



## Designing Custom Pumps That *Elevate Patient Care* Is Our Goal.



## Your Satisfaction Is Our Benchmark.

Established in 1988, Dynaflo, Inc. specializes in creating custom OEM diaphragm vacuum pumps and compressors with a dedicated focus on innovative medical devices that enhance patient care. Manufacturers prefer our innovative designs because they:

- Are 60% more efficient than leading pumps
- Provide precise and accurate flow
- Function responsively under different pressures and loads
- Are small and lightweight to easily integrate into portable devices
- Require minimal maintenance
- · Are custom-designed for you at off-the-shelf prices

#### Ensuring Safe, Reliable Performance.

Medical device failure is not an option when patient lives are at stake. That's why our in-house engineers meticulously create each pump in the United States using medical-grade components designed specifically for demanding ambulance, aircraft, military, and hospital environments.

Every custom pump we create is focused on safe and reliable performance that meets or exceeds the requirements of the FDA for contamination control, RoHS, and ISO 10933.

#### Custom or Customized. You Choose.

Dynaflo, Inc. provides a multitude of customization services to help your medical devices stand out from the crowd. We can adjust flow, performance, or motor options, create unique mechanical and electrical components to fit your needs—or design an entirely new pump unique to you.

"SPEED OF DEVELOPMENT AND PROTOTYPING, PARTNERSHIP, AND COLLABORATION WERE ALL KEY FACTORS WHEN WORKING WITH DYNAFLO." BEN POWERS VENIX INFUSION SYSTEM



## Design Aspirators for Safe, Reliable Suction

Dynaflo's 1000 Series diaphragm pumps are small and powerful, using ½ the power of leading pumps. They are our most versatile pump, used in pressure and vacuum medical devices, and are ideal for portable aspirators used in unpredictable and demanding emergency environments.

#### Rapidly Clear Airways

Quick airway clearance is critical to reduce the risk of hypoxia and other complications related to obstructed airways. The 1000 Series diaphragm vacuum pumps provide high flow (up to ~80 lpm) to facilitate rapid removal of fluids, mucus, and other obstructions from the patient's airway.

#### Optimize Patient Safety

With a vacuum level reaching up to 800 mbar (24 in Hg), the 1000 Series generates strong, steady suction power to efficiently maintain clear airways and minimize the risk of aspiration. Its maximum pressure of 1.1 bar (17 psi) ensures that suction is gentle enough for delicate tissues yet strong enough to remove thicker fluids or obstructions.

#### Maximize Performance

The 1000 Series diaphragm pumps are 60% more efficient than their leading counterparts. They deliver a powerful 2.9 lpm/W to ensure fast, reliable suction without burning through your battery life. These pumps are built with medical-grade materials and designed specifically for use in demanding environments to maximize the life of your aspirator.

#### **Transport** Easily

The 1000 Series diaphragm pumps are compact and lightweight to integrate into portable aspirators easily. Their small size and weight make it easy to transport and use aspirators in environments with limited space, such as ambulances and helicopters.

The 1000 Series diaphragm pumps meet FDA contamination requirements and are RoHS and ISO 10933-compliant.

Besides being integral components of medical aspirators, these pumps are frequently used in pressure or vacuum products like catheter cleaning, endoscopy, air sampling, and vacuum lifters. The most common customizations for this pump include tailored motors, port configurations, materials, eccentrics, wiring, mounting, and white labeling for pump design exclusivity.

## 1000 SERIES FOR PORTABLE ASPIRATORS



#### Typical Dual-Head Specifications

Power & Flow	2.9 lpm/W
Max Flow	75 l/min (2.6 cfm)
Max Vacuum	~800 mbar (24 in Hg)
Max Pressure	1.1 bar (17 psi)
Motor Options	Brush DC or Brushless DC
Voltage	12 VDC or 24 VDC
Current	~ 4.5 A
Weight	~5.5 lbs (2.5 kg)
Mounting	M5 or 6-32
Valve Material	Silicone or custom
Diaphragm Material	EPDM or custom
Port Orientation	Side-by-side or in-line
Wire/Connector	Flying lead or custom
Price Range*	\$175 - \$275

\*Prices are typical for brush DC motors. Final pricing depends on the motor, volume, and customization features.







## Design Prosthetics that Amplify Trust

Dynaflo's 2000 Series mini diaphragm pump is one of the highest-performing pumps of its size and type. It was customdesigned specifically for suction-based prosthetic devices to ensure they remain securely attached to an amputee's limb, even when they move in ways that might disrupt suction.

#### Fast, Comfortable Grip

Despite its size, the 2000 Series provides 1.5 lpm (0.05 cfm) flow, 2 bar (30 PSI) pressure, and can reach ~914 mbar (27 Hg) in mere seconds to ensure suction-based prosthetics grip firmly but comfortably to a residual limb.

#### Consistent Reliable Suction

An efficient high-torque motor and a lightweight, compact design ensure consistent, uninterrupted use over extended periods. The pump starts back up under full vacuum to ensure the prosthetic remains securely attached, even when an amputee moves in a way that might disrupt suction.

#### Mimic Natural Movement

The 2000 Series comes in a tiny micro package to fit compact engineering designs. It weighs only 0.04 lbs (18 g) to help your prosthetic provide amputees with an experience that is as close as possible to the natural movement and feel of an actual limb.

#### Extended Prosthetic Use

The 2000 Series mini diaphragm pump is designed to draw under 1 Watt at full vacuum. This power efficiency ensures amputees can confidently wear prosthetics for extended periods without worrying about battery drainage.

The 2000 Series mini diaphragm pumps meet FDA contamination requirements and are RoHS and ISO 10933-compliant.

Besides being integral components of suction-based prosthetics, these pumps are ideal for products that require high vacuum, portability, a high torque motor in a small package, and can start back up under full vacuum. The most common customizations for this pump include tailored flow rates, motors, port configurations, materials, wiring, connectors, mounting, and white labeling for pump design exclusivity.

## 2000 SERIES FOR PROSTHETIC DEVICES



#### **Typical Specifications**

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Power & Flow	0.7 lpm/W
Max Flow	1.5 l/min (0.05 cfm)
Max Vacuum	~914 mbar (27 in Hg)
Max Pressure	~2 bar (30 psi)
Motor Options	Brush DC; Brushless DC available
Voltage	3.7-6 VDC
Current	~0.5 A
Weight	0.04 lbs (18g)
Mounting	Custom
Valve Material	Silicone or custom
Diaphragm Material	EPDM or custom
Port Orientation	Side-by-side
Wire/Connector	Flying lead or custom
Price Range*	\$150 - \$200

\*Prices are typical for brush DC motors. Final pricing depends on the motor, volume, and customization features.







## Design Pulse-Free Ventilators That Match Patients' Natural Breathing Patterns

Dynaflo's 3000 Series diaphragm pump was designed specifically for portable ventilators. The pump's twelve mini radial pump heads are optimized to provide uniform, high flow at low pressure. They provide a truly smooth stream of air from a durable, lightweight body so ventilators can match the natural breathing patterns of patients.

#### Mimic Natural Breathing Patterns

The patented 12-head radial design responds quickly to electrical / command inputs to eliminate pulsation and vibration issues and provide ultra-smooth airflow that mimics the smooth, natural breathing pattern of patients This fosters confidence in medical professionals' ability to ventilate patients, so they spend less time on monitoring.

#### Precisely Control Air Flow

An efficient, low-profile brushless DC motor operates over a wide range of speeds so you can precisely control airflow to patients who are large, small, or anything in between.

#### Use in Demanding Environments

The 3000 Series pumps operate efficiently across a broad temperature spectrum, from -40 to 120°F (-40 to 50°C). They can adapt to varying atmospheric pressures by enabling high to low flow rates, ensuring optimal performance worldwide.

#### Extend Ventilator Lifespan

The 3000 Series was designed to extend the life of your ventilator. It uses a long-life brushless DC motor, the radial design provides consistent torque to enhance operational efficiency, and the diaphragms are meticulously crafted to flex by rolling to reduce motor strain.

The 3000 Series pumps meet transport standards EN 794-3 and ISO 10651-3 for emergency and transport ventilators, EN 1789 for ambulances, EN 13718-1 and RTCA/DO-160G for aircraft, and IEC60601-1-12 for basic safety and essential performance. They meet FDA contamination requirements and are RoHS and ISO 10933-compliant.

Besides being integral components of ventilators, these pumps are ideal for products that require an extremely fast response, low pressure output, and a smooth, pulse-free flow. The most common customizations for this pump include tailored materials, wiring, connectors, mounting, and white labeling for pump design exclusivity.

## 3000 SERIES FOR MEDICAL VENTILATORS



#### **Typical Specifications**

Power & Flow	2.7 lpm/W
Max Flow	140 l/min (4.9 cfm)
Max Pressure	140 mbar (2 psi)
Motor Options	Brushless DC
Voltage	12 VDC
Current	~ 5.5 A
Weight	1.5 lbs (0.7 kg)
Mounting	Custom
Valve Material	Silicone or custom
Diaphragm Material	EPDM or custom
Port Orientation	Side-by-side, fixed
Wire/Connector	Flying lead or custom
Price Range*	\$475 - \$575

\*Prices are typical for brush DC motors. Final pricing depends on the motor, volume, and customization features.





# Develop Safer, *More Accurate*

## Drug Infusion Systems

Dynaflo's 6000 Series micro diaphragm pumps were designed specifically for a revolutionary drug infusion system that aimed to solve significant issues associated with drug delivery in U.S. hospitals. These pumps generate short bursts of pneumatic pressure and vacuum to actuate the drug delivery infusion pump.

#### Precisely Control Flow

Dynaflo's 6000 Series micro pump generates short bursts of pneumatic pressure (up to 27 psi) and vacuum (up to 27 inHg) to keep the infusion system's flow rate consistent, even when tubing is long or there is a change in tube elevation. A max flow rate of 9.5 lpm (0.3 cfm) ensures the drug infusion system delivers medicine quickly and efficiently.

#### Safely Deliver Medicine

It's critical for drug infusion systems to deliver the right amount of medicine to patients at the right time. The 6000 Series micro diaphragm pump was designed to restart under load so infusion systems can deliver medicine at a safe, consistent rate and pressure, even if the system temporarily stops.

#### Ensure Unfailing Reliability

The 6000 Series micro diaphragm pumps were tested continuously for 16 weeks to ensure they could withstand electrical and mechanical issues associated with thousands of short bursts (~100ms) of on/off cycles. They're made with medical-grade materials for the valve, diaphragm, and bearings—and a long-lasting motor to help maximize the life of the drug infusion system.

#### Transport with Ease

With a weight of just 0.2 lbs (0.1 kg), the 6000 Series micro diaphragm pumps are lightweight and compact. They are easy to integrate into small devices and help keep drug infusion systems light for optimal portability.

The 6000 Series micro pumps exceed the requirements of the FDA for contamination control and are RoHS and ISO 10933-compliant.

Besides being integral components of drug infusion systems, these pumps are ideal for products that need to generate short bursts of pneumatic pressure, vacuum, and precise flow control. The most common customizations for this pump include tailored port configurations, materials, wiring, connectors, mounting, and white labeling for pump design exclusivity.

## 6000 SERIES FOR DRUG INFUSION SYSTEMS



#### Typical Dual-Head Specifications

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Power & Flow	~1.5 lpm/W
Max Flow	~9.5 lpm (0.3 cfm)
Max Vacuum	~735 mbar (22 in Hg)
Max Pressure	~0.6 bar (9 psi)
Motor Options	Brush DC, Brushless DC
Voltage	12 VDC, custom
Current	~ 1 A
Weight	~0.20 lbs (0.1 kg)
Mounting	Custom
Valve Material	Silicone or custom
Diaphragm Material	EPDM or custom
Port Orientation	Side-by-side
Wire/Connector	Flying lead or custom
Price Range*	\$150 - \$250

 $^{*}\mbox{Prices}$  are typical for brush DC motors. Final pricing depends on the motor, volume, and customization features.



#### VACUUM PERFORMANCE CURVE



#### "DYNAFLO'S PUMPS ARE THE RIGHT MIX OF SIZE, WEIGHT, POWER, AND PRICE."



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#### Experience the Dynaflo Pump Difference.

Our pumps don't just meet standards; they redefine them. Integrate a solution that amplifies performance and gives you a competitive edge in the marketplace. Visit *dynaflopumps.com* or contact us to find out if a Dynaflo pump can give your product a competitive edge.



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