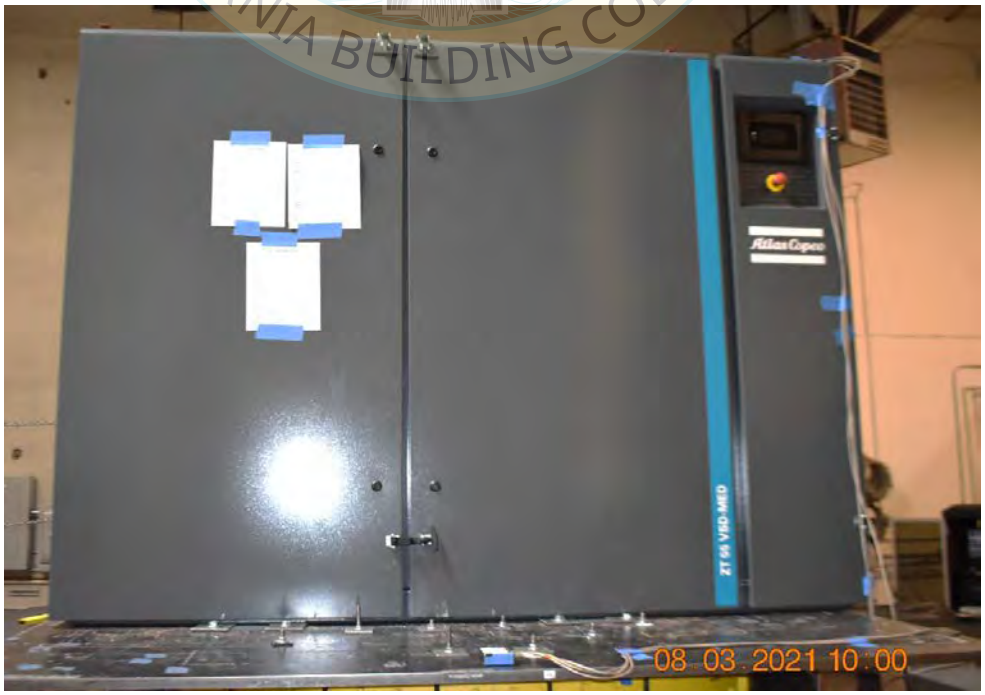
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3,160	46	96	74	7.0	6.5	14.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.15	N/A	N/A
		2.00	0.0	1.0	1.0		N/A	N/A	1.33	0.53

Unit Mounting Description: UUT-2a was rigidly base mounted to the shake table interface plate using the manufacturer's (4) carbon steel anchor pads (Beacon Medaes Part #8092290694). Each anchor pad was fastened to the mounting locations on UUT-2a using (2) M10 Class 8.8 bolts. The anchor pads were bolted to the shake table interface plate using a total of (8) 5/8" Grade 5 bolts, (8) round washers, and (8) 4"x4"x1/4" carbon steel plate washers. The 5/8" bolts were spaced approximately 8" apart on center width-wise on each anchor pad. The furthest-most bolts were spaced approximately 46-1/2" apart on center width-wise while the innermost bolts were spaced approximately 30-1/2" on center width-wise. The bolts were spaced approximately 43" on center depth-wise. Each bolt was torqued to approximately 110ft-lb.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-2b

DCL Repot Number: 13153-2101

Test Dates: 7/26/21 - 8/3/21

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: CD300 Dryer/ Control Module

Product Construction Summary: Powder-coated carbon steel enclosure

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Dryer Subassembly	8102 2897 51	Atlas Copco	Carbon steel, aluminum
Dryer Controller	4107 0081 89	Atlas Copco	Carbon steel, aluminum, plastic
Sensors	4107 6554 19	Kahn	Stainless steel, plastic, ceramic
Sensors	4107 6511 42	GEMS	Stainless steel, plastic
Sensors	4107 6564 27	GFG	Carbon steel

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 before and after the AC 156 test.

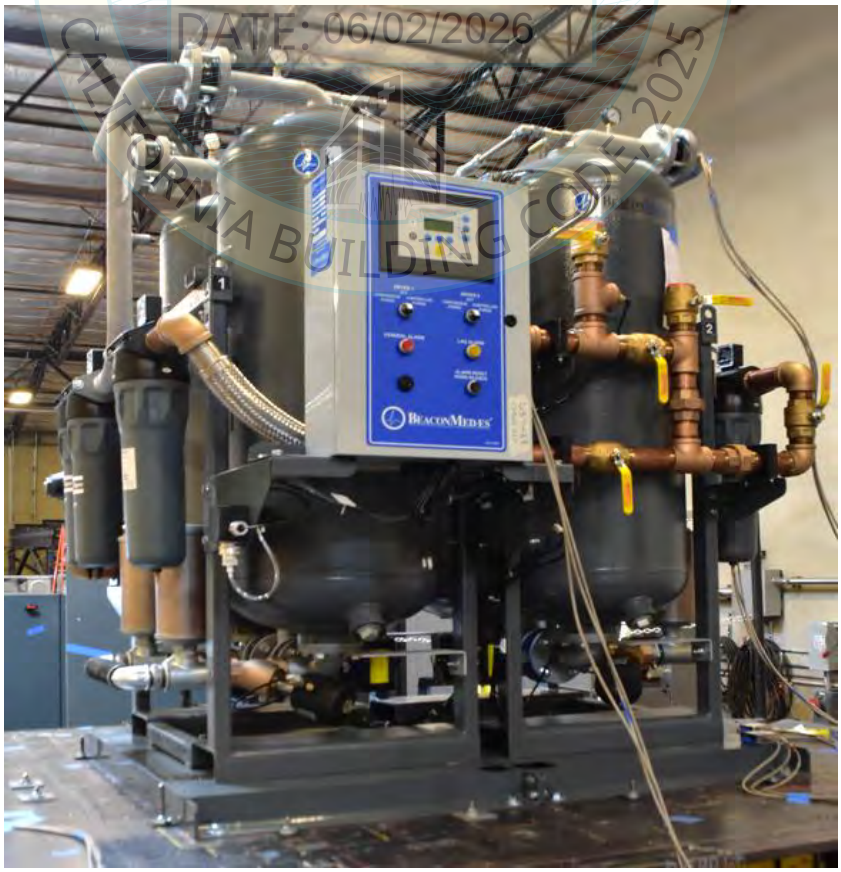
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3,600	69	68	79	5.0	5.0	23.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.15	N/A	N/A
		2.00	0.0	1.0	1.0		N/A	N/A	1.33	0.53

Unit Mounting Description: UUT-2b was rigidly base mounted to the shake table interface plate using the manufacturer's mounting locations. (8) 5/8" Grade 5 bolts and round washers spaced approximately 26", 4-1/2", and 26" width-wise and approximately 47" on center depth-wise were used. Each bolt was torqued to approximately 110ft-lb.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-2c

DCL Repot Number: 13153-2101

Test Dates: 7/26/21 - 8/3/21

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: 400G Receiver Tank

Product Construction Summary: Powder-coated carbon steel enclosure

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Receiver Tank	4107 6559 48	SPV	Carbon steel epoxy coat

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 before and after the AC 156 test.

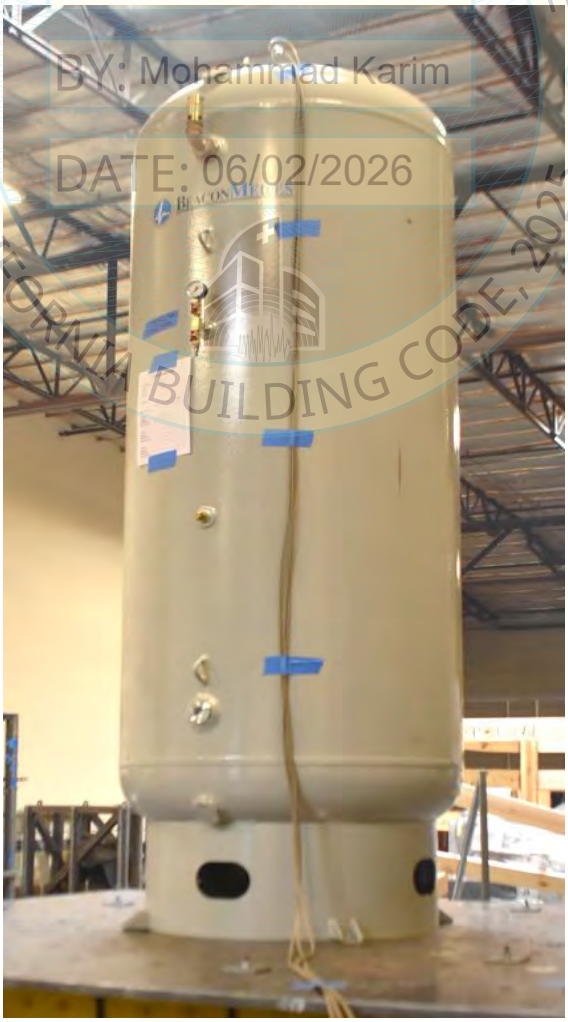
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
900	36	36	102	13.5	14.0	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.15	N/A	N/A
		2.00	0.0	1.0	1.0		N/A	N/A	1.33	0.53

Unit Mounting Description: UUT-2c was rigidly base mounted to the shake table interface plate using the manufacturer's mounting locations. (4) ½" Grade 5 bolts, (4) round washers, and (4) 1-1/4"x1-1/4"x1/4" galvanized steel plate washers were used. The bolts were spaced approximately 23" on center, both width-wise and depth-wise. Each bolt was torqued to approximately 55ft-lb.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-3

DCL Repot Number: 13153-2101

Test Dates: 7/26/21 - 8/3/21

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: CD110 Dryer/ Control Module

Product Construction Summary: Powder-coated carbon steel enclosure

Subcomponent Type	Model Number	Manufacturer	Material
Dryer Subassembly	8102 2896 78	Atlas Copco	Carbon steel, aluminum
Dryer Controller	4107 0081 89	Atlas Copco	Carbon steel, aluminum, plastic
Sensors	4107 6554 19	Kahn	Stainless steel, plastic, ceramic
Sensors	4107 6511 42	GEMS	Stainless steel, plastic
Sensors	4107 6564 27	GFG	Carbon steel

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 before and after the AC 156 test.

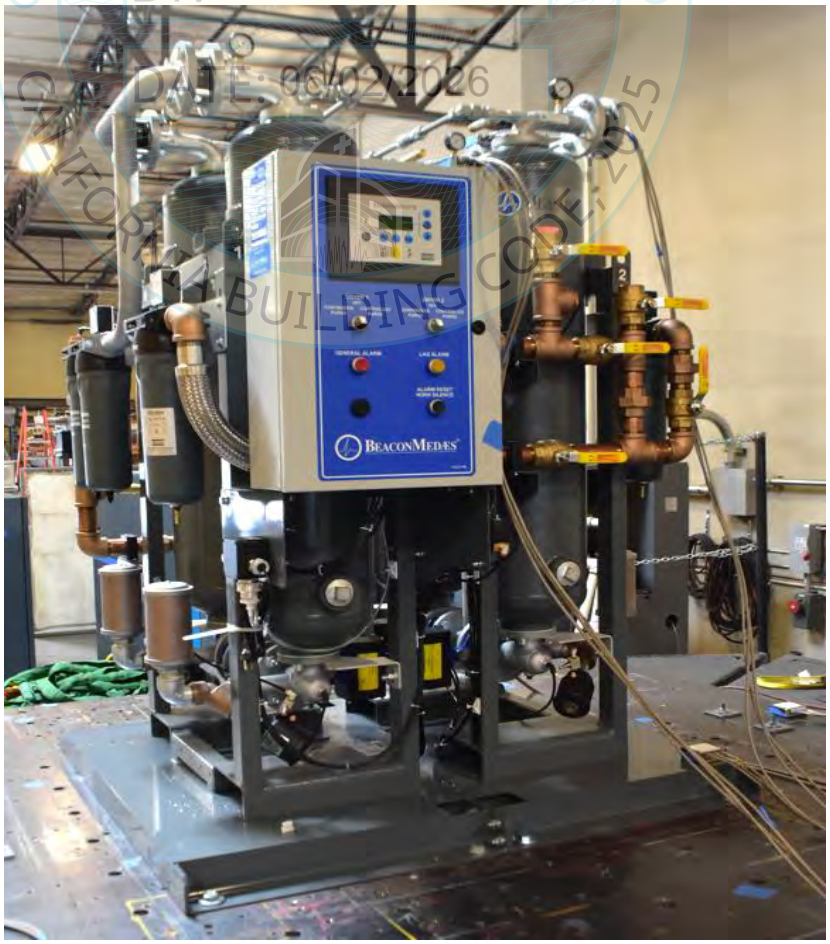
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1,750	54	50	72	6.5	6.5	18.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	2.00	1.0	3.5	1.3	1.5	3.20	2.15	N/A	N/A
		2.00	0.0	1.0	1.0		N/A	N/A	1.33	0.53

Unit Mounting Description: UUT-3 was rigidly base mounted to the shake table interface plate using the manufacturer's mounting locations. (8) 5/8" Grade 5 bolts and round washers were used. Each bolt was spaced approximately 21", 4", and 21" on center width-wise and approximately 44" on center depth-wise. Each bolt was torqued to approximately 110ft-lb.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-4

DCL Repot Number: 65917-2501

Test Dates: 5/4/26 - 5/7/26

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: ZT22VSD-MED Compressor Module

Product Construction Summary: Powder-coated carbon steel enclosure

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Compressor Subassembly	8153970358	Atlas Copco	Carbon steel, aluminum
Compressor Gearbox Assembly	1625 8805 41	Atlas Copco	Cast iron, carbon steel
Compressor Element	1616 7107 91	Atlas Copco	Cast iron, carbon steel
Compressor Element	1616 7117 91	Atlas Copco	Cast iron, carbon steel
Compressor Motor	1625 8800 03	WEG	Cast iron, carbon steel, copper
Compressor Control Panel	1622 8996 80	Atlas Copco	Carbon steel
Compressor Fan	1830 0989 14	Atlas Copco	Carbon steel, copper
Aftercooler	1094 1398 75	Atlas Copco	Aluminum
Aftercooler	1094 1398 76	Atlas Copco	Aluminum

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 before and after the AC 156 test.

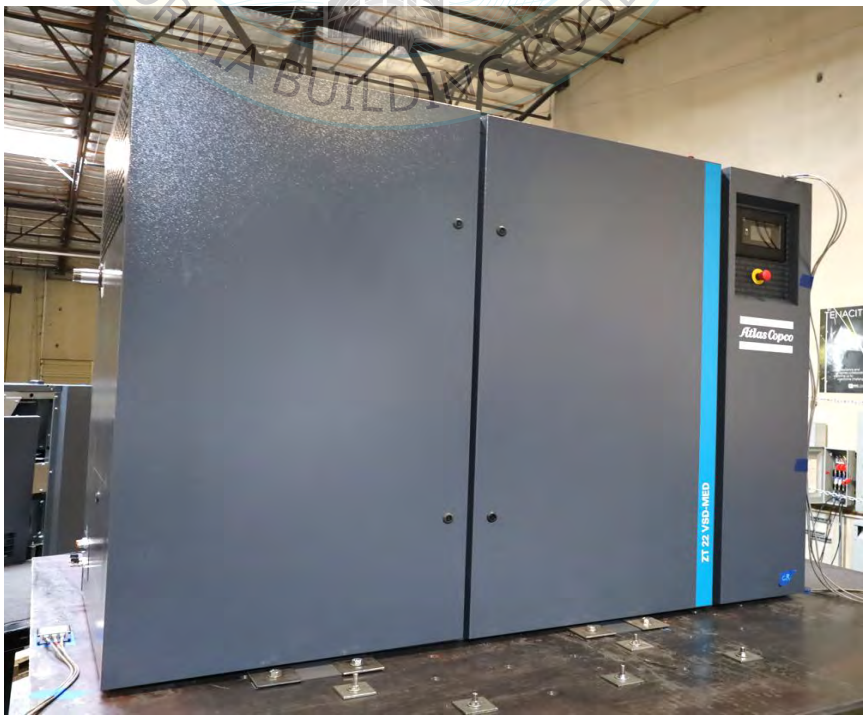
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2,370	46	87	64	9.00	7.50	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	1.50	1.0	3.5	1.3	1.5	2.40	1.62	N/A	N/A
		1.50	0.0	1.0	1.0		N/A	N/A	1.00	0.40

Unit Mounting Description: UUT-4 was rigidly base mounted to the shake table interface plate using (4) manufacturer-provided carbon steel anchor pads (Beacon Medaes part #8092290694). Each anchor pad was attached to the shake table interface plate using (2) 5/8" Grade 5 bolts, round washers, and 4" x 4"x ¼" carbon steel plate washers. The 5/8" bolts were spaced approximately 8" and 27 ½'' apart in the lengthwise direction and 43'' apart in the widthwise direction measured on-center. Each anchor pad was connected to the unit using (2) M10 Class 8.8 bolts and the bolts were spaced 9'' and 26'' apart in the lengthwise direction and 37'' apart in the widthwise direction measured on-center.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-5

DCL Repot Number: 65917-2501

Test Dates: 5/4/26 - 5/7/26

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: ZT30FLX Compressor module

Product Construction Summary: Powder-coated carbon steel enclosure

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Compressor Subassembly	8153350289	Atlas Copco	Carbon steel, aluminum
Compressor Element	1616 7273 87	Atlas Copco	Cast iron, carbon steel
Compressor Element	1616 7275 81	Atlas Copco	Cast iron, carbon steel
Compressor Motor	1625 8804 94	Atlas Copco	Cast iron, carbon steel, copper
Compressor Motor	1625 8804 94	Atlas Copco	Cast iron, carbon steel, copper
Compressor Control Panel	1900 5204 14	Atlas Copco	Carbon steel
Compressor Control Panel	1900 5511 04	Atlas Copco	Carbon steel
Compressor Fan	1830 1023 92	Atlas Copco	Carbon steel, copper
Aftercooler	1622 4939 00	Atlas Copco	Aluminum
Aftercooler	1625 8801 04	Atlas Copco	Aluminum

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 before and after the AC 156 test.

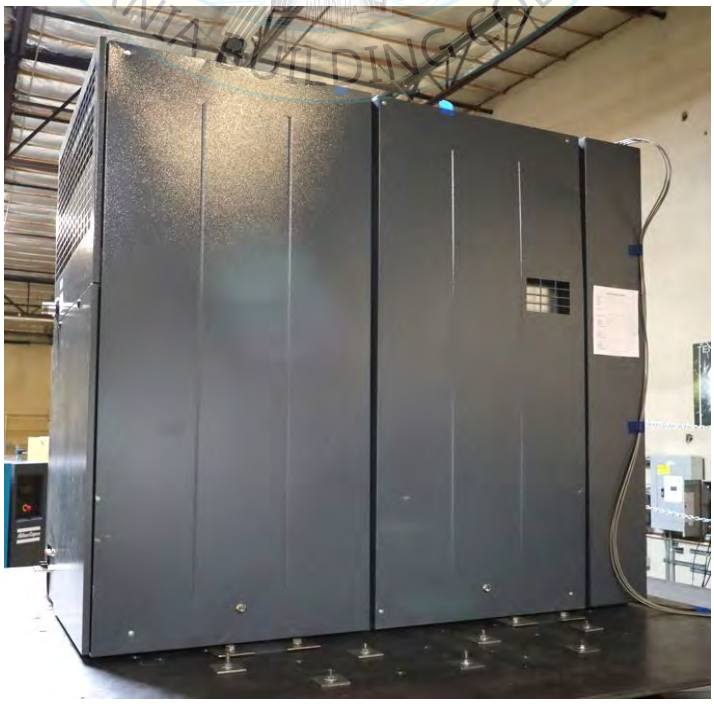
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2,454	40	79	75	8.00	5.25	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	1.50	1.0	3.5	1.3	1.5	2.40	1.62	N/A	N/A
		1.50	0.0	1.0	1.0		N/A	N/A	1.00	0.40

Unit Mounting Description: UUT-5 was rigidly base mounted to the shake table interface plate using (4) manufacturer-provided carbon steel anchor pads (Beacon Medaes part #8092290694). Each anchor pad was attached to the shake table interface plate using (2) 5/8" Grade 5 bolts, round washers, and 4" x 4"x ¼" carbon steel plate washers. The 5/8" bolts were spaced approximately 8" and 30 ¾'' apart in the lengthwise direction and 43'' apart in the widthwise direction measured on-center. Each anchor pad was connected to the unit using (2) M10 Class 8.8 bolts and the bolts were spaced 9'' and 29 ¼'' apart in the lengthwise direction and 37'' apart in the widthwise direction measured on-center.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-6

DCL Repot Number: 65917-2501

Test Dates: 5/4/26 - 5/7/26

Manufacturer: Beacon Medaes

Product Line: Z MED Medical Air Systems

Model Number: ZT55FLX Compressor module

Product Construction Summary: Powder-coated carbon steel enclosure

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 before and after the AC 156 test.

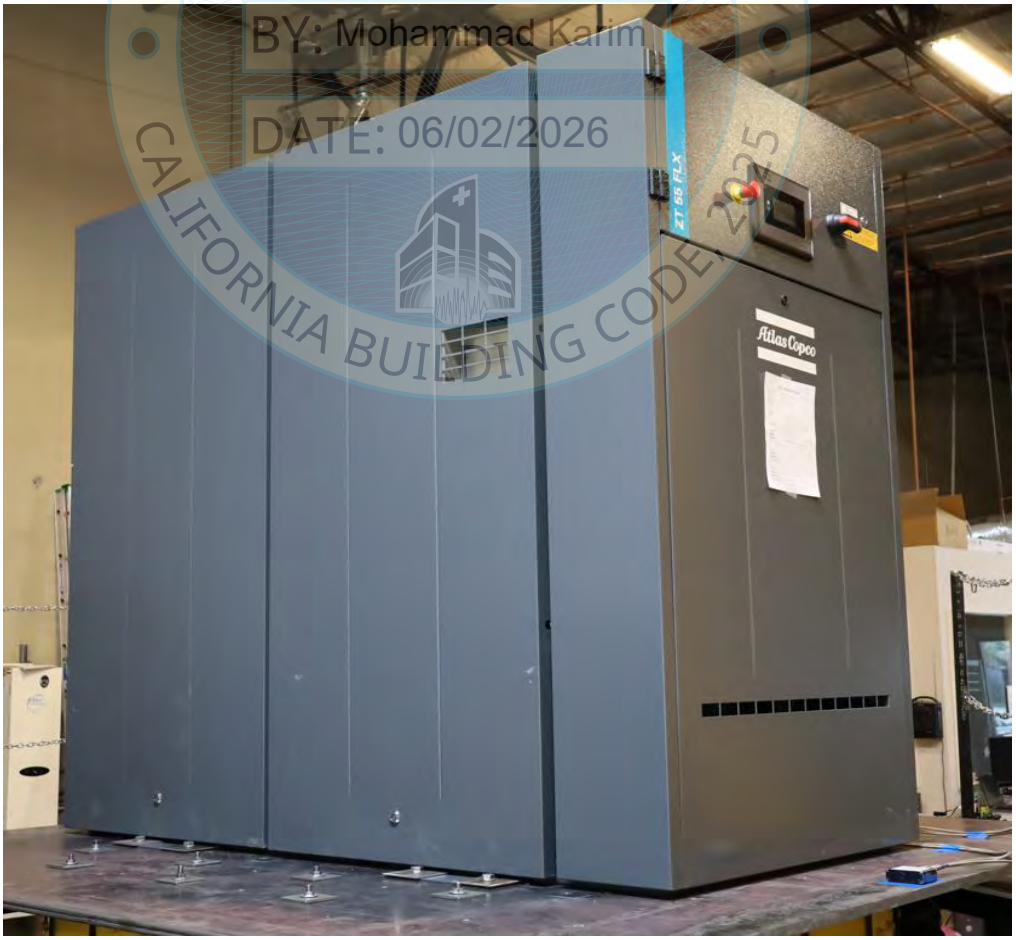
UUT Properties

Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2,500	40	79	75	7.25	5.00	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H_f	Rμ	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	1.50	1.0	3.5	1.3	1.5	2.40	1.62	N/A	N/A
		1.50	0.0	1.0	1.0		N/A	N/A	1.00	0.40

Unit Mounting Description: UUT-6 was rigidly base mounted to the shake table interface plate using (4) manufacturer-provided carbon steel anchor pads (Beacon Medaes part #8092290694). Each anchor pad was attached to the shake table interface plate using (2) 5/8" Grade 5 bolts, round washers, and 4" x 4"x ¼" carbon steel plate washers. The 5/8" bolts were spaced approximately 8" and 30 ¾'' apart in the lengthwise direction measured on-center and 43'' apart in the widthwise direction measured on-center. Each anchor pad was connected to the unit using (2) M10 Class 8.8 bolts and the bolts were spaced 9'' and 29 ¼'' apart in the lengthwise direction measured on-center and 37'' apart in the widthwise direction measured on-center.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-6

Options / Component Summary:

Subcomponent Type	Model Number	Manufacturer	Material
Compressor Subassembly	8153350295	Atlas Copco	Carbon steel, aluminum
Compressor Element	1616 7273 87	Atlas Copco	Cast iron, carbon steel
Compressor Element	1616 7275 81	Atlas Copco	Cast iron, carbon steel
Compressor Motor	1625 8804 94	Atlas Copco	Cast iron, carbon steel, copper
Compressor Motor	1625 8804 94	Atlas Copco	Cast iron, carbon steel, copper
Compressor Control Panel	1900 5204 14	Atlas Copco	Carbon steel
Compressor Control Panel	1900 5511 06	Atlas Copco	Carbon steel
Compressor Fan	1830 1023 92	Atlas Copco	Carbon steel, copper
Aftercooler	1622 4939 00	Atlas Copco	Aluminum
Aftercooler	1625 8801 04	Atlas Copco	Aluminum