APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0380

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Powerex, Inc.

Manufacturer's Technical Representative: Joe Abt

Mailing Address: 150 Production Drive, Harrison, OH 45030

Telephone: (513) 367-3273 Email: jabt@powerexinc.com

Product Information

Product Name: Medical Gas and Vacuum Systems

Product Type: Medical Air and Vacuum Systems

Product Model Number: See attachment

General Description: Medical air and laboratory air units contain pumps, a receiver tank, controller and dryers. Medical gas automatic changeover manifolds are contained in wall mounted enclosures.

Mounting Description: Medical air and laboratory air units are rigidly base mounted or mounted using neoprene pads. Medical gas automatic changeover manifolds are rigidly wall mounted.

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: Dynamic Certification Laboratories

Contact Person: Kelly Laplace

Mailing Address: 1315 Greg Parkway #109, Sparks, NV 89431

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

Title: Business Manager

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: Kelly Laplace

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

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

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) =	3.6 for systems externally isolated with neoprene pads, 4.5 for rigid base mounted internally isolated systems, and 2.4 for rigid wall or base mounted units (with no internal isolations)
S_{DS} (Design spectral response acceleration at short period, g) =	2.0
a_p (Amplification factor) =	2.5
R_p (Response modification factor) =	2.5 (systems isolated with neoprene); 2.0 (internally isolated systems - rigid base mount); 6.0 (Rigidly mounted to wall or at base (without internal isolation))
Ω_0 (System overstrength factor) =	2.0
I_p (Importance factor) =	1.5
z/h (Height ratio factor) =	1
Natural frequencies (Hz) =	See Attachment
Overall dimensions and weight =	See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 08/22/2028

Date: 8/22/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: S_{DS} (g) = 2.0 z/h = 1

Condition of Approval (if applicable):

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Table 1 - Certified Components - Stacked Units, Medical and Laboratory Scroll
(Systems Containing 2,3 and 5 HP Pumps, Flexible Base Mount)

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Flexible Base Mount

Systems Containing 2, 3, and 5 HP Pumps												
Medical Model Number	Laboratory Model Number [1]	HP Per Set	Vertical Reciever Gallons	Total Number of Pumps	Vertically Stacked Pumps or Layers	Horizontally Arrayed Pumps	Maximum Dimensions (in)[2]			Max. Operating Weight (lb)[2]	Mounting [3]	Unit
							Length	Width	Height			
Duplex												
MSD0203	LSD0203	2	80	2	2	1	50	31	78	1,040	Flexible base (neoprene) w/ internal isolation	UUT1
N/A	LSD0203 (tested with alternate dryer)	2	80	2	2	1	74	32	62	1,090		UUT2
MSD0303	LSD0303	3	80	2	2	1	50	31	78	1,100		Interpolated
MSD0503	LSD0503	5	80	2	2	1	50	31	78	1,200		Interpolated
MSD1004	LSD1004	10	120	4	4	1	78	32	77	1,800		Interpolated
MSD1005	N/A	10	200	4	4	1	83	32	84	1,900		Interpolated
MSD1506	N/A	15	240	6	2	3	84	66	96	2,820		UUT4a/4b[4]
Triplex												
MST0503	N/A	5	80	3	3	1	78	32	70	1650	Flexible base (neoprene) w/ internal isolation	Interpolated
N/A	LST0504	5	120	3	3	1	83	32	77	1,790		Interpolated
MST1005	LST1005	10	200	6	2	3	90	66	84	2800		Interpolated
MST1505	N/A	15	200	9	3	3	90	66	84	3900		Interpolated
Quadruplex												
MSQ0504	LSQ0504	5	120	4	4	1	77	32	77	1,870	Flexible base (neoprene) w/ internal isolation	UUT3
MSQ1005	LSQ1005	10	200	8	2	4	108	66	84	3,400		Interpolated
MSQ1006	N/A	10	240	8	2	4	108	66	96	3,530		Interpolated
MSQ1505	N/A	15	200	12	3	4	108	66	84	4,200		Interpolated
MSQ1506	N/A	15	240	12	3	4	108	66	96	4,260		UUT5b/UUT7[4]
Pentaplex												
MSP0504	N/A	5	120	5	1, 2	2	84	66	77	2,475	Flexible base (neoprene) w/ internal isolation	Extrapolated[5]
MSP0505	N/A	5	200	5	1, 2	2	84	66	84	2,600		Extrapolated[5]
MSP1505	N/A	15	200	15	2, 3	3	90	148	84	5,100		Extrapolated[5]
MSP1506	N/A	15	240	15	2, 3	3	90	148	96	5,300		Extrapolated[5]
Hexaplex												
MSH0504	N/A	5	120	6	2	3	90	66	77	2,835	Flexible base (neoprene) w/ internal isolation	Extrapolated[5]
MSH0505	N/A	5	200	6	2	3	90	66	84	2,975		Extrapolated[5]
MSH1006	N/A	10	240	12	3	4	108	73	96	4,250		Extrapolated[5]
MSH1506	N/A	15	240	18	3, 3	3	94	150	96	6,020		Extrapolated[5]
Seven to Twelve Pump Systems												
MSS0504	N/A	5	120	7	2	4 lower, 3 upper	103	66	82	2,900	Flexible base (neoprene) w/ internal isolation	Extrapolated[5]
MSS0505	N/A	5	200	7	2	4 lower, 3 upper	103	66	84	3,190		Extrapolated[5]
MSO0505	N/A	5	200	8	2	4	103	66	84	3,350		Extrapolated[5]
MSN0505	N/A	5	200	9	3	3	94	66	84	3,900		Extrapolated[5]
MSJ0505	N/A	5	200	10	3	4 lower, 4 mid, 2 upper	104	66	84	3,700		Extrapolated[5]
MSJ0506	N/A	5	240	10	3	4 lower, 4 mid, 2 upper	104	66	96	3,900		Extrapolated[5]
MSK0505	N/A	5	200	11	3	4 lower, 4 mid, 3 upper	104	66	84	3,900		Extrapolated[5]
MSK0506	N/A	5	240	11	3	4 lower, 4 mid, 3 upper	104	66	96	4,175		Extrapolated[5]
MSL0505	N/A	5	200	12	3	4	104	66	84	4,100		Extrapolated[5]
MSL0506	N/A	5	240	12	3	4	104	66	96	4,360		Extrapolated[5]

1. Lab scroll units differ from medical scroll units by software change only.
2. Maximum dimensions and weights relate to options and receiver tank size.
3. Pump skids feature internal isolation. Skids with only dryers and tanks do not.
4. For units comprised of more than one skid, skids are structurally independent and flexibly attached.
5. Extrapolated unit justification matrix is provided following this table.

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Table 2 - Justification Matrix for Extrapolation - Stacked Units, Medical and Laboratory Scroll (Systems Containing 2, 3 and 5 HP Pumps, Flexible Base Mount)

DCL Project Number: 32579-2201

Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Flexible Base Mount

Systems Containing 2, 3 and 5 HP Pumps			
Extrapolated Unit (Medical)	Extrapolated Unit (Laboratory)	Units Used for Extrapolation	Difference From Units Used for Extrapolation
MSP0504	N/A	UUT4 (MSD1504)	One fewer pump
MSP0505	N/A	UUT4 (MSD1504)	One fewer pump, larger 200 gal receiver (240 gal receiver tested in UUT5b/UUT7)
MSP1505	N/A	Interpolated unit MST1505	Has an additional pump skid like that tested in UUT4, includes 24" spacing between each of the skids
MSP1506	N/A	Interpolated unit MST1505	Has an additional pump skid like that tested in UUT4 and includes 24" spacing between each of the skids.
MSH0504	N/A	UUT4 (MSD1504)	Has 6 pumps in rack of 3, 3 layers
MSH0505	N/A	UUT4 (MSD1504)	Has 6 pumps in rack of 3, 3 layers, and larger 200 gal receiver (240 gal receiver tested in UUT5b/UUT7)
MSH1006	N/A	UUT5b/UUT7 (MSQ1506)	Includes 6" space between the two system frame modules.
MSH1506	N/A	Interpolated unit MST1505	Has additional pump skid and includes 24" spacing between each of the skids, with 240 gal receiver like that tested in UUT5
MSS0504	N/A	UUT5b/UUT7 (MSQ1506)	One less row of pumps, with smaller receiver tank (one pump less than interpolated MSQ1005)
MSS0505	N/A	UUT5b/UUT7 (MSQ1506)	One less row of pumps, with smaller receiver tank (one pump less than interpolated MSQ1005)
MSO0505	N/A	UUT5b/UUT7 (MSQ1506)	One less row of pumps, with smaller receiver tank
MSN0505	N/A	UUT5b/UUT7 (MSQ1506)	One less column of pumps, with smaller receiver tank
MSJ0505	N/A	UUT5b/UUT7 (MSQ1506)	Two fewer pumps in the top row, with smaller receiver tank
MSJ0506	N/A	UUT5b/UUT7 (MSQ1506)	Two fewer pumps in the top row
MSK0505	N/A	UUT5b/UUT7 (MSQ1506)	One fewer pump in the top row, with smaller receiver tank
MSK0506	N/A	UUT5b/UUT7 (MSQ1506)	One fewer pump in the top row
MSL0505	N/A	UUT5b/UUT7 (MSQ1506)	Smaller receiver tank
MSL0506	N/A	UUT5b/UUT7 (MSQ1506)	Software change only

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Table 3 - Certified Components - Stacked Units, Medical and Laboratory Scroll

(Systems Containing 2, 3 and 5 HP Pumps, Rigid Base Mount)

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Rigid Base Mount

Systems Containing 2, 3, and 5 HP Pumps													
Medical Model Number	Laboratory Model Number [1]	HP Per Set	Vertical Receiver Gallons	Total Number of Pumps	Vertically Stacked Pumps or Layers	Horizontally Arrayed Pumps	# Independently Mounted & Plumbed Assemblies	Maximum Dimensions (in)[2]			Max. Operating Weight (lb.)[2]	Mounting [3]	Unit
								Length	Width	Height			
Duplex													
MSD02A3	LSD02A3	2	80	2	2	1	1	50	34	74	1,090	Rigid base w/ internal isolation	UUT 32
MSD03A3	LSD03A3	3	80	2	2	1	1	50	34	74	1,120		Interpolated
MSD05A3	LSD05A3	5	80	2	2	1	1	50	34	74	1,300		Interpolated
MSD10A4	LSD10A4	10	120	4	4	1	2	51	73	75	2,120		Interpolated
MSD10A5	LSD10A5	10	200	4	4	1	2	51	73	85	2,360		Interpolated
MSD10A6	LSD10A6	10	240	4	4	1	2	51	73	94	2,470		Interpolated
MSD15A5	LSD15A5	15	200	6	2	3	2	60	73	86	3,030		Interpolated
MSD15A6	LSD15A6	15	240	6	2	3	2	60	73	94	3,090		Interpolated
Triplex													
MST03A3	LST03A3	3	80	3	3	1	2	51	73	74	1390	Rigid base w/ internal isolation	Interpolated
MST05A3	LST05A3	5	80	3	3	1	2	51	73	74	1720		Interpolated
MST05A4	LST05A4	5	120	3	3	1	2	51	73	75	1,936		Interpolated
MST10A4	LST10A4	10	120	6	3	2	2	60	73	75	2,995		Interpolated
MST10A5	LST10A5	10	200	6	3	2	2	60	73	86	3230		Interpolated
MST10A6	LST10A6	10	240	6	3	2	2	60	73	94	3320		Interpolated
MST15A4	LST15A4	15	120	9	3	3	2	73	73	75	3930		Interpolated
MST15A5	LST15A5	15	200	9	3	3	2	73	73	86	4201		Interpolated
MST15A6	LST15A6	15	240	9	3	3	2	73	73	94	4260		Interpolated
Quadruplex													
MSQ05A4	LSQ05A4	5	120	4	4	1	1	51	73	75	2,180	Rigid base w/ internal isolation	Interpolated
MSQ10A5	LSQ10A5	10	200	8	2	4	2	60	73	86	3,790		Interpolated
MSQ10A6	LSQ10A6	10	240	8	2	4	2	60	73	94	3,840		Interpolated
MSQ15A5	LSQ15A5	15	200	12	3	4	2	73	73	86	5,620		Interpolated
MSQ15A6	LSQ15A6	15	240	12	3	4	2	73	73	94	5,680		Interpolated
Pentaplex													
MSP15A5	LSP15A5	15	200	15	3,4,4,4	4	2	85	73	86	6,080	Rigid base w/ internal isolation	Interpolated
MSP15A6	LSP15A6	15	240	15	3,4,4,4	4	2	86	73	91	6,140		UUT 33i,ii[4]
Hexaplex													
MSH05A4	LSH05A4	5	120	6	2	3	2	60	75	75	2,990	Rigid base w/ internal isolation	Interpolated
MSH05A5	LSH05A5	5	200	6	2	3	2	60	75	86	3,230		Interpolated
MSH10A6	LSH10A6	10	240	12	3	4	2	73	73	94	5,680		Interpolated
MSH15A5	LSH15A5	15	200	18	3	6	3	85	113	86	7,750		Extrapolated[5]
MSH15A6	LSH15A6	15	240	18	3	6	3	85	113	94	7,810		Extrapolated[5]
Nine-plex													
MSN05A5	LSN05A5	5	200	9	3	3	2	73	73	86	4,680	Rigid base w/ internal isolation	Interpolated

1. Lab scroll units differ from medical scroll units by software change only.
2. Maximum dimensions and weights relate to options and receiver tank size.
3. Pump skids feature internal isolation. Skids with only dryers and tanks do not.
4. For units comprised of more than one skid, skids are structurally independent and flexibly attached.
5. Extrapolated unit justification matrix is provided following this table.

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Table 4 - Justification Matrix for Extrapolation - Stacked Units, Medical and Laboratory Scroll (Systems Containing 2, 3 and 5 HP Pumps, Rigid Base Mount)

DCL Project Number: 32579-2201

Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Rigid Base Mount

Systems Containing 2, 3 and 5 HP Pumps			
Extrapolated Unit (Medical)	Extrapolated Unit (Laboratory)	Units Used for Extrapolation	Difference From Units Used for Extrapolation
MSH15A5	N/A	UUT32/UUT33 (MST15A5)	Same pump rack duplicated, with tank, dryer, and controller from UUT4
MSH15A6	N/A	UUT32/UUT33 (MST15A6)	Same pump rack duplicated, with tank, dryer, and controller from UUT4

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Table 5 - Certified Components - Stacked Units, Medical and Laboratory Scroll
(Systems Containing 7.5 and 10 HP Pumps, Rigid Base Mount)

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Rigid Base Mount

Systems Containing 7.5 and 10 HP Pumps, Rigid Base Mount												
Medical Air Model Number	Laboratory Air Model Number [1]	HP Per Set	Vertical Receiver Gallons	Total Number of Pumps	Vertically Stacked Pumps or Layers	Horizontally Arrayed Pumps	Maximum Dimensions (in) [2]			Max. Operating Weight (lb.)[2]	Mounting [4]	Unit
							Length	Width	Height			
Systems with 80 to 240 Gallon Tanks												
Duplex												
MSD0753	LSD0753	7.5	80	2	2	1	61	66	68	2,205	Rigid base w/ internal isolation	Extrapolated [5]
MSD0754	LSD0754	7.5	120	2	2	1	61	66	78	2,260		Extrapolated [5]
MSD10B4	LSD10B4	10	120	2	2	1	61	66	78	2,310		Extrapolated [5]
MSD15B4	LSD15B4	15	120	4	4	1	61	66	78	2,390		UUT10a/10b [6]
MSD20B4	LSD20B4	20	120	4	4	1	61	66	78	2,500		Interpolated
Triplex												
MST0755	LST0755	7.5	200	3	3	1	61	66	81	2,400	Rigid base w/ internal isolation	Interpolated
MST10B5	LST10B5	10	200	3	3	1	61	66	81	2,550		Interpolated
MST15B5	LST15B5	15	200	6	3	2	79	90	81	4,200		Interpolated
MST15B6	LST15B6	15	240	6	3	2	79	90	93	4,300		Interpolated
MST20B5	LST20B5	20	200	6	3	2	79	90	81	4,450		Interpolated
MST20B6	LST20B6	20	240	6	3	2	79	90	93	4,550		Interpolated
Quadruplex												
MSQ0755	LSQ0755	7.5	200	4	4	1	66	61	81	2,650	Rigid base w/ internal isolation	Interpolated
MSQ10B5	LSQ10B5	10	200	4	4	1	66	61	81	2,750		Interpolated
MSQ15B5	LSQ15B5	15	200	8	4	2	79	90	81	4,450		Interpolated
MSQ15B6	LSQ15B6	15	240	8	4	2	79	90	93	4,550		Interpolated
MSQ20B5	LSQ20B5	20	200	8	4	2	79	90	81	4,700		Interpolated
MSQ20B6	LSQ20B6	20	240	8	4	2	79	90 [3]	93	4,800		UUT11aii/bii
Pentaplex												
MSP15B6	LSP15B6	15	240	10	4 max, partial fill	3	76	138	93	7,000	Rigid base w/ internal isolation	Extrapolated [5]
MSP20B6	LSP20B6	20	240	10	4 max, partial fill	3	76	138	93	7,200		Extrapolated [5]
MSH15B6	LSH15B6	15	240	12	4	3	76	138	93	8,200	Rigid base w/ internal isolation	Extrapolated [5]
MSH20B6	LSH20B6	20	240	12	4	3	76	138	93	8,600		Extrapolated [5]
Systems with 400 or 660 Gallon Tanks (Tank separately mounted and flexibly plumbed)												
Pentaplex												
MSP15B7	LSP15B7	15	400	10	4 max, partial fill	3	96	158	102	7,400	Rigid base w/ internal isolation	Extrapolated [5], w/ UUT12c tank
MSP20B7	LSP20B7	20	400	10	4 max, partial fill	3	96	158	102	7,600		Extrapolated [5], w/ UUT12c tank
MSP15B8	LSP15B8	15	660	10	4 max, partial fill	3	99	163	127	8,100		Extrapolated [5], w/ UUT15b tank
MSP20B8	LSP20B8	20	660	10	4 max, partial fill	3	99	163	127	8,300		Extrapolated [5], w/ UUT15b tank
Hexaplex												
MSH15B7	LSH15B7	15	400	12	4	3	96	158	102	8,600	Rigid base w/ internal isolation	Extrapolated [5], w/ UUT12c tank
MSH20B7	LSH20B7	20	400	12	4	3	96	158	102	9,000		Extrapolated [5], w/ UUT12c tank
MSH15B8	LSH15B8	15	660	12	4	3	99	163	127	9,300		Extrapolated [5], w/ UUT15b tank
MSH20B8	LSH20B8	20	660	12	4	3	99	163	127	9,700		Extrapolated [5], w/ UUT15b tank

400 and 660 Gallon Tanks

Tank Model No.	Description	Max. Dimensions (in)			Weight (lb.)	Mounting	Unit
		Length	Width	Height			
AR063700AV	400 gal	38	47	102	640	Rigid base	UUT12c
AR660000AV	660 gal	42	42	127	1,500		UUT15b

1. Lab scroll units differ from medical scroll units by software change only.
2. Maximum dimensions and weights are calculated, and take into account options and receiver tank size.
3. Maximum width shown for 11aii/bii is an overall width dimension that includes an 18" separation between the two equipment skids.
4. Pump skids feature internal isolation. Skids with dryers and tanks do not.
5. Extrapolated unit justification matrix is provided following this table.
6. For units comprised of more than one skid, skids are structurally independent and flexibly attached.

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Table 6 - Justification Matrix for Extrapolation - Stacked Units, Medical and Laboratory Scroll
(Systems Containing 7.5 and 10 HP Pumps, Rigid Base Mount)

DCL Project Number: 32579-2201

Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Rigid Base Mount

Systems Containing 7.5 and 10 HP Pumps			
Extrapolated Unit (Medical)	Extrapolated Unit (Laboratory)	Units Used for Extrapolation	Difference From Units Used for Extrapolation
MSD0753	LSD0753	UUT10 (MSD15B4)	Two fewer pump-motor assemblies in rack; tank is smaller from UUT 1
MSD0754	LSD0754	UUT10 (MSD15B4)	Two fewer pump-motor assemblies in rack.
MSD10B4	LSD10B4	UUT10 (MSD15B4)	Two fewer pump-motor assemblies in rack, pump-motor assemblies as in UUT11
MSP15B6	LSP15B6	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506)	10 total pumps; one 2 pump stack, as a depopulated variant of UUT10 control deleted, one 8 pump (2 stacks -4 high, using 7.5HP pumps and motors instead of 10HP) as in UUT11; Control depopulated variant of UUT7 (10 of 12 circuits); Tank/dryer skid as in UUT5b with dryers as in UUT6 or UUT9
MSP20B6	LSP20B6	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506)	10 total pumps; One 2 pump stack, as a depopulated variant of UUT10 with 10 HP pumps/motors instead of 7.5 control deleted, one 8 pump (2stack -4 high) as in UUT11; Control depopulated variant of UUT7 (10 of 12 circuits). Tank/dryer skid as in UUT5b with dryers as in UUT6 or UUT9
MSH15B6	LSH15B6	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506)	12 total pumps; one 4 pump stack, as in UUT10; one 8 pump stack (2 stacks -4 high, using 7.5HP pumps and motors instead of 10HP) as in UUT11; Controller tested in UUT7. Tank/dryer skid as in UUT5b with dryers as in UUT6 or UUT9.
MSH20B6	LSH20B6	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506)	12 total pumps; One 4 pump stack, as in UUT10 with 10 HP pumps/motors instead of 7.5 (10HP covered by interpolation to UUT10-11); one 8 pump stack (2 stacks -4 high) as in UUT11; Controller a depopulated variant of UUT7 (10 of 12 circuits). Tank/dryer skid as in UUT5b with dryers as in UUT6 or UUT9
MSP15B7	LSP15B7	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506), UUT12c (400gal receiver)	Same as MSP15B6 above, except tank/dryer skid deletes receiver tank, add separately mounted/flexibly plumbed 400gal receiver as in UUT12c
MSP20B7	LSP20B7	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506), UUT12c (400gal receiver)	Same as MSP20B6 above, except tank/dryer skid deletes receiver tank, add separately mounted/flexibly plumbed 400gal receiver as in UUT12c
MSP15B8	LSP15B8	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506), UUT15b (660gal receiver)	Same as MSP15B6 above, except tank/dryer skid deletes receiver tank, add separately mounted/flexibly plumbed 660gal receiver as in UUT15b
MSP20B8	LSP20B8	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506), UUT15b (660gal receiver)	Same as MSP20B6 above, except tank/dryer skid deletes receiver tank, add separately mounted/flexibly plumbed 660gal receiver as in UUT15b
MSH15B7	LSH15B7	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506), UUT12c (400gal receiver)	Same as MSH15B6 above, except tank/dryer skid deletes receiver tank; add separately mounted/flexibly plumbed 400gal receiver as in UUT12c
MSH20B7	LSH20B7	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506), UUT12c (400gal receiver)	Same as MSH20B6 above, except tank/dryer skid deletes receiver tank; add separately mounted/flexibly plumbed 400gal receiver as in UUT12c
MSH15B8	LSH15B8	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506), UUT15b (660gal receiver)	Same as MSH15B6 above, except tank/dryer skid deletes receiver tank; add separately mounted/flexibly plumbed 660gal receiver as in UUT15b
MSH20B8	LSH20B8	UUT10 (MSD15B4), UUT11(MSQ20B6), UUT7(MSQ1506), UUT15b (660gal receiver)	Same as MSH20B6 above, except tank/dryer skid deletes receiver tank; add separately mounted/flexibly plumbed 660gal receiver as in UUT15b

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Table 7 - Certified Components - Rotary Tooth Oil Free Medical/Lab Air Systems, Rigid Base Mount

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Rigid Base Mount

Medical Air Model Number	Lab Air Model Number [1]	HP	Vertical Receiver Gallons	Number of Compressor Enclosures	Number of Compressors per Enclosure	Maximum Dimensions (in)[2]			Max. Operating Weight (lb.)[3]	Mounting [4]	Unit
						Length	Width	Height			
Duplex Systems											
MDRC05074FA5	LDRC05072FA5	50 x 2	400	2	1	232	116	102	8,260	Rigid base w/ internal isolation	UUT12a,b,c [5, 6]
Triplex Systems											
MTRC05074FA5	LTRC05074KA5	50 x 3	400	3	1	332	116	102	11,190	Rigid base w/ internal isolation	Same As [7]
Quadruplex Systems											
MQRC05074FA5	LQRC05074FA5	50 x 4	400	4	1	412	152	102	14,120	Rigid base w/ internal isolation	Same As [7]
MQRC05084FA5	LQRC05084FA5	50 x 4	660	4	1	412	166	127	14,980	Rigid base w/ internal isolation	Same As [7] with tank from UUT15b [8]

1. Lab units are physically identical to medical air units (software change only).
2. Dimensions include 24 inch spacing between system components. System component skids are independently mounted and flexibly connected.
3. Weight is sum of all system components.
4. Compressor pump skids are internally isolated. Dryer and receiver tank skids are not.
5. Only one compressor enclosure tested in UUT12a (systems consist of 2 to 4 identical enclosures, independently mounted and flexibly connected).
6. Dimensions and weight shown here for the MDRC05074FA5 are calculated, assuming the duplex system contains two of the compressor enclosures tested in UUT12a, along with the dryer/controller and 400 gallon receiver tank tested in UUT12b and UUT12c.
7. Units are the same as the unit tested, except with additional enclosures identical to that tested in UUT12a, all independently mounted and flexibly connected.
tested in UUT15b.

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Table 8 - Certified Components - Scroll Enclosed (SE) Medical/Laboratory Air Systems, Rigid Base Mount

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Rigid Base Mount

Medical Air Model Number [1]	Lab Air Model Number [1,2]	HP Per Pump	Total HP	Vertical Receiver (gallons)	Number of Compressor Enclosures	Vertically Stacked Pumps Per Enclosure	Horizontally Arrayed Pumps Per Enclosure	Maximum Dimensions (in)			Max. Operating Weight (lb.)	Mounting [3]	Unit
								Length	Width	Height			
Duplex Systems (individual enclosed compressor units with structurally independent and flexibly attached tank/dryer/control skids)													
MSED1003x5	LSED1003x5	5	10 x 2	80	2	2	1	94	80	71	2,650	Rigid base w/ internal isolation	Extrapolated
MSED1504x5	LSED1504x5	5	15 x 2	120	2	3	1	94	80	79	2,980		Extrapolated
MSED2004x5 [1]	LSED2004x5	5	20 x 2	120	2	4	1	94	80	79	3,280		UUT14a,b [4]
MSED2005x5	LSED2005x5	5	20 x 2	200	2	4	1	94	80	84	3,380		Interpolated
MSED3006x5	LSED3006x5	5	30 x 2	240	2	3, 3	2	95	140	96	5,100		Interpolated
MSED4006x5	LSED4006x5	5	40 x 2	240	2	4, 4	2	95	140	96	5,500		Interpolated
MSED15B4x5	LSED15B4x5	7.5	15 x 2	120	2	2	1	99	104	79	3,050		Interpolated
MSED20B4x5	LSED20B4x5	10	20 x 2	120	2	2	1	99	104	79	3,170		Interpolated
MSED22B4x5	LSED22B4x5	7.5	22.5 x 2	120	2	3	1	99	104	79	4,000		Interpolated
MSED30B5x5	LSED30B5x5	10	30 x 2	200	2	3	1	99	104	84	4,700		Interpolated
MSED50B6x5	LSED50B6x6	10	50 x 2	240	2	2, 3	2	99	165	96	5,600		Interpolated
Triplex Systems (individual enclosed compressor units with structurally independent and flexibly attached tank/dryer/control skids)													
MSET1004x5	LSET1004x5	5	10 x 3	120	3	2	1	95	125	79	3,550	Rigid base w/ internal isolation	Interpolated
MSET1505x5	LSET1505x5	5	15 x 3	200	3	3	1	95	125	84	4,750		Interpolated
MSET2005x5	LSET2005x5	5	20 x 3	200	3	4	1	95	125	84	4,800		Interpolated
MSET2006x5	LSET2006x5	5	20 x 3	240	3	4	1	95	125	96	4,900		Interpolated
MSET3006x5	LSET3006x5	5	30 x 3	240	3	3, 3	1	96	223	96	6,500		Interpolated
MSET4006x5	LSET4006x5	5	40 x 3	240	3	4, 4	2	96	223	96	8,200		Interpolated
MSET20B6x5	LSET20B6x5	10	20 x 3	240	3	2	1	99	175	96	4,052		Interpolated
MSET2256x5	LSET2256x5	7.5	22.5 x 3	240	3	3	1	99	175	96	4,850		Interpolated
MSET30B6x5	LSET30B6x5	10	30 x 3	240	3	3	1	99	175	96	6,550		Interpolated
MSET40B6x5	LSET40B6x5	10	40 x 3	240	3	2, 2	2	99	259	96	7,316		Interpolated
MSET50B7x5	LSET50B7x5	10	50 x 3	400	3	2, 3	2	99	259	96	8,552		Interpolated
MSET60B7x5	LSET60B7x5	10	60 x 3	400	3	3, 3	2	99	259	96	9,452		Interpolated

Continued on Next Page

1. In model numbers listed, the "x" can be 2 = 208V, 3 = 230V, or 4 = 460V. UUT14a,b was MSED200425 (208V) and UUT15a,b was LSEQ60B845 (460V).

2. Lab units are physically identical to medical air units (software change only)

3. Compressor pump skids are internally isolated. Dryer and receiver tank skids are not.

4. Dimensions and weight shown here for the MSED2004xx system are calculated, assuming the duplex system contains two of the compressor enclosures tested in UUT14a, along with a skid containing a controller, tank, dryers, and other subcomponents as shown in the Scroll Enclosed certified subcomponent tables.

Special Seismic Certification
Table 8 - Certified Components (Continued) - Scroll Enclosed (SE) Medical/Laboratory Air Systems, Rigid Base Mount

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air
Mounting: Rigid Base Mount

Medical Air Model Number [1]	Lab Air Model Number [1,2]	HP Per Pump	Total HP	Vertical Receiver (gallons)	Number of Compressor Enclosures	Vertically Stacked Pumps Per Enclosure	Horizontally Arrayed Pumps Per Enclosure	Maximum Dimensions (in)			Max. Operating Weight (lb.)	Mounting [3]	Unit
								Length	Width	Height			
Quadruplex Systems (individual enclosed compressor units with structurally independent and flexibly attached tank/dryer/control skids)													
MSEQ1505x5	LSEQ1505x5	5	15 x 4	200	4	3	1	132	100	84	5,050	Rigid base w/ internal isolation	Interpolated
MSEQ2006x5	LSEQ2006x5	5	20 x 4	240	4	4	1	132	100	96	6,150		Interpolated
MSEQ3007x5	LSEQ3007x5	5	30 x 4	400	4	3, 3	2	212	126	109	8,730		Interpolated
MSEQ4007x5	LSEQ4007x5	5	40 x 4	400	4	4, 4	2	212	126	109	9,890		Interpolated
MSEQ2256x5	LSEQ2256x5	7.5	22.5 x 4	240	4	3	1	99	246	96	5,900		Interpolated
MSEQ30B6x5	LSEQ30B6x5	10	30 x 4	240	4	3	1	99	246	96	6,400		Interpolated
MSEQ40B6x5	LSEQ40B6x5	10	40 x 4	240	4	2, 2	2	220	122	96	9,400		Interpolated
MSEQ40B7x5	LSEQ40B7x5	10	40 x 4	400	4	2, 2	2	220	122	102	10,100		Interpolated
MSEQ45B8x5	LSEQ45B8x5	7.5	45 x 4	660	4	3, 3	2	220	122	127	11,700		Interpolated
MSEQ50B8x5	LSEQ50B8x5	10	50 x 4	660	4	2, 3	2	220	122	127	11,800		Interpolated
MSEQ60B8x5 [1]	LSEQ60B8x5	10	60 x 4	660	4	3, 3	2	220	150	127	13,200		UUT15a,b [4]

1. In model numbers listed, the "x" can be 2 = 208V, 3 = 230V, or 4 = 460V. UUT14a,b was MSED200425 (208V) and UUT15a,b was LSEQ60B845 (460V).

2. Lab units are physically identical to medical air units (software change only)

3. Compressor pump skids are internally isolated. Dryer and receiver tank skids are not.

4. Dimensions and weight shown here for the MSEQ60B8x5 system are calculated, assuming the quadruplex system contains four of the compressor enclosures tested in UUT15a, one 660 gallon tank as tested in UUT15b, and a skid containing a controller, dryers, and other subcomponents as shown in the Scroll Enclosed certified subcomponent tables.

Special Seismic Certification
Table 9 - Certified Components - Medical Gas Automatic Changeover Manifolds, Rigid Wall Mount

DCL Project Number: 32579-2201

Manufacturer: Powerex (alternately branded Tri-Tech Medical)

Product Line: Medical Gas Automatic Changeover Manifolds

Mounting: Rigid Wall Mount

Powerex Model Number [1,2,3]	Tri-Tech Medical Model Number	Control	Gas Containers [4]	Cabinet	Delivery Pressure (psi)	Dimensions (inches)			Weight (lb.)	Mounting	Unit
						Width	Depth	Height			
PX-NPCU12AI1L	NPCU12AI1L	Analog	C x C	Standard	50	15	9	25	66	Rigid wall	UUT28
PX-NPCU12xxxL	NPCU12xxxL	Analog	C x C	Standard		15	9	25		Rigid wall	Interpolated
PX-NPCU12xxxH	NPCU12xxxH	Analog	C x C	Standard		15	9	25		Rigid wall	Interpolated
PX-NPCU22xxxL	NPCU22xxxL	Analog	C x C	Weatherproof		19	11	27		Rigid wall	Interpolated
PX-NPCU22xxxH	NPCU22xxxH	Analog	C x C	Weatherproof		19	11	27		Rigid wall	Interpolated
PX-CCU12xxxL	CCU12xxxL	Digital	C x C	Standard		15	9	25		Rigid wall	Interpolated
PX-CCU12xxxH	CCU12xxxH	Digital	C x C	Standard		15	9	25		Rigid wall	Interpolated
PX-CCU22xxxL	CCU22xxxL	Digital	C x C	Weatherproof		19	11	27		Rigid wall	Interpolated
PX-CCU22xxxH	CCU22xxxH	Digital	C x C	Weatherproof		19	11	27		Rigid wall	Interpolated
PX-PLU12xxxL	PLU12xxxL	Digital	L x C	Standard	50, 80 or 170	15	9	25	66 to 70	Rigid wall	Interpolated
PX-PLU12xxxH	PLU12xxxH	Digital	L x C	Standard		15	9	25		Rigid wall	Interpolated
PX-PLU22xxxL	PLU22xxxL	Digital	L x C	Weatherproof		19	11	27		Rigid wall	Interpolated
PX-PLU22xxxH	PLU22xxxH	Digital	L x C	Weatherproof		19	11	27		Rigid wall	Interpolated
PX-LLU12xxxL	LLU12xxxL	Digital	L x L	Standard		15	9	25		Rigid wall	Interpolated
PX-LLU12xxxH	LLU12xxxH	Digital	L x L	Standard		15	9	25		Rigid wall	Interpolated
PX-LLU22xxxL	LLU22xxxL	Digital	L x L	Weatherproof		19	11	27		Rigid wall	Interpolated
PX-LLU22xxxH	LLU22xxxH	Digital	L x L	Weatherproof		19	11	27		Rigid wall	Interpolated
PX-LLU22NT3H	LLU22NT3H	Digital	L x L	Weatherproof	170	19	11	27	70	Rigid wall	UUT29

1. First and second lower case "x" in model number stand for medical gas type: AI=medical air, CD=carbon dioxide, IA=instrument air, NT=Nitrogen, NO=nitrous oxide, OX=oxygen, AR=argon
2. Third lower case "x" in model number stands for delivery pressure in psi: 1=50, 2=80, 3=170
3. Last digit in model number stands for Flow: L = Standard Flow; H = High Flow
4. Gas Containers: C x C = Cylinder x Cylinder; L x L = Liquid x Liquid; L x C = Liquid x Cylinder

Special Seismic Certification
Table 10 - Certified Subcomponents - Stacked Units, Medical and Laboratory Scroll
(Systems Containing 2,3 and 5 HP Pumps, Flexible Base Mount)

DCL DYNAMIC CERTIFICATION LABORATORIES, LLC

DCL Project Number:	32579-2201
Manufacturer:	Powerex
Product Line:	Medical Air and Laboratory Air

Subcomponent [MFR]	Model	Notes	Unit
Scroll pumps [POWEREX] Note: material is die cast aluminum	SLAE03EB	2 or 3 Hp	UUT1, UUT2
	SLAE05E	5 Hp	UUT3
	SLAE05EHP	5 Hp	Same as UUT3
Vertical tanks [CAMPBELL HAUSFELD, ALSO BRANDED TWIN LAKES]	AR027300ST	80 gal	UUT1, UUT2
	AR027400ST	120 gal	UUT3
Dew point monitor / probe desiccant [POWEREX] Note: material of probe housing is stainless steel	PDPM1001AJ	N/A	UUT1, UUT2, UUT3
	PDMP2001AJ	N/A	Same As [1]
Carbon monoxide monitor/ sensor [ENMET] Note: material is FRP housing with circuit board and integrated sensor	03481-005	N/A	UUT1, UUT2, UUT3
Controllers [POWEREX] Note: material is painted carbon steel electrical cabinet	BASIC_PSM	NEMA 12 enclosure; no touchscreen	UUT1
	HMI_PXMI	NEMA 12 enclosure: Human Machine Interface	Interpolated
	PBMI_PXMI	NEMA 12 enclosure: Powerex Building Management Integrator	UUT2, UUT3
Motors [WEG] Note: material is carbon steel shell with welded foot Note: All motors are 208-230V / 460V	00218OT3E145T_	2 Hp	UUT1, UUT2
	00218OT3ECD145T_	2 Hp	Interpolated
	00318OT3E182T_	3 Hp	Interpolated
	00518OT3E184T_	5 Hp	UUT3
Tank drain [JORC] Note: material is cast brass body with integrated solenoid valve and DIN connector-mounted solid state timer	2523	Timer drain	UUT1, UUT3
Tank drain [PARKER-DOMNICK HUNTER / ZANDER] Note: material is die cast body and molded polymer housing	ED3004N	No-loss drain	UUT2
Aftercooler [THERMAL TRANSFER] Note: material is copper header tanks, copper cross tubes and copper fins	DH062	N/A	UUT1, UUT2, UUT3
Intake filter elements [SOLBERG] Note: material is powder-coated stamped carbon steel	CSL-843	MSD0203, MSD0303, MSD0503, MST0503, MSP1505	UUT1
	CSL-849	MSQ0504, MSH0504, MSD1504, SDT1005, MSP1505	UUT2
	CSL-851	MSN0504, MST1505, MSQ1005, MSQ1505, MSL0505, MSO0505	UUT7
Check valve [POWEREX] Note: material is anodized die cast aluminum	IP087700AV	Check valve	UUT1, UUT2, UUT3
Vertical tanks [CAMPBELL HAUSFELD, ALSO BRANDED TWIN LAKES]	AR051201AJ	200 gal	Extrapolated
	AR051301AJ	240 gal	UUT4b, UUT5b
Vertical tanks [Morganton] Note: material is welded carbon steel	VES07285	80 gal	UUT 30b , UUT 31b
	VES04865	120 gal	Interpolated
	VES04767	120 gal	UUT 31b
	VES07303	200 gal	Interpolated
	VES07072	240 gal	UUT 30b

1. Extrapolated dew point monitor is the same as tested in UUT1-3 (software change only).

Special Seismic Certification
Table 10 - Certified Subcomponents (Continued) - Stacked Units, Medical and Laboratory Scroll
(Systems Containing 2,3 and 5 HP Pumps, Flexible Base Mount)

DCL DYNAMIC CERTIFICATION LABORATORIES,LLC

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air

Subcomponent [MFR]	Model [1]	Dimensions (in)			Weight (lb.)	Unit
		Length	Width	Height		
Desiccant dryers [POWEREX] Note: material is powder coated welded carbon steel tanks; powder coated welded carbon steel mounting frame	PMD10	17	28	53	200	Extrapolated
	PMD17	17	28	53	200	Extrapolated
	PMD30	17	28	64	330	UUT3
	PMD35	17	28	64	330	Interpolated
	PMD45	17	28	72	360	Interpolated
	PMD55	17	28	72	360	Interpolated
	PMD60	35	28	67	660	Interpolated
	PMD71	35	28	67	660	Interpolated
	PMD90	35	28	76	720	Interpolated
	PMD110	35	28	76	720	Interpolated
	PMD111	35	28	76	720	UUT4b
	PMD07T	18	28	37	185	UUT1
	PMD10T	18	28	37	185	Same As [2]
	PMD17T	18	28	37	185	Same As [2]
Desiccant dryers [POWEREX] Note: material is powder coated welded carbon steel tanks; powder coated welded carbon steel mounting frame	PLD10	17	28	53	200	Extrapolated
	PLD17	17	28	53	200	Extrapolated
	PLD30	17	28	64	330	UUT3
	PLD35	17	28	64	330	Interpolated
	PLD45	17	28	72	360	Interpolated
	PLD55	17	28	72	360	Interpolated
	PLD60	35	28	67	660	Interpolated
	PLD71	35	28	67	660	Interpolated
	PLD90	35	28	76	720	Interpolated
	PLD111	35	28	76	720	UUT4b
	PLD07T	18	28	37	185	UUT1
	PLD10T	18	28	37	185	Same As [2]
	PLD17T	18	28	37	185	Same As [2]
Desiccant dryers [PARKER-DOMNICK, alternately branded HUNTER/ZANDER] Note: material is aluminum extruded towers; powder coated welded carbon steel mounting frame	DME050RX	22	9	56	176	UUT5b
	DME060RX	22	9	63	198	Interpolated
	DME080RX	22	9	73	229	UUT6
	DME015	12	11	33	81	UUT6
	DME025	12	11	53	103	Interpolated
	DME030	12	11	59	114	Interpolated
	DME050	22	9	56	176	Interpolated
	DME060	22	9	63	198	UUT6
	KMT3	8	12	32	37	UUT2
	KMT4	8	12	54	54	UUT6
Desiccant dryers [NANO PSI] Note: material is aluminum extruded towers; powder coated carbon steel mounting frame	NDL110	17	13	48	172	UUT9
	NDL120	17	13	52	209	Interpolated
	NDL130	17	13	56	262	Interpolated
	NDL2110	25	12	47	366	UUT9

1. Dryers with PLD designation are structurally identical to PMD models in this table.
2. The PMD10T/PLD10T and PMD17T/PLD17T are identical to the PMD07T/PLD07T.

Special Seismic Certification
Table 11 - Certified Subcomponents - Stacked Units, Medical and Laboratory Scroll
(Systems Containing 2, 3 and 5 HP Pumps and Systems Containing 7.5 and 10 HP Pumps, Rigid Base Mount)

DCL DYNAMIC CERTIFICATION LABORATORIES,LLC

DCL Project Number:	32579-2201
Manufacturer:	Powerex
Product Line:	Medical Air and Laboratory Air

Subcomponent [MFR]	Model	Notes	Unit
Scroll pumps [POWEREX] Note: material is die cast aluminum	SLAE03EB	2 or 3 Hp	UUT32
	SLAE05E	5 Hp	UUT33ii
	SLAE05EHP	5 Hp	Same as UUT33ii
	SLAE075	7.5 Hp	UUT10a
	SLAE10	10 Hp	UUT11aii
Controllers [POWEREX] Note: material is painted carbon steel electrical cabinet	BASIC_PSM	NEMA 12 enclosure; no touchscreen	UUT10a
	HMI_PXMI	NEMA 12 enclosure: Human Machine Interface: touchscreen	Interpolated
	PBMI_PXMI	NEMA 12 enclosure: Powerex Building Management Integrator: HMI panel with additional communications card	UUT11aii
Motors for medical and lab skid mount [WEG] Note: material is carbon steel shell with welded foot Note: All motors are 208-230V / 460V	00736OT2E184T	7.5 Hp	UUT10a
	01036OT3E213T	10 Hp	UUT11aii
Aftercooler [THERMAL TRANSFER] Note: material is copper header tanks, copper cross tubes and copper fins	BGA35	N/A	UUT 32,33ii
	DH106	N/A	UUT10a, UUT11aii
Intake filter elements [SOLBERG] Note: material is powder-coated stamped carbon steel	CSL-824	Multiple filters used per unit, up to one per pump	UUT 32, 33ii
	CSL-849	Multiple filters used per unit, up to one per pump	UUT10a, UUT11aii
Check valve [CONTROL DEVICES, INC.] Note: material is cast brass	CB50	Check valve	UUT10a, UUT11aii
Vertical tanks [CAMPBELL HAUSFELD, ALSO BRANDED TWIN LAKES] Note: material is welded carbon steel	AR027400ST	120 gal	UUT10b
	AR051201AJ	200 gal	Interpolated
	AR051301AJ	240 gal	UUT11bii
Vertical tanks [MANCHESTER TANK] Note: material is welded carbon steel (ASME, 165 PSIG)	AR063700AV	400 gal	UUT12c
	AR660000AV	660 gal	UUT15b
Vertical tanks [Morganton] Note: material is welded carbon steel	VES07285	80 gal	UUT 30a, 31a
	VES07387	80 gal	Interpolated
	VES04865	120 gal	Interpolated
	VES04767	120 gal	UUT 31a
	VES07303	200 gal	Interpolated
	VES07072	240 gal	UUT 30a
Dew point monitor / probe desiccant [POWEREX] Note: material of probe housing is stainless steel	PDPM1001AJ	N/A	UUT10b, UUT12b
	PDMP2001AJ	N/A	Same As [1]
Carbon monoxide monitor/ sensor [ENMET] Note: material is FRP housing with circuit board and integrated sensor	03481-005	N/A	UUT10b, UUT12b
Tank drain [JORC] Note: material is cast brass body with integrated solenoid valve and DIN connector-mounted solid state timer	2523	Timer drain	UUT10b
Tank drain [PARKER-DOMNICK HUNTER / ZANDER] Note: material is die cast body and molded polymer housing	ED3004N	No-loss drain	UUT15b

1. Extrapolated dew point monitor is the same as tested in UUT10b and UUT12b (software change only).

Special Seismic Certification
Table 11 - Certified Subcomponents (Continued) - Stacked Units, Medical and Laboratory Scroll
(Systems Containing 2, 3 and 5 HP Pumps and Systems Containing 7.5 and 10 HP Pumps, Rigid Base Mount)

DCL DYNAMIC CERTIFICATION LABORATORIES,LLC

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air

Subcomponent [MFR]	Model [1]	Dimensions (in)			Weight (lb.)	Unit
		Length	Width	Height		
Desiccant dryers [POWEREX] Note: material is powder coated welded carbon steel tanks; powder coated welded carbon steel mounting frame, or powder coated carbon steel mounting platform.	PMD10	17	28	53	200	Extrapolated
	PMD17	17	28	53	200	Extrapolated
	PMD30	17	28	64	330	Extrapolated
	PMD35	17	28	64	330	Extrapolated
	PMD45	17	28	72	360	UUT10b
	PMD55	17	28	72	360	Interpolated
	PMD60	35	28	67	660	Interpolated
	PMD71	35	28	67	660	Interpolated
	PMD90	35	28	76	720	Interpolated
	PMD110	35	28	76	720	Interpolated
	PMD111	35	28	76	720	UUT 4b [1]
Desiccant dryers [POWEREX] Note: material is powder coated welded carbon steel tanks; powder coated welded carbon steel mounting frame, or powder coated carbon steel mounting platform.	PLD10	17	28	53	200	Extrapolated
	PLD17	17	28	53	200	Extrapolated
	PLD30	17	28	64	330	Extrapolated
	PLD35	17	28	64	330	Extrapolated
	PLD45	17	28	72	360	UUT10b
	PLD55	17	28	72	360	Interpolated
	PLD60	35	28	67	660	Interpolated
	PLD71	35	28	67	660	Interpolated
	PLD90	35	28	76	720	Interpolated
	PLD111	35	28	76	720	UUT 4b [1]
Desiccant dryers [NANO PSI] Note: material is aluminum extruded towers; powder coated carbon steel mounting frame, or powder coated carbon steel mounting platform.	NDL110	17	13	48	172	Extrapolated
	NDL120	17	13	52	209	Extrapolated
	NDL130	17	13	56	262	UUT11bii
	NDL2110	25	12	47	366	UUT 9 [2]
Desiccant dryers [Trident] Note: material is aluminum extruded towers; powder coated carbon steel mounting frame, or powder coated carbon steel mounting platform.	PD204A	6	13	41	50	UUT 32
	PD205A	8	15	38	65	Interpolated
	PD206A	8	15	48	90	Interpolated
	PD207A	12	19	40	110	Interpolated
	PD208A	12	21	47	135	Interpolated
	PD209A	15	17	63	235	Interpolated
	PD210A	15	17	75	265	Interpolated
	PD211A	23	18	64	470	Interpolated
	PD212A	23	18	76	525	Interpolated
	PD213A	30	18	64	565	UUT 33i

1. UUT 4b, which serves as the upper bookend, was tested on neoprene pads
2. UUT 9, which serves as the upper bookend, was tested on neoprene pads

Special Seismic Certification

Table 12 - Certified Subcomponents - Rotary Tooth Oil Free Medical/Lab Air Systems, Rigid Base Mount

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air

Subcomponent [MFR]	Model	Notes	Material	Unit
Pump [POWEREX]	PCCMD50074R2AJ	50 HP	Cast iron, w/ flange mounted motor. welded steel platform, bolted framing and sheet metal.	UUT12a
Motor [WEG]	03736ET3Y200L-W22	380/460V, 50 HP	Cast iron construction, flange mount	UUT12a
Aftercooler [POWEREX]	Custom	50 HP aftercooler, intercooler and oil cooler integrated into compressor package design	Aluminum	UUT12a
Intake filter elements [MANN]	45 402 92 960	PCC and PCCMD	Molded polymer	UUT12a
Check valves [POWEREX]	Custom	Check valve integrated into PCC compressor unit	Cast Iron	UUT12a
Vertical tanks [MANCHESTER TANK]	AR063700AV	400 gal	Welded carbon steel (ASME, 165 PSIG)	UUT12c
	AR660000AV	660 gal	Welded carbon steel (ASME, 165 PSIG)	UUT15b
Controllers [1] [POWEREX]	PXTM215X1AJ	208-230V / 460V, Duplex 50 HP	Painted carbon steel electrical cabinet, NEMA 12	Extrapolated
	PXTM218AXAJ	208-230V / 460V, Duplex 50 HP	Painted carbon steel electrical cabinet, NEMA 12	UUT14b
	PXTM315X1AJ	208-230V / 460V, Triplex 50 HP	Painted carbon steel electrical cabinet, NEMA 12	Interpolated
	PXTM415X1AJ	208-230V / 460V, Quadruplex 50 HP	Painted carbon steel electrical cabinet, NEMA 12	UUT12b
Tank drain [JORC]	3623-UL, 3622	No-loss drain; Smart Guard or Smart Guard Mini	Die cast body and molded polymer housing	UUT12c, UUT15b
Desiccant dryers [NANO PSI]	NDL2120	16"Lx25"Wx61"H, 450 lb.	Aluminum extruded towers; powder coated carbon steel mounting frame	UUT12b
	NDL2130	16"Lx25"Wx75"H, 750 lb.		Interpolated
	NDL3130	16"Lx31"Wx75"H, 800 lb.		Interpolated
	NDL4130	16"Lx38"Wx75"H, 1160 lb.		UUT12b

1. Controllers are universal voltage design. Each controller operates compressors of any voltage (208-230V / 460V) and requires 120 VAC input.

Special Seismic Certification
Table 13 - Certified Subcomponents - Scroll Enclosed (SE) Medical/Laboratory Air Systems, Rigid Base Mount

DCL Project Number:	32579-2201
Manufacturer:	Powerex
Product Line:	Medical Air and Laboratory Air

Subcomponent [MFR]	Model	Notes	Unit
Scroll pumps [POWEREX] Note: material is die cast aluminum. Pump motor assemblies mounted in welded and bolted steel frame with enclosing sheet metal Note: Pumps are belt driven	SED1007	5 Hp (2)	Extrapolated
	SET1507	5 Hp (3)	Extrapolated
	SEQ2007	5 Hp (4)	UUT14a
	SEH3007	5 Hp (6)	Interpolated
	SEO4007	5 Hp (8)	Interpolated
	SED15B7	7.5 Hp (2)	Interpolated
	SED20B7	10 Hp (2)	Interpolated
	SET2257	7.5 Hp (3)	Interpolated
	SET30B7	10 Hp (3)	Interpolated
	SEQ40B7	10 Hp (4)	Interpolated
	SEP50B7	10 Hp (5)	Interpolated
	SEH45B7	7.5 Hp (6)	Interpolated
	SEH60B7	10 Hp (6)	UUT15a
Motors [WEG] Note: material is TEFC design, carbon steel shell w/ welded foot	00518ET3E184T-SRT	208-230V / 460V, 5 Hp	UUT14a
	00736ET3E213T-S	208-230V / 460V, 7.5 Hp	Interpolated
	01036ET3E215T-S	208-230V / 460V, 10 Hp	UUT15a
Check valve [POWEREX] Note: material is aluminum (anodized body), in-line design	Custom	Check valve for 5,7.5, and 10 HP scroll compressors in enclosures	UUT14a, UUT15a
Controllers [POWEREX] Note: material is painted carbon steel electrical cabinet Note: lower case "x" in model number is 4 for 460V, 3 for 230V, and 2 for 208V	HMI_PXMI	NEMA 12 enclosure: Human Machine Interface: Touchscreen	Extrapolated [1]
	PBMI_PXMI	NEMA 12 enclosure: Powerex Building Management Integrator: HMI panel w/ additional communications card	UUT10a, UUT11aii

1. Extrapolated controller is a depopulated version of that tested in UUT10a and UUT11aii

Continued on Next Page

Special Seismic Certification
Table 13 - Certified Subcomponents (Continued) - Scroll Enclosed (SE) Medical/ Laboratory Air Systems, Rigid Base Mount

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air

Subcomponent [MFR]	Model	Notes	Unit
Controllers [POWEREX] Note: material is painted carbon steel electrical cabinet Note: lower case "x" in model number is 4 for 460V, 3 for 230V, and 2 for 208V	PXEM218AxAJ	NEMA 12 enclosure, 10 HP duplex	UUT14b
	PXEM218FxAJ	NEMA 12 enclosure, 15 HP duplex	Interpolated
	PXEM218GxAJ	NEMA 12 enclosure, 20 HP duplex	Interpolated
	PXEM218IxAJ	NEMA 12 enclosure, 30 HP duplex	Interpolated
	PXEM218KxAJ	NEMA 12 enclosure, 40 HP duplex	Interpolated
	PXEM215XxAJ	NEMA 12 enclosure, 22.5-60 HP duplex	Interpolated
	PXEM318AxAJ	NEMA 12 enclosure, 10 HP triplex	Interpolated
	PXEM318FxAJ	NEMA 12 enclosure, 15 HP triplex	Interpolated
	PXEM318GxAJ	NEMA 12 enclosure, 20 HP triplex	Interpolated
	PXEM318IxAJ	NEMA 12 enclosure, 30 HP triplex	Interpolated
	PXEM318KxAJ	NEMA 12 enclosure, 40 HP triplex	Interpolated
	PXEM315XxAJ	NEMA 12 enclosure, 22.5-60 HP triplex	Interpolated
	PXEM418AxAJ	NEMA 12 enclosure, 10 HP quadruplex	Interpolated
	PXEM418FxAJ	NEMA 12 enclosure, 15 HP quadruplex	Interpolated
	PXEM418GxAJ	NEMA 12 enclosure, 20 HP quadruplex	Interpolated
	PXEM418IxAJ	NEMA 12 enclosure, 30 HP quadruplex	Interpolated
	PXEM418KxAJ	NEMA 12 enclosure, 40 HP quadruplex	UUT14b
	PXEM415XxAJ	NEMA 12 enclosure, 22.5-60 HP quadruplex	UUT12b
Vertical tanks [CAMPBELL HAUSFELD, ALSO BRANDED TWIN LAKES] Note: material is welded carbon steel	AR027400ST	120 gal	UUT10b
	AR051201AJ	200 gal	Interpolated
	AR051301AJ	240 gal	UUT11bii
Vertical tanks [MANCHESTER TANK]	AR063700AV	400 gal	UUT12c
	AR660000AV	660 gal	UUT15b
Vertical tanks [Morganton] Note: material is welded carbon steel	VES07285	80 gal	UUT30a, 31a
	VES04865	120 gal	Interpolated
	VES04767	120 gal	UUT31a
	VES07303	200 gal	Interpolated
	VES07072	240 gal	UUT30a

Special Seismic Certification

Table 13 - Certified Subcomponents (Continued) - Scroll Enclosed (SE) Medical/Laboratory Air Systems, Rigid Base Mount

DCL DYNAMIC CERTIFICATION LABORATORIES,LLC

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air

Subcomponent [MFR]	Model	Dimensions (in)			Weight (lb.)	Unit
		Length	Width	Height		
Desiccant dryers [POWEREX] Note: material is powder coated welded carbon steel tanks; powder coated welded carbon steel mounting frame, or powder coated carbon steel mounting platform.	PMD10	17	28	53	200	Extrapolated
	PMD17	17	28	53	200	Extrapolated
	PMD30	17	28	64	330	Extrapolated
	PMD35	17	28	64	330	Extrapolated
	PMD45	17	28	72	360	UUT10b
	PMD55	17	28	72	360	Interpolated
	PMD60	35	28	67	660	Interpolated
	PMD71	35	28	67	660	Interpolated
	PMD90	35	28	76	720	Interpolated
	PMD110	35	28	76	720	Interpolated
	PMD111	35	28	76	720	UUT 4b[1]
Desiccant dryers [POWEREX] Note: material is powder coated welded carbon steel tanks; powder coated welded carbon steel mounting frame, or powder coated carbon steel mounting platform.	PLD10	17	28	53	200	Extrapolated
	PLD17	17	28	53	200	Extrapolated
	PLD30	17	28	64	330	Extrapolated
	PLD35	17	28	64	330	Extrapolated
	PLD45	17	28	72	360	UUT10b
	PLD55	17	28	72	360	Interpolated
	PLD60	35	28	67	660	Interpolated
	PLD71	35	28	67	660	Interpolated
	PLD90	35	28	76	720	Interpolated
	PLD111	35	28	76	720	UUT 4b[1]
Desiccant dryers [NANO PSI] Note: material is aluminum extruded towers; powder coated carbon steel mounting frame, or powder coated carbon steel mounting platform.	NDL110	17	13	48	172	Extrapolated
	NDL120	17	13	52	209	Extrapolated
	NDL130	17	13	56	262	UUT11bii
	NDL2110	25	12	47	366	Interpolated
	NDL2120	16	25	61	450	UUT12b
	NDL2130	16	25	75	750	Interpolated
	NDL3130	16	31	75	800	Interpolated
	NDL4130	16	38	75	1160	UUT12b

1. UUT 4b, which serves as the upper bookend, was tested on neoprene pads (see Table 11)

Special Seismic Certification
Table 14 - Certified Subcomponents - Medical Gas Automatic Changeover Manifolds, Rigid Wall Mount

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air

Model	Manufacturer	Description	Material	Unit
PT	Tri-Tech Medical	Standard Enclosure	Powder-coated carbon steel, NEMA 1	UUT28
PLU	Tri-Tech Medical	Weatherproof Enclosure	Powder-coated carbon steel, NEMA 1	UUT29
PX-68-0003R	Victor	Primary regulator	Brass	UUT28
PX-68-0017R	Harris	Line regulator standard flow 5-125 psig	Brass	UUT28
PX-68-0004R	Harris	Line regulator standard flow 5-125 psig	Brass	UUT29
PX-68-0002R	Victor	Line regulator high flow 5-125 psig	Brass	UUT28, UUT29
PX-68-0001R	Victor	Line regulator high flow 10-200 psig	Brass	UUT28, UUT29
PX-35-1007R	IDC	Circuit board	Phenolic and electrical components	UUT28
PX-35-1003R	IDC	Circuit board	Phenolic and electrical components	Interpolated
PX-35-1004R	IDC	Circuit board	Phenolic and electrical components	UUT29
PX-35-2013R	Hughes Peters	Power supply	Various including copper and stainless steel	UUT28, UUT29
PX-14-3001R	Measurement Specialties	0-2500 psig transducer w/ 3' cable for left or right banks	Stainless steel housing, internal electronics	UUT29
PX-14-3024	Tri-Tech Medical	0-250 psig transducer w/ 1.5' cable N2	Aluminum housing, internal electronics	UUT29
PX-14-3025	Tri-Tech Medical	0-100 psig transducer w/ 1.5' cable Oxy	Aluminum housing, internal electronics	UUT29
PX-14-3026	Tri-Tech Medical	0-100 psig transducer w/ 1.5' cable Med Air	Aluminum housing, internal electronics	UUT29
PX-14-3027	Tri-Tech Medical	0-100 psig transducer w/ 1.5' cable N20	Aluminum housing, internal electronics	UUT29
PX-14-3028	Tri-Tech Medical	0-100 psig transducer w/ 1.5' cable CO2	Aluminum housing, internal electronics	UUT29
PX-14-3001-12R	Tri-Tech Medical	0-2500 psig transducer w/ 12' cable for emergency reserve low	Stainless steel housing, internal electronics	UUT29
PX-14-3001-5R	Tri-Tech Medical	0-2500 psig transducer w/ 15' cable for right bank low	Stainless steel housing, internal electronics	UUT29
PX-14-3002	Measurement Specialties	0-500 psig transducer w/ 3' cable for left or right banks and emergency reserve in use	Stainless steel housing, internal electronics	UUT29
PX-14-2013	United Electric	Left bank pressure switch	Plastic, stainless steel & brass	UUT28
PX-14-2014	United Electric	Right bank pressure switch	Plastic, stainless steel & brass	UUT28
PX-48-1007R	TTM	Solenoid Valve	Brass	UUT28
PX-48-1008R	TTM	Left Solenoid Valve for LLU/PLU	Brass	UUT29
PX-48-1009R	TTM	Right Solenoid Valve for LLU/PLU	Brass	UUT29
PX-17-4003R	TTM	Intermediate check valve 1/2" NPT male x 1/2" OD tube	Brass	UUT28, UUT29
PX-14-1018	WIKA	0-4000 psig 1-1/2" x 1/8" M NPT center back gage	Plastic & brass	UUT28, UUT29
PX-14-1016	WIKA	0-400 psig 2" x 1/4" M NPT bottom port gage	Plastic & brass	UUT28, UUT29
PX-14-1017	WIKA	0-400 psig 1-1/2" x 1/8" M NPT center back gage	Plastic & brass	UUT28, UUT29
PX-14-1009	WIKA	0-300 psig 1-1/2" x 1/8" M NPT center back gage	Plastic & brass	UUT28, UUT29
PX-14-1008	WIKA	0-100 psig 1-1/2" x 1/8" M NPT center back gage	Plastic & brass	UUT28, UUT29
PX-RV-22-075	Rego	75 psig x 1/2" M NPT inlet w/ pipe away adapt	Brass	UUT28, UUT29
PX-RV-22-150	Rego	150 psig x 1/2" M NPT inlet w/ pipe away adapt	Brass	UUT28, UUT29
PX-RV-22-250	Rego	250 psig x 1/2" M NPT inlet w/ pipe away adapt	Brass	UUT28, UUT29
PX-RV-11-400	Rego	400 psig x 1/4" M NPT inlet w/ pipe away adapt	Brass	UUT28, UUT29
PX-17-0169	Fairview Fittings	Union 3 piece 1/2" M NPT x 1/2" M NPT 1" 11-1/2 NPS	Brass	UUT28, UUT29

Special Seismic Certification
Table 15 - Tested Units

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Air and Laboratory Air

Type	Model number	Total number of pumps	Vertically stacked pumps or layers	Horizontally arrayed pumps	Dimensions (inches)			Weight (lb.)	Mounting	Unit
					Length	Width	Height			
Stacked Units 1. Note: Indicated length and/or height are combined overall dimensions for the individual unit skids	MSD02034L5	2	2	1	50.0	31.0	78.0	1,040	Flexible base (neoprene), w/ internal isolation	UUT1
	LSD02034L5	2	2	1	74.0	32.0	62.0	1,090	Flexible base (neoprene), w/ internal isolation	UUT2
	MSQ05044P5	4	4	1	77.0	32.0	77.0	1,870	Flexible base (neoprene), w/ internal isolation	UUT3
	MSD15064L5 (controller/pump skid)	6	2	3	84 [1]	34.0	96 [1]	1,510	Flexible base (neoprene), w/ internal isolation	UUT4a
	MSD15064L5 (receiver/dryer skid)	N/A	N/A	N/A		32.0		1,310	Flexible base (neoprene)	UUT4b
	MSQ15064L5 (controller/pump skid)	12	3	4	108 [2]	34.0	96 [2]	2,950	Flexible base (neoprene), w/ internal isolation	UUT7
	MSQ15064L5 (receiver/dryer skid)	N/A	N/A	N/A		32.0		1,310	Flexible base (neoprene)	UUT5b
	Dryer skid	N/A	N/A	N/A	98.0	32.0	79.0	1,060	Flexible base (neoprene)	UUT6
	MSD15B44K5 (controller/pump skid)	4	4	1	61.0	32.5	78.0	1,550	Rigid base, w/ internal isolation	UUT10a
	MSD15B44K5 (receiver/dryer skid)	N/A	N/A	N/A	61.0	33.5	76.0	840	Rigid base	UUT10b
	MSQ20B62P5 (controller/pump skid)	8	7	2	79.0	33.5 [3]	78.0	3,120	Rigid base, w/ internal isolation	UUT11aii
	MSQ20B62P5 (receiver/dryer skid)	N/A	N/A	N/A	79.0	43.0 [3]	93.0	1,680	Rigid base	UUT11bii
	Dryer skid (NDL110 and NDL2110 dryers)	N/A	N/A	N/A	55.0	31.5	67.0	800	Flexible base (neoprene)	UUT9
	MSD02A3	2	2	N/A	50.5	30.5	75.0	1,060	Rigid base, w/ internal isolation	UUT 32
	MSP15A6 (receiver/dryer/controller skid)	N/A	N/A	N/A	86.0	34.0	91.0	2,110	Rigid base	UUT 33i
	MSP15A6 (pump skid)	15	2,3	3	86.0	34.0	80.0	4,030	Rigid base, w/ internal isolation	UUT 33ii
Rotary Tooth Oil Free Medical Air Systems	MDRC05074FA5 (pump skid)	1	1	1	77.5	39.4	65.2	2,930	Rigid base, w/ internal isolation	UUT12a
	MDRC05074FA5 (dryer/controller skid)	N/A	N/A	N/A	32.0	99.2	80.3	1,760	Rigid base	UUT12b
	MDRC05074FA5 (400 gallon receiver tank)	N/A	N/A	N/A	38.2	47.2	101.5	640	Rigid base	UUT12c
Scroll Enclosed Compressed Air Systems Note: compressor enclosures are structurally independent and flexibly connected. Only one compressor enclosure tested in each UUT14a and UUT15a.	MSED200425 (pump skid)	4	4	1	46.4	35.2	61.2	1,030	Rigid base, w/ internal isolation	UUT14a
	MSED200425 (controller skid); 2 controllers tested: PXEM218G2AJ and PXEM418G2AJ	N/A	N/A	N/A	55.0	39.8	79.4	560	Rigid base	UUT14b
	LSEQ60B845 (pump skid)	6	3,3	2	51.0	73.8	61.2	2,740	Rigid base, w/ internal isolation	UUT15a
	LSEQ60B845 (660 gallon receiver tank)	N/A	N/A	N/A	42.0	42.0	126.5	1,500	Rigid base	UUT15b
Miscellaneous	Platform base, 80 gallon vertical tank, 240 gallon vertical tank	N/A	N/A	N/A	33.5	60.0	94.0	1,010	Rigid base	UUT 30a
	Platform base, 80 gallon vertical tank, 240 gallon vertical tank	N/A	N/A	N/A	33.5	60.0	94.0	1,010	Flexible base (neoprene)	UUT 30b
	Ladder Frame base, 80 gallon vertical tank, 120 gallon vertical tank	N/A	N/A	N/A	32.0	55.0	75.0	630	Rigid base	UUT 31a
	Ladder Frame base, 80 gallon vertical tank, 120 gallon vertical tank	N/A	N/A	N/A	32.0	55.0	75.0	630	Flexible base (neoprene)	UUT 31b

1. Length and height are combined dimensions of UUT4a and UUT4b.
2. Length and height are combined dimensions of UUT7 and UUT5b.
3. Overall width dimension for UUT11aii/bii is 90", which includes an 18" separation between the two equipment skids.

Special Seismic Certification
Table 15 - Tested Units (Continued)

DCL Project Number: 32579-2201
Manufacturer: Powerex
Product Line: Medical Gas Automatic Changeover Manifolds

Type	Powerex Model	Tri-Tech Medical Model	Control	Gas Container Type	Cabinet	Delivery Pressure	Flow	Dimensions (inches)			Weight (lb.)	Mounting	Unit
								Depth	Width	Height			
Medical Gas Automatic Changeover Manifolds	PX-NPCU12AI1L	NPCU12AI1L	Analog	C x C	Standard	50 PSIG	L	9	15	25	66	Rigid wall	UUT28
	PX-LLU22NT3H	LLU22NT3H	Digital	L x L	Weatherproof	170 PSIG	H	11	19	27	70	Rigid wall	UUT29

C x C = Cylinder x Cylinder, and L x L = Liquid x Liquid

Flow: L = Standard Flow; H = High Flow

UUT1

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSD02034L5

Product Construction Summary: Powder coated structural steel skid and frame. Unit is internally isolated.

Options / Component Summary:

2HP scroll pump with WEG motor, 80 gallon vertical receiver tank, dew point monitor, CO monitor, BASIC_PSM controller in NEMA 12 enclosure, timer drain, aftercooler, intake filter element, check valve, and PMD07T desiccant air dryer.

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,040	UUT1	50	31	78	6.3	5.8	24.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted to the shake table interface frame through the skid using four Airloc model 32 neoprene pads and four 3/8"-diameter, Grade 5 bolts and washers spaced at approximately 30'' widthwise and 48'' lengthwise on center.

UUT2

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: LSD02034L5

Product Construction Summary: Powder coated structural steel skid and frame. Unit is internally isolated.

Options / Component Summary:

2HP scroll pump with WEG motor, 80 gallon vertical receiver tank, dew point monitor, CO monitor, PBMI_PXMI controller in NEMA 12 enclosure, no-loss drain, aftercooler, intake filter element, check valve, and KMT3 desiccant air dryer.

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,090	UUT2	74	32	62	8.8	8.0	13.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted to the shake table interface frame through the skid using four Airloc model 32 neoprene pads and four 1/2"-diameter, Grade 5 bolts and washers spaced at approximately 31'' widthwise and 72'' lengthwise on center.

UUT3

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSQ05044P5

Product Construction Summary: Powder coated structural steel skid and frame. Unit is internally isolated.

Options / Component Summary:

5HP scroll pump with WEG motor, 120 gallon vertical receiver tank, dew point monitor, CO monitor, PBMI_PXMI controller in NEMA 12 enclosure, timer drain, aftercooler, intake filter element, check valve, and PMD30 desiccant air dryer.

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,870	UUT3	77	32	77	6.5	5.0	14.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted to the shake table interface frame through the skid using four Airloc model 32 neoprene pads and four 1/2"-diameter, Grade 5 bolts and washers spaced at approximately 31'' widthwise and 75'' lengthwise on center.

UUT4a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSD15064L5 (controller/pump skid)

Product Construction Summary: Powder coated structural steel skid and frame. Unit is internally isolated.

Options / Component Summary:

5HP scroll pump with WEG motor, dew point monitor, CO monitor, PBMI_PXMI controller in NEMA 12 enclosure, timer drain, aftercooler, intake filter element and check valve.

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,510	UUT4a	84*	34	96*	6.8	5.5	12.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

*Note: Length and height are combined dimensions for UUT4a and UUT4b.

Unit Mounting Description:

The unit was base mounted to the shake table interface frame through the skid using four Airloc model 32 neoprene pads and four 1/2"-diameter, Grade 5 bolts and washers spaced approximately 32'' widthwise and 74'' lengthwise on center.

UUT4b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSD15064L5 (receiver/dryer skid)

Product Construction Summary: Powder coated structural steel skid and frame

Options / Component Summary:

240 gallon vertical receiver tank and PMD111 desiccant air dryer.

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,310	UUT4b	84*	32	96*	5.5	5.0	22.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

*Note: Length and height are combined dimensions for UUT4a and UUT4b.

Unit Mounting Description:

The unit was base mounted to the shake table interface frame through the skid using four Airloc model 32 neoprene pads and four 1/2"-diameter, Grade 5 bolts and washers spaced approximately 30'' widthwise and 74'' lengthwise on center.

UUT5b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSQ15064L5 (receiver/dryer skid)

Product Construction Summary: Powder coated structural steel skid and frame

Options / Component Summary:

240 gallon vertical receiver tank and DME050RX desiccant air dryer.

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,310	UUT5b	108*	32	96*	6.3	5.5	17.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

*Note: Length and height are combined dimensions for UUT7 and UUT5b.

Unit Mounting Description:

The unit was base mounted to the shake table interface frame through the skid using four Airloc model 32 neoprene pads and four 1/2"-diameter, Grade 5 bolts and washers spaced approximately 30'' widthwise and 78'' lengthwise on center.

UUT6

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: Desiccant air dryers KMT4, DME015, DME060 and DME080RX

Product Construction Summary: Powder coated structural steel skid and frame

Options / Component Summary: KMT4, DME015, DME060 and DME080RX desiccant air dryers

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,060	UUT6	98	32	79	7.5	5.0	8.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted to the shake table interface frame using four Airloc model 32 neoprene pads and four 1/2"-diameter, Grade 5 bolts and washers spaced approximately 30'' widthwise and 95'' lengthwise on center.

UUT7

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSQ15064L5 (controller/pump skid)

Product Construction Summary: Powder coated structural steel skid and frame. Unit is internally isolated.

Options / Component Summary:

5HP scroll pumps with WEG motors, dew point monitor, CO monitor, PBMI_PXMI controller in NEMA 12 enclosure, timer drain, aftercooler, intake filter element and check valve.

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
2,950	UUT7	108*	34	96*	4.5	4.0	4.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

*Note: Length and height are combined dimensions for UUT7 and UUT5b.

Unit Mounting Description:

The unit was base mounted to the shake table interface frame through the skid using four Airloc model 32 neoprene pads and four 1/2"-diameter, Grade 5 bolts and washers spaced approximately 32'' widthwise and 95'' lengthwise on center.

UUT9

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: Desiccant air dryers NDL110 and NDL2110

Product Construction Summary:

Powder coated structural steel skid and frame

Options / Component Summary: NDL110 and NDL2110 desiccant air dryers.

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
800	UUT9	55.0	31.5	67.0	6.5	6.5	19.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted to the shake table interface frame through the skid using four Airloc model 32 neoprene pads and four 1/2"-diameter, Grade 5 bolts and washers spaced at approximately 30'' widthwise and 53'' lengthwise on center.

UUT10a,b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSD15B44K5 controller/pump skid (UUT10a) and receiver/dryer skid (UUT10b)

Product Construction Summary: Powder coated structural steel skid and frame. UUT10a is internally isolated.

Options / Component Summary: 7.5 HP scroll pumps with WEG motors, 120 gallon vertical receiver tank, C0 monitor, BASIC_PSM controller, aftercooler, intake filter element, PMD45 desiccant air dryer

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,550	UUT10a	61.0	32.5	78.0	6.5	4.5	24.0
840	UUT10b	61.0	33.5	76.0	4.0	6.0	23.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Each skid was base mounted to the shake table interface frame with four 1/2"-diameter, Grade 5 bolts and washers spaced at approximately 30.5'' widthwise and 57.5'' lengthwise on center for both skids.

UUT11aii,bii

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSQ20B62P5 controller/pump skid (UUT11aii) and receiver/dryer skid (UUT11bii)

Product Construction Summary: Powder coated structural steel skid and frame. UUT11aii is internally isolated.

Options / Component Summary: 10 HP scroll pumps with WEG motors, 240 gallon vertical receiver tank, C0 monitor, PBMI_PXMI controller, aftercooler, intake filter element, check valve, NDL130 desiccant air dryer

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
3,120	UUT11aii	79.0	33.5	78.0	3.0	3.0	7.5
1,680	UUT11bii	79.0	43.0	93.0	4.5	4.0	17.0
4,800	Total	79.0	90.0 *	93.0	NA	NA	NA

*Overall width dimension that includes an 18" separation between the two equipment skids.

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Each skid was base mounted to the shake table interface frame with four 1/2"-diameter, Grade 5 bolts and washers spaced at approximately 31' widthwise and 74'' lengthwise on center for UUT 11aii and 42'' widthwise and 74'' lengthwise on center for UUT 11bii.

UUT12a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MDRC05074FA5 (pump skid)

Product Construction Summary: Painted carbon steel enclosure. Unit is internally isolated.

Options / Component Summary: 50 HP pumps with WEG motors, aftercooler, intake filter element and check valve

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
2,930	UUT12a	77.5	39.4	65.2	5.5	6.0	28.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted with four 7/16"-diameter Grade 8 bolts and washers, and four 3"x3"x1/4" galvanized finish low carbon steel washers spaced approximately 38'' widthwise and 34'' lengthwise on center. Pre-test retrofit: the side panels were bolted to the enclosure frame with an additional four 5/16-inch diameter Grade 5 bolts, nuts, and washers each.

UUT12b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MDRC05074FA5 (dryer/controller skid)

Product Construction Summary: Powder coated structural steel skid and frame

Options / Component Summary: Quadruplex controller and NDL2120 and NDL4130 desiccant air dryers

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,760	UUT12b	32.0	99.2	80.3	5.0	10.5	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

UUT12b Front View

UUT12b Side View

The unit was base mounted with four 1/2"-diameter Grade 5 bolts and washers spaced approximately 96'' widthwise and 30'' lengthwise on center., and four 3"x3"x3/16" galvanized finish low carbon steel washers.

UUT12c

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MDRC05074FA5 (400 gallon receiver tank)

Product Construction Summary: Painted carbon steel

Options / Component Summary: 400 gallon vertical 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 and attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
640	UUT12c	38.2	47.2	101.5	14.0	14.5	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted with four 1/2"-diameter Grade 8 bolts spaced approximately 19'' widthwise and 19'' lengthwise on center, each with a 1/2" full size Grade 8 washer, 5/8" full size Grade 8 washer, and 2"x2"x3/16" low carbon steel black oxide finish plate washer.

UUT14a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSED200425 (pump skid)

Product Construction Summary: Painted carbon steel enclosure. Unit is internally isolated.

Options / Component Summary: 5 HP pumps with WEG motors, check valves

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,030	UUT14a	46.4	35.2	61.2	4.5	5.5	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted with four 1/2"-diameter Grade 5 bolts and washers spaced approximately 28'' widthwise and 33'' lengthwise on center, and four 1 1/2"x1 1/2"x1/4" galvanized finish low carbon steel washers.

UUT14b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSED200425 (controller skid); 2 controllers tested: PXEM218G2AJ and PXEM418G2AJ

Product Construction Summary: Powder coated structural steel skid

Options / Component Summary: Custom skid with duplex and quadruplex PXE controllers

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
560	UUT14b	55.0	39.8	79.4	11.0	9.5	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

UUT14b - duplex panel

UUT14b - quadruplex panel

The unit was base mounted with four 1/2"-diameter Grade 5 bolts and washers spaced approximately 30'' widthwise and 52'' lengthwise on center., and four 1 1/4"x1 1/4" x 3/8" malleable iron bevel washers, plain finish. Each control panel was braced to the skid with one piece of B-Line B45 14 gage galvanized carbon steel channel, attached with B-Line B230 brackets (one bracket per channel end) and two Grade 2, 1/2"-diameter bolts and nuts with flat washers per bracket.

UUT15a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: LSEQ60B845 (pump skid)

Product Construction Summary: Painted carbon steel enclosure. Unit is internally isolated.

Options / Component Summary: 10 HP pumps with WEG motors, check valves

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

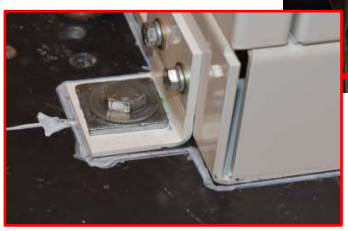
UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
2,740	UUT15a	51.0	73.8	61.2	5.0	6.0	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:



The unit was base mounted with four 1/2"-diameter Grade 5 bolts and washers spaced approximately 72'' widthwise and 37'' lengthwise on center, and four 1 1/2"x1 1/2"x1/4" galvanized finish low carbon steel washers. Pre-test retrofit: the top diaphragm corners were welded together, and the side panels were bolted to the frame with an additional four 5/16-inch diameter Grade 5 bolts, nuts and washers each.

UUT15b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: LSEQ60B845 (660 gallon receiver tank)

Product Construction Summary: Carbon steel

Options / Component Summary: 660 gallon vertical 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 and attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,500	UUT15b	42.0	42.0	126.5	14.5	9.5	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was base mounted with four 1/2"-diameter Grade 8 bolts and washers spaced approximately 20'' widthwise and 20'' lengthwise on center, and four 3"x3"x3/16" galvanized finish low carbon steel washers.

UUT28

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Gas Automatic Changeover Manifolds

Model Number: PX-NPCU12AI1L

Product Construction Summary: Powder coated carbon steel enclosure

Options / Component Summary: Regulators, circuit boards, power supply, transducers, switches, valves, gages and pipe adapters

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
66	UUT28	9.0	15.0	25.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was mounted to the shake table wall fixture with a combination of two manufacturer-provided channeled mounting brackets mounted near the top of the enclosure back plate, and two 3/8-inch diameter Grade 5 bolts spaced approximately 20'' on center installed near the middle of the enclosure back plate. For the two mounting brackets, one was attached to the back plate of the cabinet with two 5/16-inch diameter Grade 5 bolts, and one was attached to the shake table interface frame with two 3/8-inch diameter Grade 5 bolts, and ¼-inch thick plate washers as a backing between the wall bracket and the shake table interface fixture. The mounting locations were spaced 11'' in the vertical direction.

UUT29

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Gas Automatic Changeover Manifolds

Model Number: PX-LLU22NT3H

Product Construction Summary: Powder coated carbon steel enclosure

Options / Component Summary: Regulators, circuit boards, power supply, transducers, switches, valves, gages and pipe adapters

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
70	UUT29	11.0	19.0	27.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

The unit was mounted to the shake table wall fixture with a combination of two manufacturer-provided channeled mounting brackets mounted near the top of the enclosure back plate, and two 3/8-inch diameter Grade 5 bolts spaced approximately 20'' on center installed near the middle of the enclosure back plate. For the two mounting brackets, one was attached to the back plate of the cabinet with two 5/16-inch diameter Grade 5 bolts, and one was attached to the shake table interface frame with two 3/8-inch diameter Grade 5 bolts, and ¼-inch thick plate washers as a backing between the wall bracket and the shake table interface fixture. The mounting locations were spaced 11'' in the vertical direction.

UUT30a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: VES07285 (80gal tank) , VES07072 (240gal tank)

Product Construction Summary: Powder coated structural steel skid

Options / Component Summary: Platform frame mounted tanks

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,010	UUT30a	33.5	60.0	94.0	4.0	5.5	31.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

UUT 30a was base mounted with four 1/2'' diameter Grade 5 bolts and washers spaced approximately 50'' widthwise and 31'' lengthwise on center.

UUT30b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: VES07285 (80gal tank) , VES07072 (240gal tank)

Product Construction Summary: Powder coated structural steel skid

Options / Component Summary: Platform frame mounted tanks

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,010	UUT30b	33.5	60.0	94.0	3.0	3.5	10.5

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

UUT 30b was base mounted with four 1/2'' diameter Grade 5 bolts and washers spaced approximately 50'' widthwise and 31'' lengthwise on center through an Airloc model 32 neprene pad.

UUT31a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: VES07285 (80gal tank) , VES04767 (120gal tank)

Product Construction Summary: Powder coated structural steel skid

Options / Component Summary: Ladder frame mounted tanks

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
630	UUT31a	32	55	75	8.5	11.5	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

UUT 31a was base mounted with four 1/2'' diameter Grade 5 bolts and washers spaced approximately 53'' widthwise and 30'' lengthwise on center and four 1 1/4"x1 1/4" x 3/8" malleable iron bevel washers.

UUT31b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: VES07285 (80gal tank) , VES04767 (120gal tank)

Product Construction Summary: Powder coated structural steel skid

Options / Component Summary: Ladder frame mounted tanks

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
630	UUT31b	32	55	75	8.0	9.5	16.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

UUT 31b was base mounted with four 1/2'' diameter Grade 5 bolts and washers spaced approximately 53'' widthwise and 30'' lengthwise on center and four 1 1/4"x1 1/4" x 3/8" malleable iron bevel washers through an Airloc model 32 neprene pad.

UUT32

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSD02A3

Product Construction Summary: Powder coated structural steel skid

Options / Component Summary: Medical air and laboratory air unit with Trident PD204A desiccant dryer

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
1,060	UUT32	51	31	75	4.5	9.5	21.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

UUT 32 was base mounted with four 1/2"-diameter Grade 5 bolts and washers spaced approximately 30'' widthwise and 20'' lengthwise on center.

UUT33i,ii

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Powerex

Product Line: Medical Air and Laboratory Air

Model Number: MSP15A6

Product Construction Summary: Powder coated structural steel skid

Options / Component Summary: Medical air and laboratory air unit with Trident PD213A desiccant dryer

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

UUT Properties

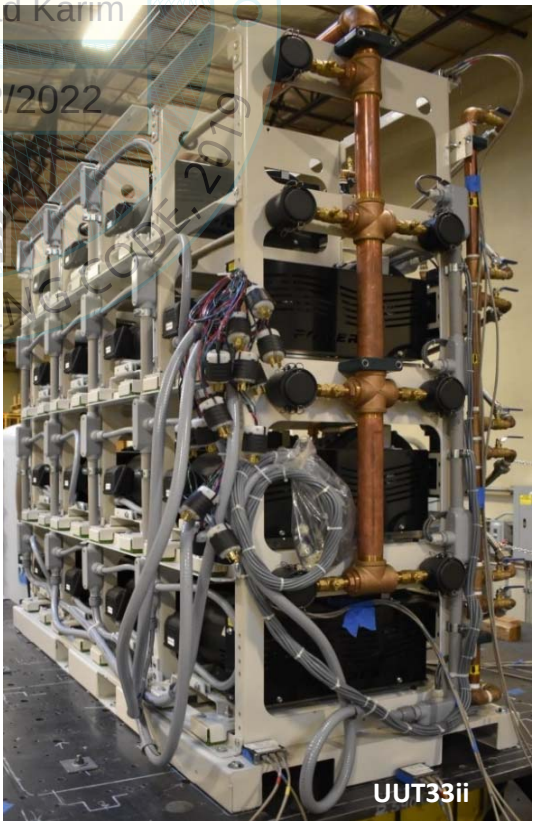
Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
2,110	UUT33i	86	34	91	5.0	6.5	27.5
4,030	UUT33ii	86	34	80	5.5	4.0	22.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:


UUT33i


UUT33ii

UUT 33i and 33ii was base mounted with eight 1/2"-diameter Grade 5 bolts and washers spaced approxmately 31'' widthwise and 20'' lengthwise on center for both skids.