

## Lifeline® "Oil-Free" Rotary Tooth Medical Air Water Cooled Duplex Modular System (40-60 HP)

### SPECIFICATION

#### **Modular System Design**

The medical air system is of a modular base mounted design and each module is fully compliant with the latest edition of NFPA 99. The complete system includes:

- Two fixed speed compressor modules
- One duplex dryer/control module with central control system
- Corrosion resistant vertical air receiver

#### **Compressor Module**

The compressor modules are fully enclosed with sound attenuated steel panels with full access doors for maintenance and inspection. Each compressor module includes the compressor, drive motor with starter, oil system, and a compressor control system.

- Compressor intake equipped with an air intake filter and integral shutoff/unloading valve
- Unloading carried out by closing the intake valve
- Loading or unloading of the unit controlled by a pressure transducer, actuating the loading solenoid valve
- Air discharge for the compressor module includes pulsation damper, check valve, and manual isolation valve
- Ventilation for the module supplied by a radial fan with a separate motor
- Unit controller displays the runtime hours, temperature readouts, pressure readouts, service indicators, safety warnings, and safety shutdowns for the compressor module

#### *Compressor*

The compressor is a two-stage, oil-free compressor block, consisting of separate low and high pressure rotary tooth compressor elements flanged to a common step-up gearbox.

- Compressor elements are water cooled
- High and low compressor elements supplied with safety relief valves
- Intercooler cools first stage air with moisture trap and automatic drain valve
- Aftercooler cools second stage air, includes moisture trap with manual and automatic drain valves
- Gearbox oil system includes an oil sump, pump, oil filter, bypass valve, drain connection, sightglass, and cooler

#### *Compressor Drive*

The compressor is direct-driven. Torque is transmitted from the motor to the compressor through a flexible shaft coupling.

#### *Compressor Motor*

The motor is a flange-mounted high-efficiency motor, operating at 3600 RPM with a 1.15 service factor suitable for 230 or 460 volt, 60 hertz, 3-phase electrical service. The motor is equipped with a Y-Delta starter, mounted and wired, to reduce current spikes when the motor is started.

#### *Compressor Unit Controller*

High-tech compressor controller with warning indications, compressor shut-down, and maintenance scheduling. The high-definition color touchscreen features clear pictograms.

#### *Isolation System*

The compressor and motor are fully isolated from the main module base by means of a heavy-duty isolation system.

#### **Dryer/Central Control Module**

The dryer/control module includes a central control system to control multiple compressors and a duplexed desiccant drying system with dew point hygrometer/CO transmitters. Each dryer includes inlet filters, final line filters, and a regulator. All of the above are factory piped and wired in accordance with NFPA 99 and include valving to allow complete air receiver bypass and air sampling port.

#### *Dryer/Filter/Regulator System*

Each desiccant dryer is individually sized for peak calculated demand and capable of producing a -40°F (-40°C) pressure dew point.

- Dryer purge flow minimized through an integral demand based purge saving control system
- Dryer inlets each include a combination particulate and coalescing filter rated for 0.01 micron with automatic drain and element change indicator
- Dryer final line filters each consist of a 1 micron particulate filter and one active carbon filter
- Factory mounted and piped duplexed final line regulators and safety relief valves
- Factory mounted and piped single oil indicator
- Final line regulators set for system delivery pressure of 55 psig

#### *Central Control System*

The mounted and wired central control system is NEMA 12, U.L. labeled, and rated for 115V single phase electrical service.

The central control system controls the following:

- Regulates the net pressure within programmable limits by starting, loading, unloading, and stopping the compressors connected according to the programmed sequence
- Controls the regeneration cycles of the desiccant dryers while monitoring the dew point and CO levels of the discharge air
- Distributes the running time between the connected compressors
- Status of each compressor visible on the control screen
- Operating parameters accessible via the menu
- Visual/audible reserve unit alarm with isolated contacts for remote alarm
- Visual/audible alarm indication for high discharge air temperature shutdown with isolated contacts for remote alarm



#### Dew Point/CO Transmitters

The dryer/control module incorporates a dew point and CO transmitter that is mounted, pre-piped, and wired.

- Dew Point and CO conditions displayed on the central control system
- Dewpoint transmitter probe is the ceramic type sensor
- System accuracy a minimum of  $\pm 2^\circ \text{C}$  for dew point and  $\pm 2$  PPM (at 10 PPM) for carbon monoxide
- Dew point alarm factory set at  $36^\circ \text{F}$  ( $2^\circ \text{C}$ ) per NFPA 99
- CO alarm factory set at 10 PPM
- Field adjustable alarm set points for both dew point and CO
- High CO and high dew point conditions indicated with visual and audible alarms

#### Air Receiver Module

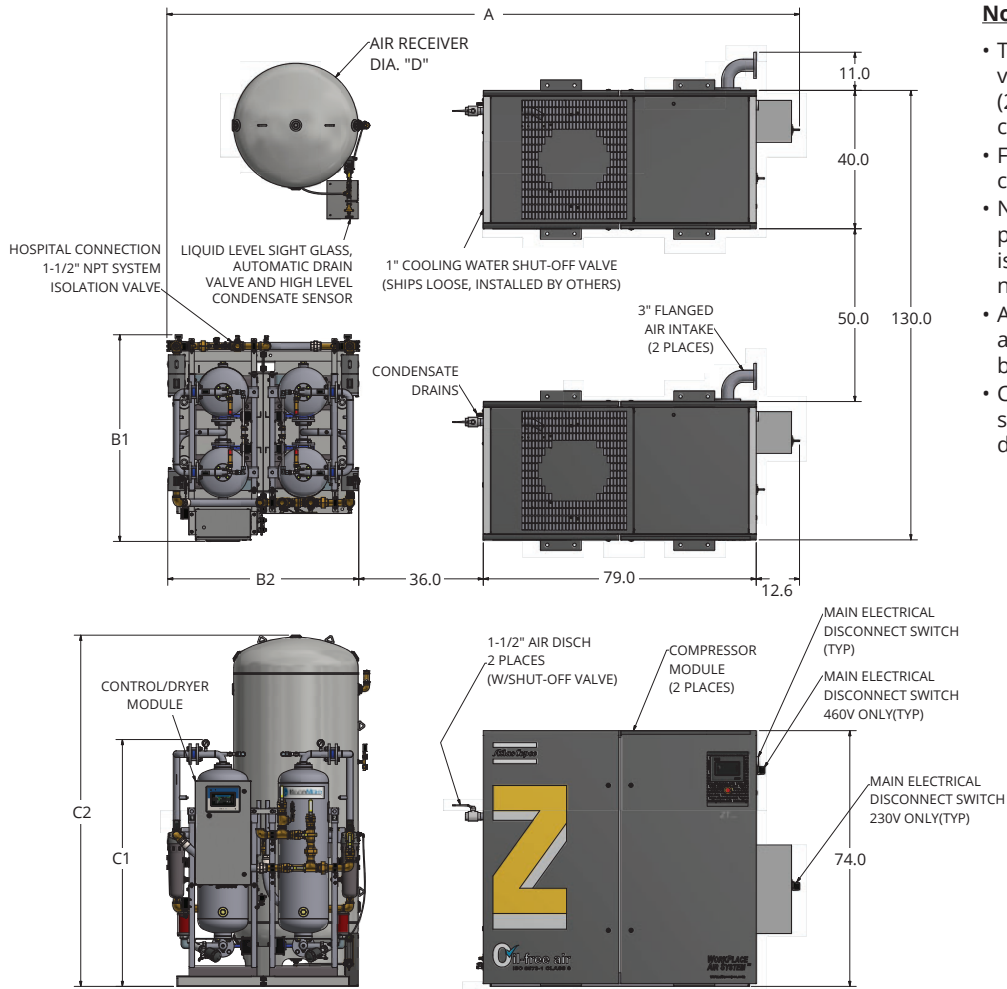
The vertical air receiver is ASME Coded, National Board Certified, corrosion resistant, and rated for a minimum 150 PSIG design pressure. The assembly includes:

- Liquid level sight glass
- Pressure gauge
- Safety relief valve
- Manual drain valve
- Automatic solenoid drain valve.

Specifications <sup>1</sup>									
System Model No.	Unit HP	Compressor Model	Capacity FAD <sup>2</sup> (CFM)	System <sup>3</sup> BTU/HR	Receiver (gallons)	Noise Level <sup>4</sup>	Compressor FLA (each unit)		Dryer FLA
							460/3/60	230/3/60	115/1/60
ZRM-30D-D240-D	40	ZR30	167	9,160	240	63	65	129	1.3
ZRM-30D-D400-D	40	ZR30	167	9,160	400	63	65	129	1.3
ZRM-37D-D240-D	50	ZR37	204	11,400	240	65	77	152	1.3
ZRM-37D-D400-D	50	ZR37	204	11,400	400	65	77	152	1.3
ZRM-45D-D400-D	60	ZR45	243	13,740	400	67	94	187	1.3

1. Normal operating conditions at a maximum ambient of  $105^\circ \text{F}$ . Consult factory for higher ambient conditions.
2. All capacities are shown as NFPA 99 system capacities (reserve compressor on standby). Reference conditions: absolute inlet pressure 1 bar (14.5 psi); intake air temperature  $20^\circ \text{C}$  ( $68^\circ \text{F}$ ); 7.5 bar (109 psi) max. working pressure. NOTE: System delivery pressure is 55 psig. For higher delivered pressure, contact the factory.
3. All system BTU/HR are shown with reserve compressor on standby.
4. All noise levels are shown in dB(A) and reflect reserve compressor on standby.

### Proposed Modular Configuration



#### Notes:

- This is a modular system, bring high voltage power to each compressor (2 places) and 120V power to the central control panel.
- Flexible intake and discharge connections ship loose.
- No special foundation or inertia pad is required (housekeeping pad is optional). No vibration pads are necessary.
- Additional drawings/diagrams available for download at [www.beaconmedaes.com](http://www.beaconmedaes.com)
- Consult manuals shipped with each system for pertinent installation details.

System Model No.	Unit HP	Receiver (gallons)	Dimensions (in)						System Weight (lbs.)		
			A	B1	B2	C1	C2	D	Module <sup>1</sup>	Dryer	Receiver
ZRM-30D-D240-D	40	240	163.8	56.3	50	72.3	94	30	2648	1798	542
ZRM-30D-D400-D	40	400	163	56.3	50	72.3	101.6	36	2648	1798	797
ZRM-37D-D240-D	50	240	163.8	56.3	50	72.3	94	30	2758	1798	542
ZRM-37D-D400-D	50	400	163	56.3	50	72.3	101.6	36	2758	1798	797
ZRM-45D-D400-D	60	400	167.8	59.8	55.7	71.4	101.6	36	2842	2362	797

1. Module weight represents one compressor module.

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