



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR HCAI SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0519

HCAI Special Seismic Certification Preapproval (OSP)

Type:  New  Renewal

Manufacturer Information

Manufacturer: Gardner Denver Inc.

Manufacturer's Technical Representative: Francis Ting

Mailing Address: 1800 Gardner Denver Expressway Quincy, IL 62305

Telephone: (217) 222-5400

Email: Francis.Ting@irco.com

Product Information

Product Name: Medical Gas and Vacuum Systems

Product Type: Medical Air and Vacuum Systems

Product Model Number: See Attachments

General Description: The units are 208 – 575V, and consist of scroll compressor pumps, tanks, dew point monitors, carbon monoxide monitors, controllers, motors, tank drains, aftercoolers, intake filter elements, check valves and dryers.

Mounting Description: Rigidly base mounted. Compressor pump skids feature internal isolation., Control panels are stand or equipment 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

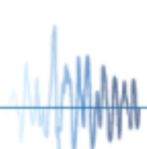
Contact Person: Kelly Laplace

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

Telephone: (775) 358-5085

Email: kelly@shaketest.com

Title: Business Manager





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

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

Company Name: THE VMC GROUP

Name: Kenneth Tarlow California License Number: 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): \_\_\_\_\_

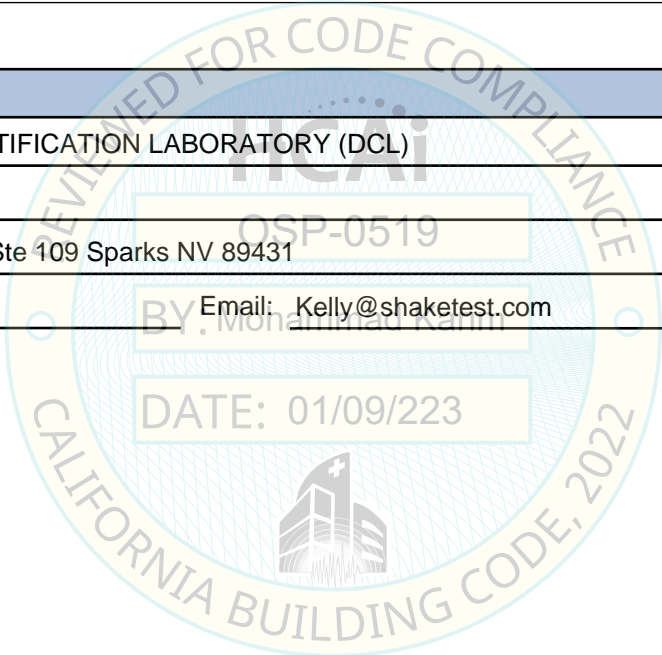
**Testing Laboratory**

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



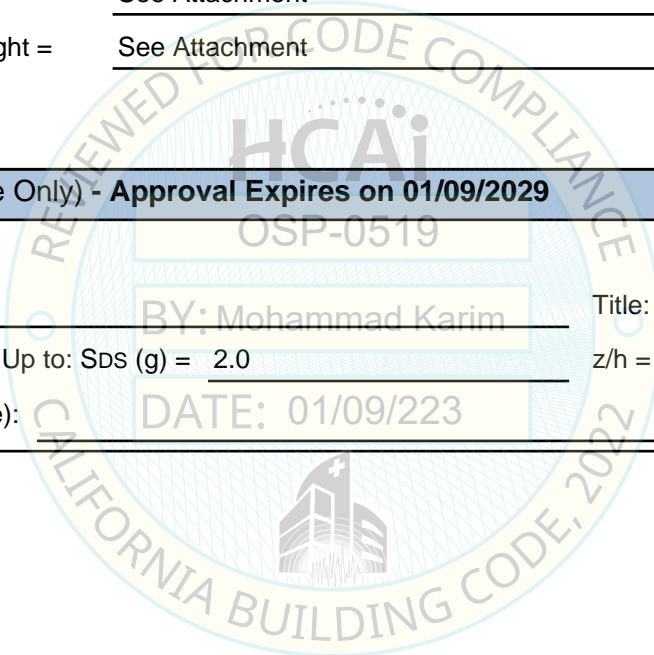


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**Seismic Parameters**

|  |  |
|--|--|
| Design Basis of Equipment or Components ( $F_p/W_p$ ) =          | 2.4 (receiver and dryer skids) or 4.5 (internally isolated compressor skids) |
| SDS (Design spectral response acceleration at short period, g) = | 2.0  |
| $a_p$ (Amplification factor) =                                   | 1.0 or 2.5 (for internally isolated components)                              |
| $R_p$ (Response modification factor) =                           | 1.5 or 2.0 (for internally isolated components)                              |
| $\Omega_0$ (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   |

| <b>HCAI Approval (For Office Use Only) - Approval Expires on 01/09/2029</b> |                |         |                               |
|---|----------------|---------|-------------------------------|
| Date:   | 1/9/2023       |         |                               |
| Name:   | Mohammad Karim | Title:  | Supervisor, Health Facilities |
| Special Seismic Certification Valid Up to:                                  | SDS (g) = 2.0  | $z/h$ = | 1                             |
| Condition of Approval (if applicable):                                      |                |         |                               |



## Special Seismic Certification

### Table 1 - Certified Components - Medical Scroll, Base Mount Systems



**DCL Project Number:** 52722-2201

**Manufacturer:** Gardner Denver (also branded Champion and Allied Healthcare)

**Product Line:** Medical Scroll Systems

**Mounting Description:** Rigid base mount

| Base Mount Systems          |                       |                                |     |                           |                       |                                    |                                   |        |        |                            |                  |                  |
|-----------------------------|-----------------------|--------------------------------|-----|---------------------------|-----------------------|------------------------------------|-----------------------------------|--------|--------|----------------------------|------------------|------------------|
| Gardner Denver Model Number | Champion Model Number | Allied Healthcare Model Number | Hp  | Vertical receiver gallons | Total number of pumps | Vertically stacked pumps or layers | Max. Dimensions (in) <sup>1</sup> |        |        | Max. Operating Weight (lb) | Mounting         | UUT              |
|                             |                       |                                |     |                           |                       |                                    | Depth                             | Width  | Height |                            |                  |                  |
| <b>Duplex</b>               |                       |                                |     |                           |                       |                                    |                                   |        |        |                            |                  |                  |
| BENVS5D-8-M                 | BCAS5D-8-M            | DOS050-80BDD                   | 5   | 80                        | 2                     | 2                                  | 50.0                              | 128.0  | 55.4   | 1,124                      | Rigid base mount | UUT1.1, 1.2, 1.3 |
| BENVS5D-12-M                | BCAS5D-12-M           | DOS050-120BDD                  | 5   | 120                       | 2                     | 2                                  | 50.0                              | 128.0  | 77.4   | 1,279                      |                  | Interpolated     |
| BENVS7D-8-M                 | BCAS7D-8-M            | DOS075-80BDD                   | 7.5 | 80                        | 2                     | 2                                  | 50.0                              | 128.0  | 55.4   | 1,240                      |                  | Interpolated     |
| BENVS7D-12-M                | BCAS7D-12-M           | DOS075-120BDD                  | 7.5 | 120                       | 2                     | 2                                  | 50.0                              | 128.0  | 77.4   | 1,395                      |                  | Interpolated     |
| BENVS10D-8-M                | BCAS10D-8-M           | DOS100-80BDD                   | 10  | 80                        | 2                     | 2                                  | 50.0                              | 128.4  | 55.4   | 1,322                      |                  | Interpolated     |
| BENVS10D-12-M               | BCAS10D-12-M          | DOS100-120BDD                  | 10  | 120                       | 2                     | 2                                  | 50.0                              | 128.4  | 77.4   | 1,477                      |                  | Interpolated     |
| <b>Triplex</b>              |                       |                                |     |                           |                       |                                    |                                   |        |        |                            |                  |                  |
| BENVS5T-8-M                 | BCAS5T-8-M            | TOS050-80BDD                   | 5   | 80                        | 3                     | 3                                  | 50.0                              | 129.5  | 55.4   | 2,238                      | Rigid base mount | Interpolated     |
| BENVS5T-12-M                | BCAS5T-12-M           | TOS050-120BDD                  | 5   | 120                       | 3                     | 3                                  | 50.0                              | 129.5  | 77.4   | 2,288                      |                  | Interpolated     |
| BENVS7T-8-M                 | BCAS7T-8-M            | TOS075-80BDD                   | 7.5 | 80                        | 3                     | 3                                  | 50.0                              | 129.9  | 55.4   | 2,551                      |                  | Interpolated     |
| BENVS7T-12-M                | BCAS7T-12-M           | TOS075-120BDD                  | 7.5 | 120                       | 3                     | 3                                  | 50.0                              | 129.9  | 77.4   | 2,601                      |                  | Interpolated     |
| BENVS10T-8-M                | BCAS10T-8-M           | TOS100-80BDD                   | 10  | 80                        | 3                     | 3                                  | 50.0                              | 129.9  | 55.4   | 2,567                      |                  | Interpolated     |
| BENVS10T-12-M               | BCAS10T-12-M          | TOS100-120BDD                  | 10  | 120                       | 3                     | 3                                  | 50.0                              | 129.5  | 77.4   | 2,617                      |                  | Interpolated     |
| <b>Quadruplex</b>           |                       |                                |     |                           |                       |                                    |                                   |        |        |                            |                  |                  |
| BENVS5Q-8-M                 | BCAS5Q-8-M            | QOS050-80BDD                   | 5   | 80                        | 4                     | 4                                  | 50.0                              | 129.9  | 71.8   | 3,011                      | Rigid base mount | Interpolated     |
| BENVS5Q-12-M                | BCAS5Q-12-M           | QOS050-120BDD                  | 5   | 120                       | 4                     | 4                                  | 50.0                              | 129.9  | 77.4   | 3,061                      |                  | Interpolated     |
| BENVS7Q-8-M                 | BCAS7Q-8-M            | QOS075-80BDD                   | 7.5 | 80                        | 4                     | 4                                  | 50.0                              | 129.9  | 72.1   | 3,267                      |                  | Interpolated     |
| BENVS7Q-12-M                | BCAS7Q-12-M           | QOS075-120BDD                  | 7.5 | 120                       | 4                     | 4                                  | 50.0                              | 129.9  | 77.4   | 3,317                      |                  | Interpolated     |
| BENVS10Q-8-M                | BCAS10Q-8-M           | QOS100-80BDD                   | 10  | 80                        | 4                     | 4                                  | 70.0                              | 130.24 | 72.2   | 3,544                      |                  | Interpolated     |
| BENVS10Q-12-M               | BCAS10Q-12-M          | QOS100-120BDD                  | 10  | 120                       | 4                     | 4                                  | 70.0                              | 130.24 | 77.4   | 3,594                      |                  | UUT2.1, 2.2, 2.3 |

Note:

1. Unit dimension includes total length of compressor, receiver and dryer skids, installed with 24" between each skid. Skids are attached through flexible connections only. Maximum unit height is for a 120 gallon receiver.

# Special Seismic Certification

## Table 2 - Certified Components - Medical Scroll, Tank Mount Systems



**DCL Project Number:** 52722-2201

**Manufacturer:** Gardner Denver (also branded Champion and Allied Healthcare)

**Product Line:** Medical Scroll Systems

**Mounting Description:** Rigid base mount

| Tank Mount Systems          |                       |                                |     |                             |                       |                                    |                      |       |        |                            |                  |              |
|-----------------------------|-----------------------|--------------------------------|-----|-----------------------------|-----------------------|------------------------------------|----------------------|-------|--------|----------------------------|------------------|--------------|
| Gardner Denver Model Number | Champion Model Number | Allied Healthcare Model Number | Hp  | Horizontal receiver gallons | Total number of pumps | Vertically stacked pumps or layers | Max. Dimensions (in) |       |        | Max. Operating Weight (lb) | Mounting         | UUT          |
|                             |                       |                                |     |                             |                       |                                    | Depth                | Width | Height |                            |                  |              |
| <b>Duplex</b>               |                       |                                |     |                             |                       |                                    |                      |       |        |                            |                  |              |
| HENVS3D-8-M                 | HCAS3D-8-M            | DOS030-80TDD                   | 3   | 80                          | 2                     | 2                                  | 65                   | 33    | 62     | 1,400                      | Rigid base mount | UUT3         |
| HENVS3D-12-M                | HCAS3D-12-M           | DOS030-120TDD                  | 3   | 120                         | 2                     | 2                                  | 69                   | 34    | 66     | 1,500                      |                  | Interpolated |
| HENVS3D-24-M                | HCAS3D-24-M           | DOS030-240TDD                  | 3   | 240                         | 2                     | 2                                  | 86                   | 40    | 72     | 1,700                      |                  | Interpolated |
| HENVS5D-8-M                 | HCAS5D-8-M            | DOS050-80TDD                   | 5   | 80                          | 2                     | 2                                  | 65                   | 34    | 62     | 1,400                      |                  | Interpolated |
| HENVS5D-12-M                | HCAS5D-12-M           | DOS050-120TDD                  | 5   | 120                         | 2                     | 2                                  | 69                   | 34    | 66     | 1,500                      |                  | Interpolated |
| HENVS5D-24-M                | HCAS5D-24-M           | DOS050-240TDD                  | 5   | 240                         | 2                     | 2                                  | 86                   | 40    | 72     | 1,700                      |                  | Interpolated |
| HENVS7D-8-M                 | HCAS7D-8-M            | DOS075-80TDD                   | 7.5 | 80                          | 2                     | 2                                  | 65                   | 34    | 62     | 1,400                      |                  | Interpolated |
| HENVS7D-12-M                | HCAS7D-12-M           | DOS075-120TDD                  | 7.5 | 120                         | 2                     | 2                                  | 69                   | 34    | 66     | 1,500                      |                  | Interpolated |
| HENVS7D-24-M                | HCAS7D-24-M           | DOS075-240TDD                  | 7.5 | 240                         | 2                     | 2                                  | 86                   | 40    | 72     | 1,700                      |                  | Interpolated |
| HENVS10D-8-M                | HCAS10D-8-M           | DOS100-80TDD                   | 10  | 80                          | 2                     | 2                                  | 65                   | 34    | 62     | 1,400                      |                  | Interpolated |
| HENVS10D-12-M               | HCAS10D-12-M          | DOS100-120TDD                  | 10  | 120                         | 2                     | 2                                  | 69                   | 34    | 66     | 1,500                      |                  | Interpolated |
| HENVS10D-24-M               | HCAS10D-24-M          | DOS100-240TDD                  | 10  | 240                         | 2                     | 2                                  | 86                   | 40    | 72     | 1,700                      |                  | UUT4         |

**Special Seismic Certification**  
**Table 3 - Model Chart - Gardner Denver Brand**



**DCL Project Number:** 52722-2201

**Manufacturer:** Gardner Denver

**Product Line:** Medical Scroll Systems

**Mounting Description:** Rigid base mount

**Gardner Denver Medical Scroll System Model Chart**

**ABCDE-F-G**

| Variable | Definition         | Allowable Value | Allowable Value Description   | Unit         |
|----------|--------------------|-----------------|-------------------------------|--------------|
| A        | System Type        | B               | Base mount                    | UUT1,2       |
|          |                    | H               | Tank Mount                    | UUT3,4       |
| B        | Series             | ENV             | EnviroAire-0519               | UUT1,2, 3, 4 |
| C        | Compressor Type    | S               | Scroll Medical Air Compressor | UUT1,2, 3, 4 |
| D        | Horsepower         | 3               | 3 HP                          | UUT3         |
|          |                    | 5               | 5 HP                          | UUT1         |
|          |                    | 7               | 7.5 HP                        | Interpolated |
|          |                    | 10              | 10 HP                         | UUT2,4       |
| E        | System Size        | D               | Duplex                        | UUT1,3, 4    |
|          |                    | T               | Triplex                       | Interpolated |
|          |                    | Q               | Quadruplex                    | UUT2         |
| F        | Receiver Tank Size | 8               | 80 Gallon                     | UUT1,3       |
|          |                    | 12              | 120 Gallon                    | UUT2         |
|          |                    | 24              | 240 Gallon                    | UUT4         |
| G        | Industry           | M               | Medical                       | UUT1,2, 3, 4 |

**Special Seismic Certification**  
**Table 4 - Model Chart - Champion Brand**



**DCL Project Number:** 52722-2201

**Manufacturer:** Gardner Denver (branded Champion)

**Product Line:** Medical Scroll Systems

**Mounting Description:** Rigid base mount

**Champion Medical Scroll System Model Chart**

**ABCDE-F-G**

| Variable | Definition         | Allowable Value | Allowable Value Description   | Unit         |
|----------|--------------------|-----------------|-------------------------------|--------------|
| A        | System Type        | B               | Base mount                    | UUT1,2       |
|          |                    | H               | Tank Mount                    | UUT3,4       |
| B        | Series             | CA              | CA Series -0519               | UUT1,2, 3, 4 |
| C        | Compressor Type    | S               | Scroll Medical Air Compressor | UUT1,2, 3, 4 |
| D        | Horsepower         | 3               | 3 HP                          | UUT3         |
|          |                    | 5               | 5 HP                          | UUT1         |
|          |                    | 7               | 7.5 HP                        | Interpolated |
|          |                    | 10              | 10 HP                         | UUT2,4       |
| E        | System Size        | D               | Duplex                        | UUT1,3, 4    |
|          |                    | T               | Triplex                       | Interpolated |
|          |                    | Q               | Quadruplex                    | UUT2         |
| F        | Receiver Tank Size | 8               | 80 Gallon                     | UUT1,3       |
|          |                    | 12              | 120 Gallon                    | UUT2         |
|          |                    | 24              | 240 Gallon                    | UUT4         |
| G        | Industry           | M               | Medical                       | UUT1,2, 3, 4 |

# Special Seismic Certification

## Table 5 - Model Chart - Allied Healthcare Brand



**DCL Project Number:** 52722-2201

**Manufacturer:** Gardner Denver (branded Allied Healthcare)

**Product Line:** Medical Scroll Systems

**Mounting Description:** Rigid base mount

### Allied Healthcare Medical Scroll System Model Chart

#### ABC-DE

| Variable | Definition         | Allowable Value | Allowable Value Description   | Unit         |
|----------|--------------------|-----------------|-------------------------------|--------------|
| A        | System Size        | DO              | Duplex                        | UUT1,3, 4    |
|          |                    | TO              | Triplex                       | Interpolated |
|          |                    | QO              | Quadruplex                    | UUT2         |
| B        | Compressor Type    | S               | Scroll Medical Air Compressor | UUT1,2, 3, 4 |
| C        | Horsepower         | 030             | 3 HP                          | UUT3         |
|          |                    | 050             | 5 HP                          | UUT1         |
|          |                    | 075             | 7.5 HP                        | Interpolated |
|          |                    | 100             | 10 HP                         | UUT2,4       |
| D        | Receiver Tank Size | 80              | 80 Gallon                     | UUT1,3       |
|          |                    | 120             | 120 Gallon                    | UUT2         |
|          |                    | 240             | 240 Gallon                    | UUT4         |
| E        | System Type        | BDD             | Base mount                    | UUT1,2       |
|          |                    | TDD             | Tank Mount                    | UUT3,4       |



**Special Seismic Certification**

**Table 6 - Certified Subcomponents - Mecical Scroll, Base Mount Systems**



DCL Project Number: 52722-2201

Product Line: Medical Scroll

| Scroll Pumps                       |                               |                           |                                   |                             |
|------------------------------------|-------------------------------|---------------------------|-----------------------------------|-----------------------------|
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                        |
| BC-52KL                            | CoAire                        | Compressor pump           | Aluminum                          | UUT1.3                      |
| SRL-5.5CBUM                        | Hitachi                       | Compressor pump           | Aluminum                          | Same as UUT2.3 <sup>1</sup> |
| SRL-7.5CBUM                        | Hitachi                       | Compressor pump           | Aluminum                          | UUT2.3                      |
| Vertical Tanks                     |                               |                           |                                   |                             |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                        |
| CC1123746                          | Samuel Pressure Vessel Group  | 80 gal                    | Vinyl Lined Carbon Steel          | UUT1.2                      |
| P09487A                            | Samuel Pressure Vessel Group  | 120 gal                   | Vinyl Lined Carbon Steel          | UUT2.2                      |
| Dew Point Monitor/ Probe Desiccant |                               |                           |                                   |                             |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                        |
| DMT143N1FU1C3A0ASA                 | Vaisala                       | Dew point sensor          | Stainless Steel                   | UUT1.2,2.2                  |
| Carbon Monoxide Monitor/ Sensor    |                               |                           |                                   |                             |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                        |
| 4035-22                            | GFG Instrumentation           | CO Sensor                 | Aluminum                          | UUT1.2,2.2                  |
| Tank Drain                         |                               |                           |                                   |                             |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                        |
| DV720-66                           | Air System Products, Inc.     | Timer Drain               | Plastic / Brass                   | UUT1.2,2.2                  |
| Aftercooler                        |                               |                           |                                   |                             |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                        |
| 300SMB292                          | WUXI Hongsheng Heat Exchanger | Air-Cooled Heat Exchanger | Aluminum                          | UUT1.3                      |
| 301SMB292                          | WUXI Hongsheng Heat Exchanger | Air-Cooled Heat Exchanger | Aluminum                          | UUT2.3                      |
| Intake Filter Element              |                               |                           |                                   |                             |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                        |
| CSL0001209                         | Solberg MFG, Inc.             | "L" Style Inlet Filter    | Carbon Steel w/ Polyester Element | UUT1.1,2.1                  |
| Check Valve                        |                               |                           |                                   |                             |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                        |
| 742044                             | Hitachi                       | 1/2NPT, In-Line Lift      | Brass                             | UUT1.3,2.3                  |

Note:

1. The SRL-5.5CBUM compressor pump has the same weight and dimensions as the SRL-7.5CBUM compressor pump tested in UUT2.3, the compressor pump only differs in power rating.

**Special Seismic Certification**

**Table 6 - Certified Subcomponents - Medical Scroll, Base Mount Systems (Continued)**



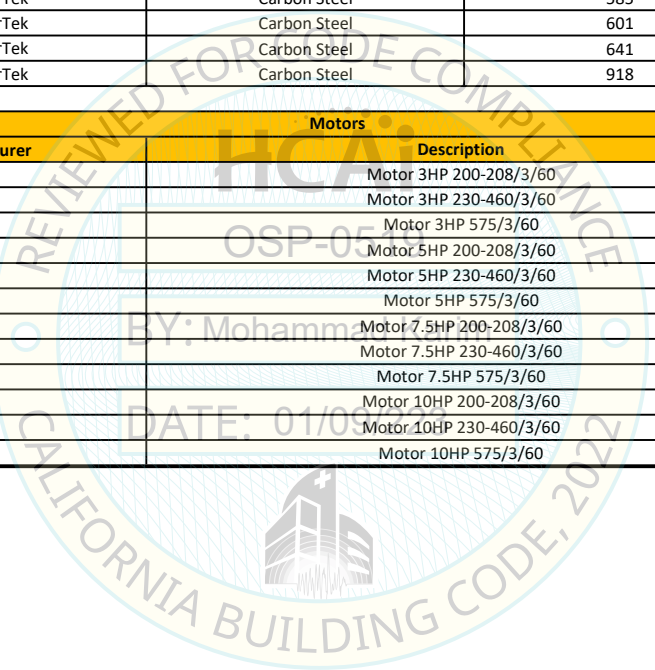
DCL Project Number: 52722-2201

Product Line: Medical Scroll

| Desiccant Air Dryers     |               |              |             |              |
|--------------------------|---------------|--------------|-------------|--------------|
| Manufacturer's Model No. | Manufacturer  | Material     | Weight (lb) | Unit         |
| BVM13A1E-DUPLEX          | Parker AirTek | Carbon Steel | 324         | UUT1.1       |
| BVM21A1E-DUPLEX          | Parker AirTek | Carbon Steel | 340         | Interpolated |
| BVM33A1E-DUPLEX          | Parker AirTek | Carbon Steel | 422         | Interpolated |
| BVM45A1E-DUPLEX          | Parker AirTek | Carbon Steel | 585         | Interpolated |
| BVM54A1E-DUPLEX          | Parker AirTek | Carbon Steel | 601         | Interpolated |
| BVM74A1E-DUPLEX          | Parker AirTek | Carbon Steel | 641         | Interpolated |
| BVM100A1E-DUPLEX         | Parker AirTek | Carbon Steel | 918         | UUT2.1       |

| Motors      |              |                          |                     |              |
|-------------|--------------|--------------------------|---------------------|--------------|
| Model No.   | Manufacturer | Description              | Material            | Unit         |
| 042830/2016 | WEG          | Motor 3HP 200-208/3/60   | Rolled Carbon Steel | Extrapolated |
| 023044/2016 | WEG          | Motor 3HP 230-460/3/60   |                     | Extrapolated |
| 023047/2016 | WEG          | Motor 3HP 575/3/60       |                     | Extrapolated |
| 043775/2016 | WEG          | Motor 5HP 200-208/3/60   |                     | UUT1.3       |
| 023051/2016 | WEG          | Motor 5HP 230-460/3/60   |                     | Interpolated |
| 023053/2016 | WEG          | Motor 5HP 575/3/60       |                     | Interpolated |
| 046370/2016 | WEG          | Motor 7.5HP 200-208/3/60 |                     | Interpolated |
| 052806/2016 | WEG          | Motor 7.5HP 230-460/3/60 |                     | Interpolated |
| 052813/2016 | WEG          | Motor 7.5HP 575/3/60     |                     | Interpolated |
| 049302/2016 | WEG          | Motor 10HP 200-208/3/60  |                     | Interpolated |
| 052817/2016 | WEG          | Motor 10HP 230-460/3/60  |                     | Interpolated |
| 052824/2016 | WEG          | Motor 10HP 575/3/60      |                     | UUT2.3       |



**Special Seismic Certification**

**Table 6 - Certified Subcomponents - Medical Scroll, Base Mount Systems (Continued)**



DCL Project Number: 52722-2201

Product Line: Medical Scroll

| Controllers |                   |                                 |                                  |                  |              |
|-------------|-------------------|---------------------------------|----------------------------------|------------------|--------------|
| Model No.   | Manufacturer      | Description                     | Material                         | Max. Weight (lb) | Unit         |
| 301SMD466   | ACPI Systems Inc. | Duplex, 5HP, 208/230/60/3       | NEMA 4/12 Carbon Steel Enclosure | 151              | UUT1.1       |
| 305SMD466   | ACPI Systems Inc. | Duplex, 5HP, 460/60/3           |                                  | 151              | Interpolated |
| 309SMD466   | ACPI Systems Inc. | Duplex, 5HP, 575/60/3           |                                  | 151              | Interpolated |
| 302SMD466   | ACPI Systems Inc. | Duplex, 7.5HP, 208/230/60/3     |                                  | 151              | Interpolated |
| 306SMD466   | ACPI Systems Inc. | Duplex, 7.5HP, 460/60/3         |                                  | 151              | Interpolated |
| 310SMD466   | ACPI Systems Inc. | Duplex, 7.5HP, 575/60/3         |                                  | 151              | Interpolated |
| 303SMD466   | ACPI Systems Inc. | Duplex, 10HP, 208/230/60/3      |                                  | 151              | Interpolated |
| 307SMD466   | ACPI Systems Inc. | Duplex, 10HP, 460/60/3          |                                  | 151              | Interpolated |
| 311SMD466   | ACPI Systems Inc. | Duplex, 10HP, 575/60/3          |                                  | 151              | Interpolated |
| 300SMT466   | ACPI Systems Inc. | Triplex, 5HP, 208/230/60/3      |                                  | 151              | Interpolated |
| 312SMT466   | ACPI Systems Inc. | Triplex, 5HP, 208/230/60/1      |                                  | 151              | Interpolated |
| 309SMT466   | ACPI Systems Inc. | Triplex, 5HP, 380/400/60/3      |                                  | 151              | Interpolated |
| 303SMT466   | ACPI Systems Inc. | Triplex, 5HP, 460/60/3          |                                  | 151              | Interpolated |
| 306SMT466   | ACPI Systems Inc. | Triplex, 5HP, 575/60/3          |                                  | 151              | Interpolated |
| 301SMT466   | ACPI Systems Inc. | Triplex, 7.5HP, 208/230/60/3    |                                  | 151              | Interpolated |
| 313SMT466   | ACPI Systems Inc. | Triplex, 7.5HP, 208/230/60/1    |                                  | 151              | Interpolated |
| 310SMT466   | ACPI Systems Inc. | Triplex, 7.5HP, 380/400/60/3    |                                  | 151              | Interpolated |
| 304SMT466   | ACPI Systems Inc. | Triplex, 7.5HP, 460/60/3        |                                  | 151              | Interpolated |
| 307SMT466   | ACPI Systems Inc. | Triplex, 7.5HP, 575/60/3        |                                  | 151              | Interpolated |
| 302SMT466   | ACPI Systems Inc. | Triplex, 10HP, 208/230/60/3     |                                  | 151              | Interpolated |
| 311SMT466   | ACPI Systems Inc. | Triplex, 10HP, 380/400/60/3     |                                  | 151              | Interpolated |
| 305SMT466   | ACPI Systems Inc. | Triplex, 10HP, 460/60/3         |                                  | 151              | Interpolated |
| 308SMT466   | ACPI Systems Inc. | Triplex, 10HP, 575/60/3         |                                  | 151              | Interpolated |
| 300SMQ466   | ACPI Systems Inc. | Quadraplex, 5HP, 208/230/60/3   |                                  | 151              | Interpolated |
| 312SMQ466   | ACPI Systems Inc. | Quadraplex, 5HP, 208/230/60/1   |                                  | 151              | Interpolated |
| 309SMQ466   | ACPI Systems Inc. | Quadraplex, 5HP, 380/400/60/3   |                                  | 151              | Interpolated |
| 303SMQ466   | ACPI Systems Inc. | Quadraplex, 5HP, 460/60/3       |                                  | 151              | Interpolated |
| 306SMQ466   | ACPI Systems Inc. | Quadraplex, 5HP, 575/60/3       |                                  | 151              | Interpolated |
| 301SMQ466   | ACPI Systems Inc. | Quadraplex, 7.5HP, 208/230/60/3 |                                  | 151              | Interpolated |
| 313SMQ466   | ACPI Systems Inc. | Quadraplex, 7.5HP, 208/230/60/1 |                                  | 151              | Interpolated |
| 310SMQ466   | ACPI Systems Inc. | Quadraplex, 7.5HP, 380/400/60/3 |                                  | 151              | Interpolated |
| 304SMQ466   | ACPI Systems Inc. | Quadraplex, 7.5HP, 460/60/3     |                                  | 151              | Interpolated |
| 307SMQ466   | ACPI Systems Inc. | Quadraplex, 7.5HP, 575/60/3     |                                  | 151              | Interpolated |
| 302SMQ466   | ACPI Systems Inc. | Quadraplex, 10HP, 208/230/60/3  |                                  | 151              | Interpolated |
| 311SMQ466   | ACPI Systems Inc. | Quadraplex, 10HP, 380/400/60/3  |                                  | 151              | Interpolated |
| 305SMQ466   | ACPI Systems Inc. | Quadraplex, 10HP, 460/60/3      |                                  | 151              | Interpolated |
| 308SMQ466   | ACPI Systems Inc. | Quadraplex, 10HP, 575/60/3      |                                  | 151              | UUT2.1       |

**Special Seismic Certification**

**Table 6 - Certified Subcomponents - Medical Scroll, Base Mount Systems (Continued)**



DCL Project Number: 52722-2201

Product Line: Medical Scroll

| Controllers |              |                                 |                                  |                  |              |
|-------------|--------------|---------------------------------|----------------------------------|------------------|--------------|
| Model No.   | Manufacturer | Description                     | Material                         | Max. Weight (lb) | Unit         |
| 321SMD466   | Neucontrol   | Duplex, 5HP, 208/230/60/3       | NEMA 4/12 Carbon Steel Enclosure | 121              | UUT5         |
| 325SMD466   | Neucontrol   | Duplex, 5HP, 460/60/3           |                                  | 151              | Interpolated |
| 329SMD466   | Neucontrol   | Duplex, 5HP, 575/60/3           |                                  | 151              | Interpolated |
| 322SMD466   | Neucontrol   | Duplex, 7.5HP, 208/230/60/3     |                                  | 151              | Interpolated |
| 326SMD466   | Neucontrol   | Duplex, 7.5HP, 460/60/3         |                                  | 151              | Interpolated |
| 330SMD466   | Neucontrol   | Duplex, 7.5HP, 575/60/3         |                                  | 151              | Interpolated |
| 323SMD466   | Neucontrol   | Duplex, 10HP, 208/230/60/3      |                                  | 151              | Interpolated |
| 327SMD466   | Neucontrol   | Duplex, 10HP, 460/60/3          |                                  | 151              | Interpolated |
| 331SMD466   | Neucontrol   | Duplex, 10HP, 575/60/3          |                                  | 151              | Interpolated |
| 315SMT466   | Neucontrol   | Triplex, 5HP, 208/230/60/3      |                                  | 151              | Interpolated |
| 327SMT466   | Neucontrol   | Triplex, 5HP, 208/230/60/1      |                                  | 151              | Interpolated |
| 324SMT466   | Neucontrol   | Triplex, 5HP, 380/400/60/3      |                                  | 151              | Interpolated |
| 318SMT466   | Neucontrol   | Triplex, 5HP, 460/60/3          |                                  | 151              | Interpolated |
| 321SMT466   | Neucontrol   | Triplex, 5HP, 575/60/3          |                                  | 151              | Interpolated |
| 316SMT466   | Neucontrol   | Triplex, 7.5HP, 208/230/60/3    |                                  | 151              | Interpolated |
| 328SMT466   | Neucontrol   | Triplex, 7.5HP, 208/230/60/1    |                                  | 151              | Interpolated |
| 325SMT466   | Neucontrol   | Triplex, 7.5HP, 380/400/60/3    |                                  | 151              | Interpolated |
| 319SMT466   | Neucontrol   | Triplex, 7.5HP, 460/60/3        |                                  | 151              | Interpolated |
| 322SMT466   | Neucontrol   | Triplex, 7.5HP, 575/60/3        |                                  | 151              | Interpolated |
| 317SMT466   | Neucontrol   | Triplex, 10HP, 208/230/60/3     |                                  | 151              | Interpolated |
| 326SMT466   | Neucontrol   | Triplex, 10HP, 380/400/60/3     |                                  | 151              | Interpolated |
| 320SMT466   | Neucontrol   | Triplex, 10HP, 460/60/3         |                                  | 151              | Interpolated |
| 323SMT466   | Neucontrol   | Triplex, 10HP, 575/60/3         |                                  | 151              | Interpolated |
| 317SMQ466   | Neucontrol   | Quadraplex, 5HP, 208/230/60/3   |                                  | 151              | Interpolated |
| 329SMQ466   | Neucontrol   | Quadraplex, 5HP, 208/230/60/1   |                                  | 151              | Interpolated |
| 326SMQ466   | Neucontrol   | Quadraplex, 5HP, 380/400/60/3   |                                  | 151              | Interpolated |
| 320SMQ466   | Neucontrol   | Quadraplex, 5HP, 460/60/3       |                                  | 151              | Interpolated |
| 323SMQ466   | Neucontrol   | Quadraplex, 5HP, 575/60/3       |                                  | 151              | Interpolated |
| 318SMQ466   | Neucontrol   | Quadraplex, 7.5HP, 208/230/60/3 |                                  | 151              | Interpolated |
| 330SMQ466   | Neucontrol   | Quadraplex, 7.5HP, 208/230/60/1 |                                  | 151              | Interpolated |
| 327SMQ466   | Neucontrol   | Quadraplex, 7.5HP, 380/400/60/3 |                                  | 151              | Interpolated |
| 321SMQ466   | Neucontrol   | Quadraplex, 7.5HP, 460/60/3     |                                  | 151              | Interpolated |
| 324SMQ466   | Neucontrol   | Quadraplex, 7.5HP, 575/60/3     |                                  | 151              | Interpolated |
| 319SMQ466   | Neucontrol   | Quadraplex, 10HP, 208/230/60/3  |                                  | 151              | Interpolated |
| 328SMQ466   | Neucontrol   | Quadraplex, 10HP, 380/400/60/3  |                                  | 151              | Interpolated |
| 322SMQ466   | Neucontrol   | Quadraplex, 10HP, 460/60/3      |                                  | 151              | Interpolated |
| 325SMQ466   | Neucontrol   | Quadraplex, 10HP, 575/60/3      |                                  | 151              | UUT6         |

**Special Seismic Certification**

**Table 7 - Certified Subcomponents - Medical Scroll, Tank Mount Systems**



DCL Project Number: 52722-2201

Product Line: Medical Scroll

| Scroll Pumps                       |                               |                           |                                   |                           |
|------------------------------------|-------------------------------|---------------------------|-----------------------------------|---------------------------|
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                      |
| BC-52KL                            | CoAire                        | Compressor pump           | Aluminum                          | UUT3                      |
| SRL-5.5CBUM                        | Hitachi                       | Compressor pump           | Aluminum                          | Same as UUT4 <sup>1</sup> |
| SRL-7.5CBUM                        | Hitachi                       | Compressor pump           | Aluminum                          | UUT4                      |
| Horizontal Tank                    |                               |                           |                                   |                           |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                      |
| 302SMD645                          | Morganton Pressure Vessel LLC | 80 gal                    | Vinyl Lined Carbon Steel          | UUT3                      |
| 303SMD645                          | Morganton Pressure Vessel LLC | 120 gal                   | Vinyl Lined Carbon Steel          | Interpolated              |
| 304SMD645                          | Morganton Pressure Vessel LLC | 240 gal                   | Vinyl Lined Carbon Steel          | UUT4                      |
| Dew Point Monitor/ Probe Desiccant |                               |                           |                                   |                           |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                      |
| DMT143N1FUA1C3A0ASA                | Vaisala                       | Dew point sensor          | Stainless Steel                   | UUT3,4                    |
| Carbon Monoxide Monitor/ Sensor    |                               |                           |                                   |                           |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                      |
| 4035-22                            | GFG Instrumentation           | CO Sensor                 | Aluminum                          | UUT3,4                    |
| Tank Drain                         |                               |                           |                                   |                           |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                      |
| DV720-66                           | Air System Products, Inc.     | Timer Drain               | Plastic / Brass                   | UUT3,4                    |
| Aftercooler                        |                               |                           |                                   |                           |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                      |
| 300SMB292                          | WUXI Hongsheng Heat Exchanger | Air-Cooled Heat Exchanger | Aluminum                          | UUT3                      |
| 301SMB292                          | WUXI Hongsheng Heat Exchanger | Air-Cooled Heat Exchanger | Aluminum                          | UUT4                      |
| Intake Filter Element              |                               |                           |                                   |                           |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                      |
| CSL0001209                         | Solberg MFG, Inc.             | "L" Style Inlet Filter    | Carbon Steel w/ Polyester Element | UUT3,4                    |
| Check Valve                        |                               |                           |                                   |                           |
| Model No.                          | Manufacturer                  | Description               | Material                          | Unit                      |
| 742044                             | Hitachi                       | 1/2NPT, In-Line Lift      | Brass                             | UUT3,4                    |

Note:

1. The SRL-5.5CBUM compressor pump has the same weight and dimensions as the SRL-7.5CBUM compressor pump tested in UUT4, the compressor pump only differs in power rating.

**Special Seismic Certification**

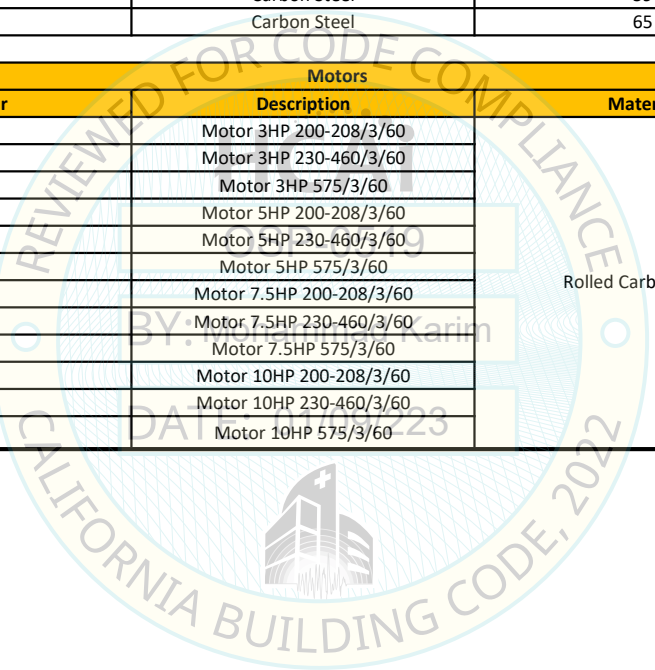
**Table 7 - Certified Subcomponents - Medical Scroll, Tank Mount Systems (Continued)**



DCL Project Number: 52722-2201

Product Line: Medical Scroll

| Desiccant Air Dryers     |              |                          |                     |              |
|--------------------------|--------------|--------------------------|---------------------|--------------|
| Manufacturer's Model No. | Manufacturer | Material                 | Weight (lb)         | Unit         |
| HR5-16-12-047            | PureGas      | Carbon Steel             | 29                  | UUT3         |
| HR6-25-12-058            | Pure Gas     | Carbon Steel             | 34                  | Interpolated |
| HR6.5-35-12-068          | Pure Gas     | Carbon Steel             | 59                  | Interpolated |
| HR7-50-12-079            | PureGas      | Carbon Steel             | 65                  | UUT4         |
| Motors                   |              |                          |                     |              |
| Model No.                | Manufacturer | Description              | Material            | Unit         |
| 042830/2016              | WEG          | Motor 3HP 200-208/3/60   | Rolled Carbon Steel | UUT3         |
| 023044/2016              | WEG          | Motor 3HP 230-460/3/60   |                     | Interpolated |
| 023047/2016              | WEG          | Motor 3HP 575/3/60       |                     | Interpolated |
| 043775/2016              | WEG          | Motor 5HP 200-208/3/60   |                     | Interpolated |
| 023051/2016              | WEG          | Motor 5HP 230-460/3/60   |                     | Interpolated |
| 023053/2016              | WEG          | Motor 5HP 575/3/60       |                     | Interpolated |
| 046370/2016              | WEG          | Motor 7.5HP 200-208/3/60 |                     | Interpolated |
| 052806/2016              | WEG          | Motor 7.5HP 230-460/3/60 |                     | Interpolated |
| 052813/2016              | WEG          | Motor 7.5HP 575/3/60     |                     | Interpolated |
| 049302/2016              | WEG          | Motor 10HP 200-208/3/60  |                     | Interpolated |
| 052817/2016              | WEG          | Motor 10HP 230-460/3/60  |                     | Interpolated |
| 052824/2016              | WEG          | Motor 10HP 575/3/60      |                     | UUT4         |



**Special Seismic Certification**

**Table 7 - Certified Subcomponents - Medical Scroll, Tank Mount Systems (Continued)**



DCL Project Number: 52722-2201

Product Line: Medical Scroll

| Controllers |                   |                             |                                  |                                  |              |              |
|-------------|-------------------|-----------------------------|----------------------------------|----------------------------------|--------------|--------------|
| Model No.   | Manufacturer      | Description                 | Material                         | Max. Weight (lb)                 | Unit         |              |
| 300SMD466   | ACPI Systems Inc. | Duplex, 3HP, 208/230/60/3   | NEMA 4/12 Carbon Steel Enclosure | 121                              | UUT3         |              |
| 318SMD466   | ACPI Systems Inc. | Duplex, 3HP, 208/230/60/1   |                                  | 121                              | Interpolated |              |
| 312SMD466   | ACPI Systems Inc. | Duplex, 3HP, 380/400/60/3   |                                  | 121                              | Interpolated |              |
| 304SMD466   | ACPI Systems Inc. | Duplex, 3HP, 460/60/3       |                                  | 121                              | Interpolated |              |
| 308SMD466   | ACPI Systems Inc. | Duplex, 3HP, 575/60/3       |                                  | 121                              | Interpolated |              |
| 301SMD466   | ACPI Systems Inc. | Duplex, 5HP, 208/230/60/3   |                                  | 121                              | Interpolated |              |
| 316SMD466   | ACPI Systems Inc. | Duplex, 5HP, 208/230/60/1   |                                  | 121                              | Interpolated |              |
| 313SMD466   | ACPI Systems Inc. | Duplex, 5HP, 380/400/60/3   |                                  | 121                              | Interpolated |              |
| 305SMD466   | ACPI Systems Inc. | Duplex, 5HP, 460/60/3       |                                  | 121                              | Interpolated |              |
| 309SMD466   | ACPI Systems Inc. | Duplex, 5HP, 575/60/3       |                                  | 121                              | Interpolated |              |
| 302SMD466   | ACPI Systems Inc. | Duplex, 7.5HP, 208/230/60/3 |                                  | 121                              | Interpolated |              |
| 317SMD466   | ACPI Systems Inc. | Duplex, 7.5HP, 208/230/60/1 |                                  | 121                              | Interpolated |              |
| 314SMD466   | ACPI Systems Inc. | Duplex, 7.5HP, 380/400/60/3 |                                  | 121                              | Interpolated |              |
| 306SMD466   | ACPI Systems Inc. | Duplex, 7.5HP, 460/60/3     |                                  | 121                              | Interpolated |              |
| 310SMD466   | ACPI Systems Inc. | Duplex, 7.5HP, 575/60/3     |                                  | 121                              | Interpolated |              |
| 303SMD466   | ACPI Systems Inc. | Duplex, 10HP, 208/230/60/3  |                                  | 121                              | Interpolated |              |
| 315SMD466   | ACPI Systems Inc. | Duplex, 10HP, 380/400/60/3  |                                  | 121                              | Interpolated |              |
| 307SMD466   | ACPI Systems Inc. | Duplex, 10HP, 460/60/3      |                                  | 121                              | Interpolated |              |
| 311SMD466   | ACPI Systems Inc. | Duplex, 10HP, 575/60/3      |                                  | 121                              | UUT4         |              |
| 320SMD466   | Neucontrol        | Duplex, 3HP, 208/230/60/3   |                                  | NEMA 4/12 Carbon Steel Enclosure | 121          | UUT7         |
| 336SMD466   | Neucontrol        | Duplex, 3HP, 208/230/60/1   |                                  |                                  | 121          | Interpolated |
| 332SMD466   | Neucontrol        | Duplex, 3HP, 380/400/60/3   |                                  |                                  | 121          | Interpolated |
| 324SMD466   | Neucontrol        | Duplex, 3HP, 460/60/3       |                                  |                                  | 121          | Interpolated |
| 328SMD466   | Neucontrol        | Duplex, 3HP, 575/60/3       | 121                              |                                  | Interpolated |              |
| 321SMD466   | Neucontrol        | Duplex, 5HP, 208/230/60/3   | 121                              |                                  | Interpolated |              |
| 337SMD466   | Neucontrol        | Duplex, 5HP, 208/230/60/1   | 121                              |                                  | Interpolated |              |
| 333SMD466   | Neucontrol        | Duplex, 5HP, 380/400/60/3   | 121                              |                                  | Interpolated |              |
| 325SMD466   | Neucontrol        | Duplex, 5HP, 460/60/3       | 121                              |                                  | Interpolated |              |
| 329SMD466   | Neucontrol        | Duplex, 5HP, 575/60/3       | 121                              |                                  | Interpolated |              |
| 322SMD466   | Neucontrol        | Duplex, 7.5HP, 208/230/60/3 | 121                              |                                  | Interpolated |              |
| 338SMD466   | Neucontrol        | Duplex, 7.5HP, 208/230/60/1 | 121                              |                                  | Interpolated |              |
| 334SMD466   | Neucontrol        | Duplex, 7.5HP, 380/400/60/3 | 121                              |                                  | Interpolated |              |
| 326SMD466   | Neucontrol        | Duplex, 7.5HP, 460/60/3     | 121                              |                                  | Interpolated |              |
| 330SMD466   | Neucontrol        | Duplex, 7.5HP, 575/60/3     | 121                              |                                  | Interpolated |              |
| 323SMD466   | Neucontrol        | Duplex, 10HP, 208/230/60/3  | 121                              |                                  | Interpolated |              |
| 335SMD466   | Neucontrol        | Duplex, 10HP, 380/400/60/3  | 121                              |                                  | Interpolated |              |
| 327SMD466   | Neucontrol        | Duplex, 10HP, 460/60/3      | 121                              |                                  | Interpolated |              |
| 331SMD466   | Neucontrol        | Duplex, 10HP, 575/60/3      | 119                              |                                  | UUT8         |              |

**Special Seismic Certification**  
**Table 8 - Tested Units - Medical Scroll Systems**



**DCL Project Number:** 52722-2201

**Manufacturer:** Gardner Denver (also branded Champion and Allied Healthcare)

**Product Line:** Medical Scroll

**Tested Product Construction:** Powder-coated carbon steel frame, NEMA 4/12 controller enclosures

| Model Number                        | Receiver Size (gal) | Total number of pumps | Vertically stacked pumps or layers | Dimensions (inches) |       |        | Weight (lb) | Mounting  | UUT    |
|-------------------------------------|---------------------|-----------------------|------------------------------------|---------------------|-------|--------|-------------|---|--------|
|                                     |                     |                       |                                    | Depth               | Width | Height |             |   |        |
| <b>Medical Scroll Systems</b>       |                     |                       |                                    |                     |       |        |             |   |        |
| BENV5D-8-M (desiccant dryer skid)   | N/A                 | N/A                   | N/A                                | 50.0                | 22.4  | 36.3   | 310         | Rigid base mount                                | UUT1.1 |
| BENV5D-8-M (receiver skid)          | 80                  | N/A                   | N/A                                | 37.3                | 32.0  | 55.4   | 560         |   | UUT1.2 |
| BENV5D-8-M (compressor skid)        | N/A                 | 2                     | 2                                  | 34.0                | 27.0  | 43.4   | 620         |   | UUT1.3 |
| BENV10Q-12-M (desiccant dryer skid) | N/A                 | N/A                   | N/A                                | 70.0                | 27.9  | 62.9   | 1,110       |   | UUT2.1 |
| BENV10Q-12-M (receiver skid)        | 120                 | N/A                   | N/A                                | 38.0                | 32.0  | 77.4   | 920         |   | UUT2.2 |
| BENV10Q-12-M (compressor skid)      | N/A                 | 4                     | 4                                  | 50.0                | 22.4  | 72.2   | 1,320       |   | UUT2.3 |
| HENV3D-8-M                          | 80                  | 2                     | 2                                  | 65.0                | 33.0  | 61.7   | 1,190       |   | UUT3   |
| HENV10D-24-M                        | 240                 | 2                     | 2                                  | 86.0                | 40.0  | 71.7   | 1,910       |   | UUT4   |
| <b>Controllers<sup>1</sup></b>      |                     |                       |                                    |                     |       |        |             |   |        |
| 321SMD466                           | N/A                 | N/A                   | N/A                                | 9.1                 | 24.0  | 30.0   | 121         | Manufacturer-provided, rigid base mounted stand | UUT5   |
| 325SMQ466                           | N/A                 | N/A                   | N/A                                | 9.0                 | 24.0  | 30.0   | 151         |   | UUT6   |
| 320SMD466                           | N/A                 | N/A                   | N/A                                | 9.0                 | 24.0  | 30.0   | 121         | Rigid base mounted tank unit frame              | UUT7   |
| 331SMD466                           | N/A                 | N/A                   | N/A                                | 9.1                 | 24.0  | 30.0   | 119         |   | UUT8   |

**Notes:**

1. The purpose of controller testing was to certify a new controller manufacturer.



# UUT1.1, 1.2, 1.3

## DCL Test Report 44686-1601

### UNIT UNDER TEST Summary Sheet



**Manufacturer:** Gardner Denver (also branded Champion and Allied Healthcare)

**Product Line:** Medical Scroll Systems

**Model Number:** BENV55D-8-M

**Product Construction Summary:** Powder coated carbon steel frame

**Options / Component Summary:**

208V, scroll pump with 5 HP WEG motor, 80 gallon vertical receiver tank, dew point monitor, CO monitor, 5 HP duplex controller with NEMA 4/12 enclosure, tank drain, aftercooler, intake filter element, check valve and desiccant air dryers.

**Note:** The UUTs were 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**

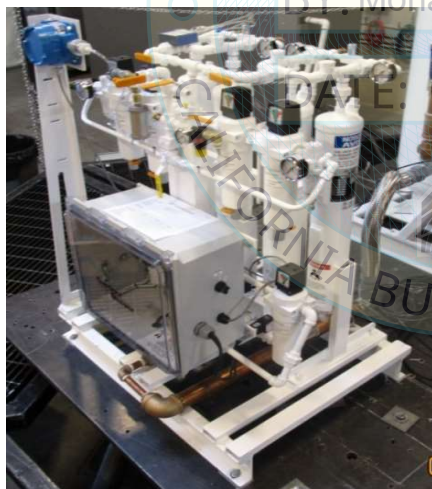
| Operating Weight (lb) | Dimensions (in)               |       |       |        | Lowest Natural Frequency (Hz) |                |              |
|-----------------------|-------------------------------|-------|-------|--------|-------------------------------|----------------|--------------|
|                       | UUT                           | Depth | Width | Height | Side-Side (X)                 | Front-Back (Y) | Vertical (Z) |
| 310                   | UUT1.1 (desiccant dryer skid) | 50.0  | 22.4  | 36.3   | 18.0                          | 20.0           | >33.3        |
| 560                   | UUT1.2 (receiver skid)        | 37.3  | 32.0  | 55.4   | 16.0                          | 16.0           | >33.3        |
| 620                   | UUT1.3 (compressor skid)      | 34.0  | 27.0  | 43.4   | 9.0                           | 8.0            | >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       | N/A        | N/A        |
|               |               | 2.50    | 0.0 |     | N/A        | N/A        | 1.67       | 0.67       |

**Unit Mounting Description:**

Each UUT was base mounted to the steel shake table interface plate with four 3/8" diameter Grade 5 bolts, one on each corner of the skid.



UUT1.1



UUT1.2



UUT1.3

**UUT2**  
**DCL Test Report 44686-1601**  
**UNIT UNDER TEST Summary Sheet**



**Manufacturer:** Gardner Denver (also branded Champion and Allied Healthcare)

**Product Line:** Medical Scroll Systems

**Model Number:** BENV510Q-12-M

**Product Construction Summary:** Powder coated carbon steel frame

**Options / Component Summary:**

575V, scroll pump with 10 HP WEG motor, 120 gallon vertical receiver tank, dew point monitor, CO monitor, 10 HP quadruplex controller with NEMA 4/12 enclosure, tank drain, aftercooler, intake filter element, check valve and desiccant air dryers.

**Note:** The UUTs were 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) |                |              |
|-----------------------|-------------------------------|-------|-------|--------|-------------------------------|----------------|--------------|
|                       | UUT                           | Depth | Width | Height | Side-Side (X)                 | Front-Back (Y) | Vertical (Z) |
| 1,100                 | UUT2.1 (desiccant dryer skid) | 70.0  | 27.9  | 62.9   | 14.0                          | 8.0            | >33.3        |
| 920                   | UUT2.2 (receiver skid)        | 38.0  | 32.0  | 77.4   | 13.0                          | 9.0            | >33.3        |
| 1,320                 | UUT2.3 (compressor skid)      | 50.0  | 22.4  | 72.2   | 5.0                           | 10.0           | 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       | N/A        | N/A        |
|               |               | 2.50    | 0.0 |     | N/A        | N/A        | 1.67       | 0.67       |

**Unit Mounting Description:**

UUT2.1 was base mounted to the steel shake table interface plate with four 3/8" diameter Grade 5 bolts, one on each corner of the skid. UUT2.2 and UUT2.3 were base mounted with four 1/2" diameter Grade 5 bolts, one on each corner of the skid.



UUT2.1



UUT2.2



UUT2.3

**UUT3**  
**DCL Test Report 44686-1601**  
**UNIT UNDER TEST Summary Sheet**



**Manufacturer:** Gardner Denver (also branded Champion and Allied Healthcare)

**Product Line:** Medical Scroll Systems

**Model Number:** HENVS3D-8-M

**Product Construction Summary:** Powder coated carbon steel frame

**Options / Component Summary:**

208V, scroll pump with 3 HP WEG motor, 80 gallon horizontal receiver tank, dew point monitor, CO monitor, 3 HP duplex controller with NEMA 4/12 enclosure, tank drain, aftercooler, intake filter element, check valve and 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) |                |              |
|-----------------------|-----------------|-------|-------|--------|-------------------------------|----------------|--------------|
|                       | UUT             | Depth | Width | Height | Side-Side (X)                 | Front-Back (Y) | Vertical (Z) |
| 1,190                 | UUT3            | 65.0  | 33.0  | 61.7   | 8.0                           | 8.0            | 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       | N/A        | N/A        |
|               |               | 2.50    | 0.0 |     | N/A        | N/A        | 1.67       | 0.67       |

**Unit Mounting Description:**

UUT3 was base mounted with four 1/2" diameter Grade 5 bolts, one on each corner of the skid.



UUT3

**UUT4**  
**DCL Test Report 44686-1601**  
**UNIT UNDER TEST Summary Sheet**



**Manufacturer:** Gardner Denver (also branded Champion and Allied Healthcare)

**Product Line:** Medical Scroll Systems

**Model Number:** HENVS10D-24-M

**Product Construction Summary:** Powder coated carbon steel frame

**Options / Component Summary:**

575V, scroll pump with 10 HP WEG motor, 240 gallon horizontal receiver tank, dew point monitor, CO monitor, 10 HP duplex controller with NEMA 4/12 enclosure, tank drain, aftercooler, intake filter element, check valve and 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) |                |              |
|-----------------------|-----------------|-------|-------|--------|-------------------------------|----------------|--------------|
|                       | UUT             | Depth | Width | Height | Side-Side (X)                 | Front-Back (Y) | Vertical (Z) |
| 1,910                 | UUT4            | 86.0  | 40.0  | 71.7   | 6.0                           | 5.0            | >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       | N/A        | N/A        |
|               |               | 2.50    | 0.0 |     | N/A        | N/A        | 1.67       | 0.67       |

**Unit Mounting Description:**

UUT4 was base mounted with four 1/2" diameter Grade 5 bolts, one on each corner of the skid.



UUT4

**UUT5**  
**DCL Test Report 52722-2201**  
**UNIT UNDER TEST Summary Sheet**



**Manufacturer:** Neucotrol

**Product Line:** Medical Scroll Systems, Controllers

**Model Number:** 321SMD466

**Product Construction Summary:** Powder coated carbon steel frame, NEMA 4/12

**Options / Component Summary:**

208V, 5 HP duplex controller with NEMA 4/12 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 and attachment system and force-resisting systems was maintained.

**UUT Properties**

| Operating Weight (lb) | Dimensions (in) |                     |       |       |        | Lowest Natural Frequency (Hz) |                |              |
|-----------------------|-----------------|---------------------|-------|-------|--------|-------------------------------|----------------|--------------|
|                       | UUT             | Component           | Depth | Width | Height | Side-Side (X)                 | Front-Back (Y) | Vertical (Z) |
| 121                   | UUT5            | Controller          | 9.1   | 24.0  | 30.0   | N/A                           | N/A            | N/A          |
| 215                   |                 | Controller w/ Stand | 27.5  | 31.5  | 65.3   |                               |                |              |

**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       | N/A        | N/A        |
|               |               | 2.50    | 0.0 |     | N/A        | N/A        | 1.67       | 0.67       |

**Unit Mounting Description:**

UUT5 was mounted on a manufacturer-provided stand with four 5/16" diameter Grade 5 bolts, washers, and nuts. The stand was mounted to the shake table interface plate with four 3/8" diameter Grade 5 bolts and washers. The manufacturer-provided stand was made of 2" x 2" x 1/4" painted carbon tube steel and has a part number of P13108B from Champion.



UUT5

**UUT6**  
**DCL Test Report 52722-2201**  
**UNIT UNDER TEST Summary Sheet**



**Manufacturer:** Neucotrol

**Product Line:** Medical Scroll Systems, Controllers

**Model Number:** 325SMD466

**Product Construction Summary:** Powder coated carbon steel frame, NEMA 4/12

**Options / Component Summary:**  
 575V, 10 HP quadruplex controller with NEMA 4/12 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 and attachment system and force-resisting systems was maintained.

**UUT Properties**

| Operating Weight (lb) | Dimensions (in) |                     |       |       |        | Lowest Natural Frequency (Hz) |                |              |
|-----------------------|-----------------|---------------------|-------|-------|--------|-------------------------------|----------------|--------------|
|                       | UUT             | Component           | Depth | Width | Height | Side-Side (X)                 | Front-Back (Y) | Vertical (Z) |
| 151                   | UUT6            | Controller          | 9.0   | 24.0  | 30.0   | N/A                           | N/A            | N/A          |
| 235                   |                 | Controller w/ Stand | 27.5  | 32.3  | 65.3   |                               |                |              |

**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       | N/A        | N/A        |
|               |               | 2.50    | 0.0 |     | N/A        | N/A        | 1.67       | 0.67       |

**Unit Mounting Description:**

UUT6 was mounted on a manufacturer-provided stand with four 5/16" diameter Grade 5 bolts, washers, and nuts. The stand was mounted to the shake table interface plate with four 3/8" diameter Grade 5 bolts and washers. The manufacturer-provided stand was made of 2" x 2" x 1/4" painted carbon tube steel and has a drawing number of P13108B from Champion.



UUT6

**UUT7**  
**DCL Test Report 52722-2201**  
**UNIT UNDER TEST Summary Sheet**



**Manufacturer:** Neucotrol

**Product Line:** Medical Scroll Systems, Controllers

**Model Number:** 320SMD466

**Product Construction Summary:** Powder coated carbon steel frame, NEMA 4/12

**Options / Component Summary:**

208V, 3 HP duplex controller with NEMA 4/12 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 and attachment system and force-resisting systems was maintained.

**UUT Properties**

| Operating Weight (lb) | Dimensions (in) |                            |       |       |        | Lowest Natural Frequency (Hz) |                |              |
|-----------------------|-----------------|----------------------------|-------|-------|--------|-------------------------------|----------------|--------------|
|                       | UUT             | Component                  | Depth | Width | Height | Side-Side (X)                 | Front-Back (Y) | Vertical (Z) |
| 121                   | UUT7            | Controller                 | 9.0   | 24.0  | 30.0   | N/A                           | N/A            | N/A          |
| 1,100                 |                 | Controller w/<br>Tank Unit | 67.0  | 31.5  | 59.5   |                               |                |              |

**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       | N/A        | N/A        |
|               |               | 2.50    | 0.0 |     | N/A        | N/A        | 1.67       | 0.67       |

**Unit Mounting Description:**

UUT7 was mounted on a Gardner Denver HENVS3D-8-M tank unit with four 5/16" diameter Grade 5 bolts, washers, and nuts. The tank unit was mounted to the shake table interface plate with four 1/2" diameter Grade 5 bolts, washers, and 1.5" x 1.5" x 1/4" carbon steel plate washers. 131 pounds of dummy weight was retrofitted to the tank unit to simulate minor subcomponents.



UUT7

**UUT8**  
**DCL Test Report 52722-2201**  
**UNIT UNDER TEST Summary Sheet**



**Manufacturer:** Neucotrol

**Product Line:** Medical Scroll Systems, Controllers

**Model Number:** 331SMD466

**Product Construction Summary:** Powder coated carbon steel frame, NEMA 4/12

**Options / Component Summary:**

575V, 10 HP duplex controller with NEMA 4/12 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 and attachment system and force-resisting systems was maintained.

**UUT Properties**

| Operating Weight (lb) | Dimensions (in) |                            |       |       |        | Lowest Natural Frequency (Hz) |                |              |
|-----------------------|-----------------|----------------------------|-------|-------|--------|-------------------------------|----------------|--------------|
|                       | UUT             | Component                  | Depth | Width | Height | Side-Side (X)                 | Front-Back (Y) | Vertical (Z) |
| 119                   | UUT8            | Controller                 | 9.1   | 24.0  | 30.0   | N/A                           | N/A            | N/A          |
| 1,730                 |                 | Controller w/<br>Tank Unit | 86.0  | 36.0  | 70.5   |                               |                |              |

**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       | N/A        | N/A        |
|               |               | 2.50    | 0.0 |     | N/A        | N/A        | 1.67       | 0.67       |

**Unit Mounting Description:**

UUT8 was mounted on a Gardner Denver HENVS10D-24-M tank unit with four 5/16" diameter Grade 5 bolts, washers, and nuts. The tank unit was mounted to the shake table interface plate with four 1/2" diameter Grade 5 bolts, washers, and 1.5" x 1.5" x 1/4" carbon steel plate washers. 191 pounds of dummy weight was retrofitted to the tank unit to simulate minor subcomponents.



UUT8