



Humphrey's custom manifold assembly controls the pneumatic functions on a ventilator system used by the military to stabilize wounded soldiers being sent to a medical facility at the rear.



- 1 Custom manifold incorporates all valve circuitry
- 2 Humphrey B-Series Mizer valves offer enhanced performance over a wider temperature range, 0.5 Watt current consumption and consistent actuation.
- 3 Humphrey assembles and 100% tests all modules
- 4 Height and width meets critical space envelope requirement



## Custom Manifold Assembly for Medical Ventilator Reduced Costs and Ensured Performance Throughout a Range of Environmental Extremes

### THE CUSTOMER'S PRODUCT:

- The customer designs and manufactures ventilators for use in respiratory therapy.
- The particular ventilator model is used in a wide range of applications.
- Customer was currently purchasing individual Humphrey valves, then manufacturing their own manifolds and assembling the system.

### THE REQUIREMENTS:

- Provide a pre-assembled system that meets tight dimensional requirements
- Meet critical performance specifications
- Unit must be compatible with the company's existing controller

### THE HUMPHREY ENGINEERED SOLUTION:

- Created a custom manifold with integrated electrical circuitry
- All ports and mounting holes per customer specifications
- Incorporates Humphrey's new B-Series Mizer valves
- All contact materials approved for oxygen service
- Withstands range of temperature extremes from -25° C to 49° C
- Operates at altitudes up to 10,000 feet
- Maximum power consumption 0.5 Watts
- Humphrey assembles and 100% tests all assemblies prior to shipping

SIC: 3841



## THE SOLUTION:

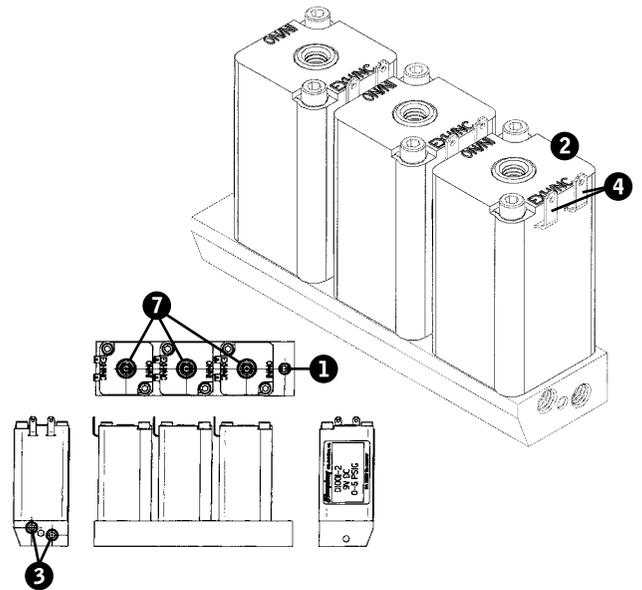
Having an established relationship, the customer immediately saw the benefits of the Engineered Solutions approach. A Humphrey engineer was assigned to work directly with the customer's engineering department, and together they identified the opportunities to improve product performance and reduce key costs.

Humphrey met all the customer's specifications, including the physical envelope, valve performance, low current consumption and signal compatibility with their existing controller module. By awarding Humphrey the responsibility of assembling and testing each unit prior to shipping, the customer saved assembly costs, including testing costs, and ensured that its ventilator units would function properly in a wide range of physical environments.

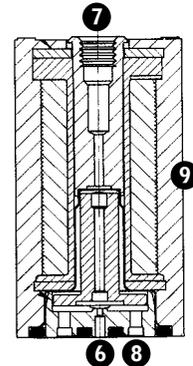
## THE PROCESS:

The Humphrey Engineered Solutions team began with the customer's request to provide a complete assembly that would enhance the performance of their portable medical ventilator under a wide range of environmental conditions. The first step was to substitute the new Humphrey B-Series valves for the original Mizer valves the customer had been purchasing individually. This would provide enhanced performance, 0.5 Watt current consumption, the ability to function in a wider temperature range (-40 to +150 F), a wide range of coil voltages, and increased coil force for more consistent actuation.

Next, Humphrey designed a custom manifold with integrated electrical circuits between the valves, common supply and exhaust galleries, and all porting and mounting holes to the customer's specifications. It was here that the Engineered Solutions team saw an opportunity to help the customer reduce costs and enhance reliability by pre-assembling the system and 100% testing each one before shipping. Now, the customer could eliminate the cost of assembling and testing units at their own facility. In addition, Humphrey's rigorous testing procedures ensured that every unit would meet the performance requirements in a wide range of environments.



- 1 Common supply all valves
- 2 Humphrey B-Series Mizer valve
- 3 Out to ventilator control
- 4 Electrical connections (spade terminals)
- 5 Mounting holes (4 holes - not shown - bottom)



- 6 Inlet Port
- 7 Exhaust Ports
- 8 Cylinder Port
- 9 Solenoid

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