



# Respiratory Solutions

## OUR HERITAGE

### ORIGINAL VALVE PARTNER

In 1985, the first patent for an electronic respirable gas delivery device was designed with Humphrey's valves inside. Our expertise of supplying valves for medical devices continued to grow for respiratory solutions. We partnered with the original oxygen concentrator manufacturer and supplied diaphragm valves used in the first artificial heart. These collaborations have provided in-depth industry insight & application experience.



### TRUSTED VALVE PARTNER

Humphrey has built a heritage of supplying valve solutions for critical care, transportation, portable and neonatal mechanical ventilators. We've been a valued partner, collaborating on designs, as the size, space and performance challenges have evolved over the years in this market. We are dedicated towards continuous improvement in order to meet the industry demands of the respiratory market.

## ENGINEERED SOLUTIONS

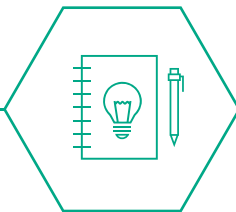
Humphrey's Engineered Solutions team partners directly with the manufacturer's engineering team when designing a custom valve solution. Through trusted collaboration, combination of core skills, and aligned purpose we can integrate our products and other elements to meet design requirements, easily integrate into production processes, and offer low costs to our customers.

- Select from a variety of proven and unique valve designs and proprietary sealing technologies.
- 25 years experience of collaborating with client engineers, acting as their fluid system control partner.
- Regulatory experience and process control systems in place for medical devices.



### CHALLENGE

We begin working closely on a peer-to-peer basis with your engineers early in the design process to understand your needs.



### CONCEPT

Often we present multiple concepts and will recommend a design that provides maximum benefits to you.



### SOLUTION

We finalize the design using proven Humphrey valve technology and assist you in moving quickly from prototype to production.



### RESULT

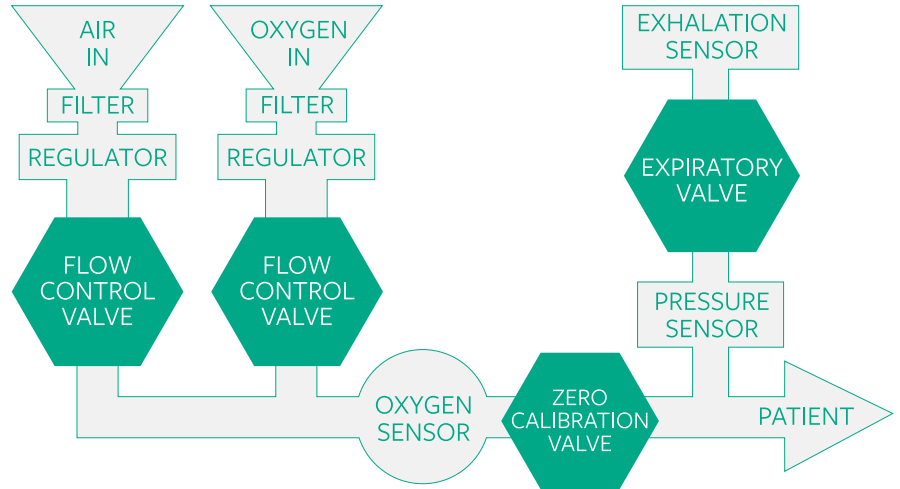
We implement your solution, measuring actual results to the original technical, commercial and schedule expectations. We continually explore ways to reduce costs.

Engineering **Respiratory** Solutions for Life



## VENTILATOR SCHEMATIC

Humphrey's product portfolio offers customizable flow rates, spatial limitations, low current consumptions and long life cycles for portable, neonatal and critical care ventilators. Our Life Science Group can be your single source provider for all pneumatic flow control solutions in your next respiratory innovation.



## PROVEN SOLUTIONS



PC 100 Servoid



PC 30 Series

### FLOW CONTROL VALVE

#### Oxygen / Air Proportional Flow Control

- **High Flow** in very compact construction.
- **Low Leak Rate** conserves oxygen.
- **Low Mass** very sensitive to applied current changes.



A10 Series



A15 Series



HK5 Series

### ZERO CALIBRATION VALVE

#### Auto Zero Pressure Sensor

- **Very Compact** manifold solution with **Low Cost**.
- **Low Power. High Flow. Oxygen Compatible**.
- **Low leak rate** ensures integrity.



PC3 Series



PC10 Series

### EXHALATION VALVE

#### Proportionally Control Exhalation Rate

- **Low mass**. Very sensitive to changes in applied current.
- **Adjustable** to Customer's exact requirements.
- **Low leak rate** when in OFF condition.