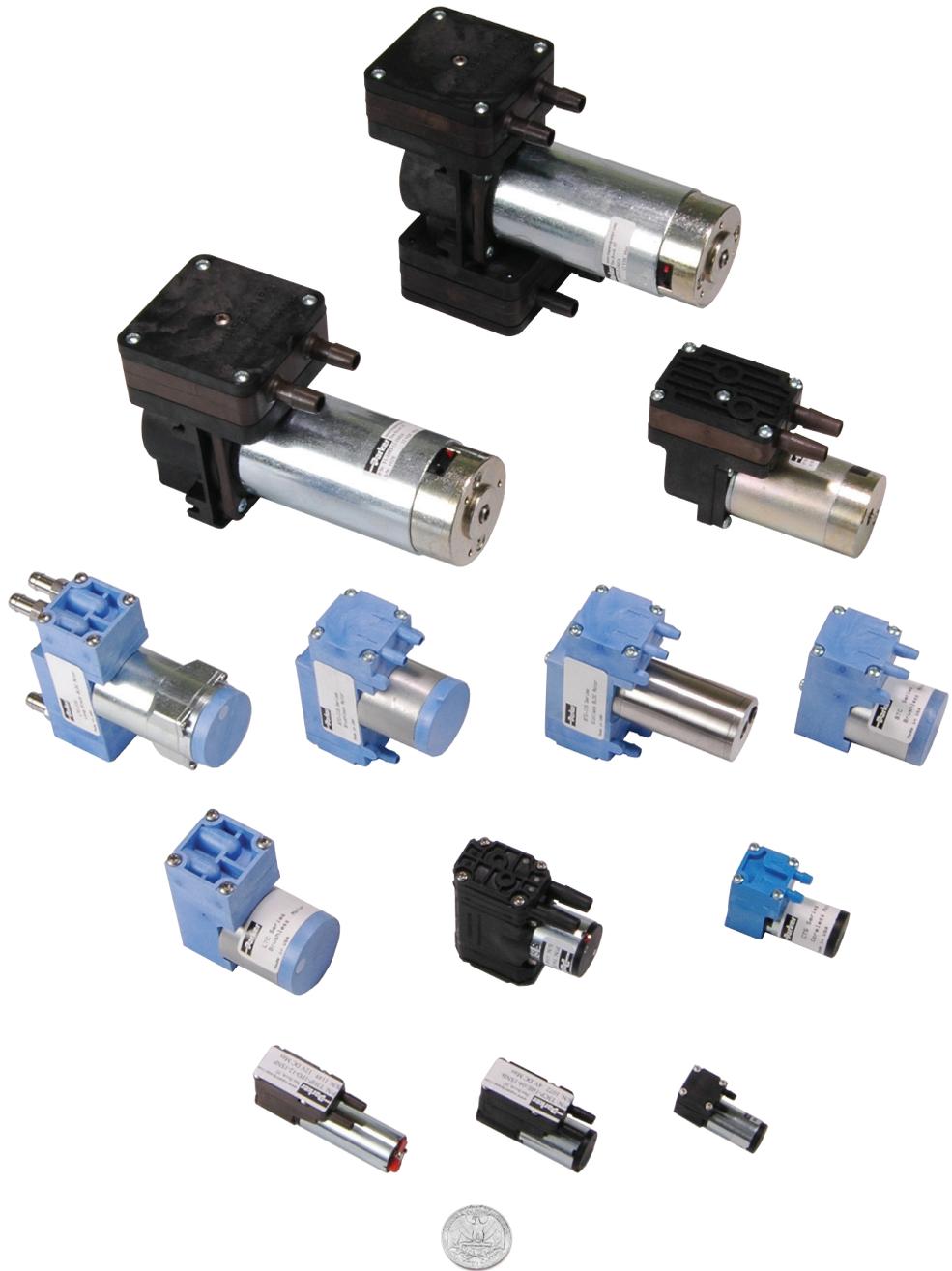




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climate control  
electromechanical  
filtration  
**fluid & gas handling**  
hydraulics  
pneumatics  
process control  
sealing & shielding



# Miniature Diaphragm Pumps

## Precision Fluidics



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When you partner with the global leader in motion and control technologies, expect to move your business and the world forward. From miniature solenoid valves to highly integrated automation systems, our innovations are critical to life-saving medical devices and scientific instruments used for drug discovery and pathogen detection. Not to mention, critical to decreasing time to market and lowering your overall cost of ownership. So partner with Parker, and get ready to move, well, anything.



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# T2-05

## Micro Pumps (air/gas)

Up to 650 mLPM Free Flow



Ironless Core

Designed to fit where other pumps can't, the T2-05 DC motor-driven pump's extra small size and high efficiency reduce footprints and extend battery life. The motor, pump head, and valve combination provide reliable long life operation. Our smallest pump was designed for applications where low power, small size, and light weight are critical. Unique valve design minimizes leakage to maximize flow.

### Features

- **High Efficiency**

The valve design has been optimized to provide the highest flowrates available with the lowest current draw. Low power leads to longer battery life and smaller instrument size.

- **Long Life**

The wear components of these pumps have been designed to provide maximum life. Many applications for these pumps require 10,000+ hours of operation.

- **Small Size and Lightweight**

The pumps fit into the extremely tight spaces demanded of today's handheld instruments, such as portable gas detectors. The lightweight design keeps instrument weight minimized.

- **Intrinsic Safety Capability**

The high efficiency ironless core motor can satisfy intrinsic safety requirements. It has been proven in applications for sampling of hazardous gases, vapors, and aerosols in a range of fixed and portable instruments.

### Typical Applications

- Nitrous Oxide Monitors
- Portable Safety Monitors
- Trace Detection
- Multimode Detectors
- Side Stream CO<sub>2</sub>
- Medical Gas Sampling

## Performance Data

### Physical Properties

**Operating Environment:**

32 to 122°F (0 to 50°C)

**Wetted Material:**

EPDM (Diaphragm/Valves),  
ABS (Head)

### Electrical

**Motor Type:**

Hi-efficiency Ironless Core

**Nominal Motor Voltages (DC):**

3.3, (custom options available)

**Max Power at Nominal Voltage:**

.36 (watts)

**Electrical Termination:**

28AWG Wire Leads ; lead length

5.7" ± 0.4".

### Pneumatic

**Head Configuration:**

Single

**Max Flow:**

0.65 lpm

**Max Intermittent Pressure:**

6.2 psi (430 mbar)

**Max Continuous Pressure:**

2.0 psi (138 mbar)

**Max Intermittent Vacuum:**

10.8 in Hg (365 mbar)

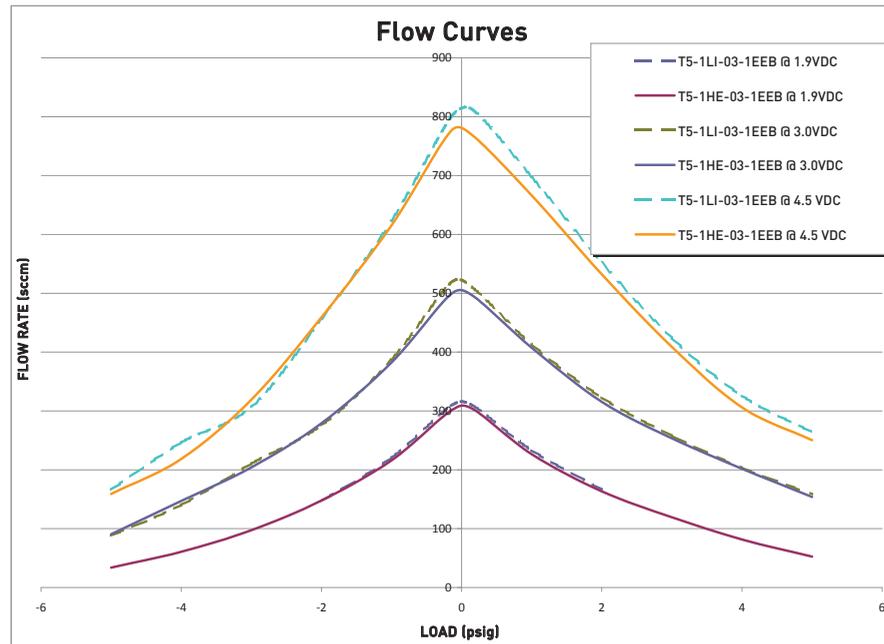
**Max Continuous Vacuum:**

4.1 in Hg (138 mbar)

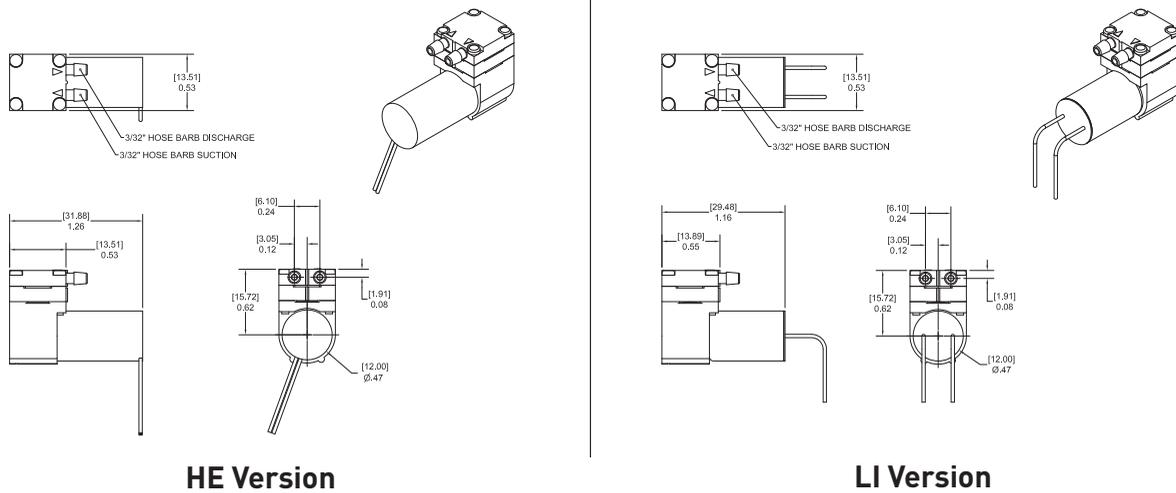
NOTE: All performance data is typical based on standard conditions: 70°F and 14.7 psia  
Custom motors may require a significant application potential. The standard motors can be configured with a special winding to meet a particular operation point at a specified voltage

# T2-05

## Micro Pumps (air/gas)



### Dimensions



HE Version

LI Version

### Ordering Information

Ex:	T5	1	HE	3	1	E
	<b>Model</b>	<b>Head Configuration</b>	<b>Motor</b>	<b>Nominal Voltage</b>	<b>Free Flow (SLPM)</b>	<b>Valve</b>
	T5	1 = Single Head	HE = High Efficiency LI = Low Inductance *	03 = 3 VDC	1 = 0.5	E = EPDM

\* Low Inductance, High Efficiency

NOTE: Please consult Parker Precision Fluidics for other considerations. For more detailed information, visit us on the Web, or call and refer to Performance Spec.T5-016



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# T2-03

Up to 2.5 LPM Free Flow



## Typical Applications

- Industrial Hygiene
- Medical Instruments
- Aerosols and Particle Analysis
- Air over Liquid Control
- Combustion Analyzers
- Trace Detection
- Fixed Gas Detectors

## Micro Pumps (air/gas)

The T2-03 DC motor-driven pump line is a miniature powerhouse ideal for use in portable air and gas applications. The pump head and patented valve design provide reliable, highly efficient, long life operation. Size and power draw are minimized. The pumps are available in “Compact” (high efficiency ironless core motor), “eCompact” (iron core brush motor), and “HP” (premium duty brush motor). Motor choice is driven by application requirements.

## Features

### • High Efficiency

The patented valve design has been optimized to provide the highest flow-rates available with the lowest power draw. Lower power results in longer battery life and smaller instrument size.

### • Long Life

The wear components of these pumps have been designed to provide maximum life. Many applications for these pumps require 10,000+ hours of operation.

### • Small Size and Lightweight

The pumps fit into the extremely tight spaces demanded of today’s handheld instruments, such as portable gas detectors. The lightweight design keeps instrument weight minimized.

### • Intrinsic Safety Capability

The motors used in the ‘Compact’ and ‘HP’ pumps can satisfy intrinsic safety requirements. They have been proven in applications for sampling of hazardous gases, vapors, and aerosols in a range of fixed and portable instruments.

## Performance Data

### Physical Properties

#### Operating Environment:

32 to 122°F (0 to 50°C)

#### Media:

Most non-condensing gases

#### Humidity:

5 - 95% RH

#### Wetted Material:

Neoprene, EPDM, FKM

#### Valves:

Silicone, FKM

#### Pump Head:

ABS, PPS

### Electrical

#### Motor Type (DC):

Iron Core, Ironless Core, Premium Duty

#### Nominal Motor Voltages (DC):

4, 5.6, 8.3, 12.4 VDC

#### Current Range:

18 mA - 400 mA\*

\*Dependent on motor type, voltage, pressure/vacuum and flow requirement

#### Motor Control:

2-wire (Analog or PWM) Brush  
Solder Tabs (Analog or PWM)

### Pneumatic

#### Head Configuration:

Single

#### Max Unrestricted Flow:

2.5 LPM\*

#### Pressure Range:

0 - 12 PSI\*

#### Vacuum Range:

0 - 24 in Hg\*

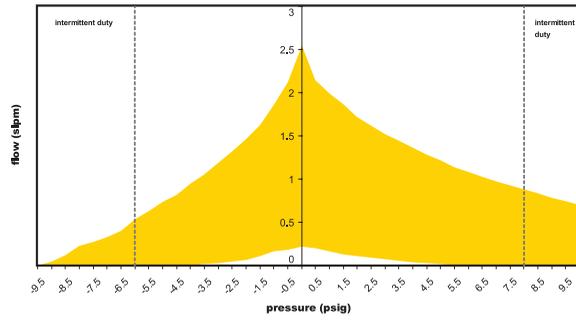
\*Varies depending on pump configuration

# T2-03

## Micro Pumps (air/gas)

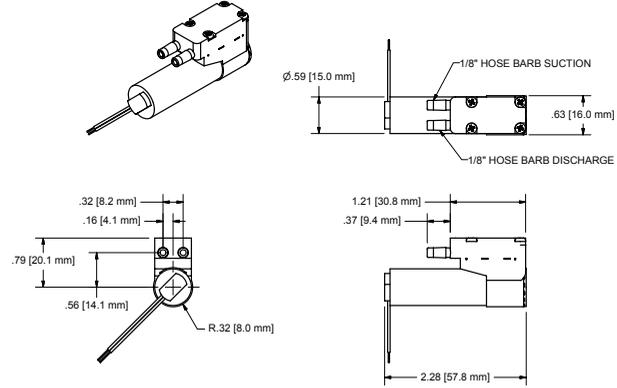
### Flow

#### T2-03 HP

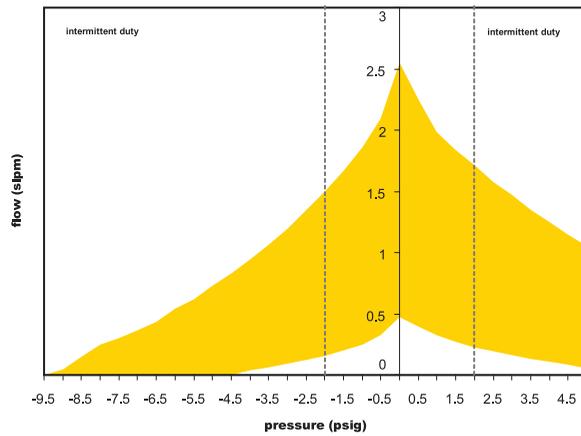


### Dimensions

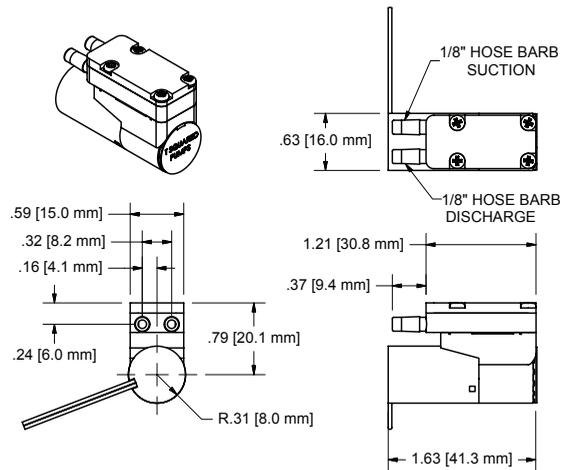
#### T2-03 HP



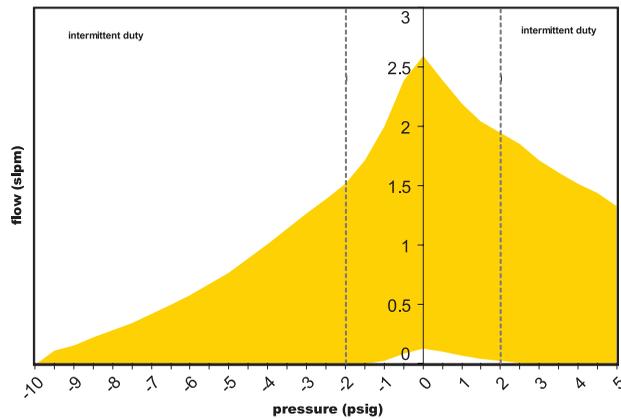
#### T2-03 Compact



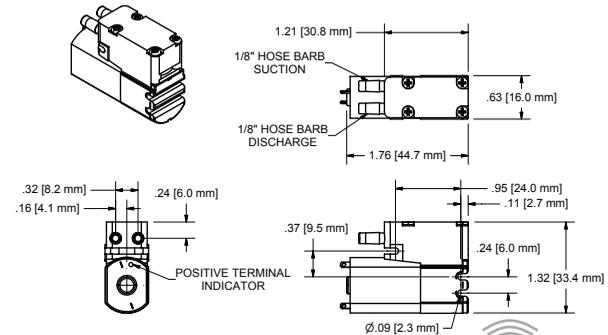
#### T2-03 Compact



#### T2-03 e-Compact



#### T2-03 e-Compact



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# CTS Series

2.5 LPM Free Flow



Coreless, Brushed and Brushless motors

## Typical Applications:

- Gas Analyzers
- Patient Monitoring
- CO<sub>2</sub> Monitors
- Compression Therapy
- NPWT

## Micro Pumps (air/gas)

CTS Micro Diaphragm Pumps and Compressors are a series of brushless, brush and coreless D.C. motor-driven pumps tailored to meet the specific performance requirements of your application.

## Features

### • Longevity

The CTS Series pump sets the highest benchmark for service free life expectancy, with our advanced proprietary diaphragm elastomer.

### • Highly Configurable

The CTS Series has designed in flexibility to sync your challenging applications.

- **Brushed motor:** robust performance at lowest cost
- **Coreless motor:** maximize efficiency
- **Brushless motor:** long life performance

### • Lightweight, Compact Size ~45g

The CTS Series pump design has a unique compact configuration.

### • Contamination-Free

Parker takes the necessary steps in manufacturing to assure that our 100% oil free pump and compressor designs maintain the purity of your system. Parker pumps and compressors are commonly used in FDA-approved systems.

### • Dynamically Balanced

The CTS Series pump design is uniquely balanced to minimize noise and vibration to maximize life.

## Performance Data

### Physical Properties

#### Operating Environment:

41 to 122°F (5 to 50°C)

#### Media:

Most Gases

#### Humidity:

0 – 95% RH

### Wetted Materials

Diaphragm/Valves: EPDM, AEPDM

Head: PSU

Screw: 18-8 Stainless

### Electrical

#### Motor Type (DC):

Brush, Brushless, Coreless

#### Nominal Motor Voltages:

6, 9, 12 VDC

Other voltages available upon request

#### Current Range:

50mA - 675mA\*

\*Dependent on motor type, voltage, pressure/vacuum and flow requirement.

### Pneumatic

#### Head Configuration:

Single

#### Max Unrestricted Flow:

2.5 LPM

#### Pressure Range:

0 - 24 psig (165 kPa)

#### Vacuum Range:

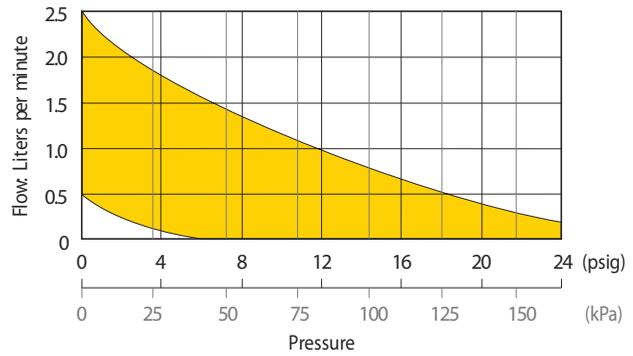
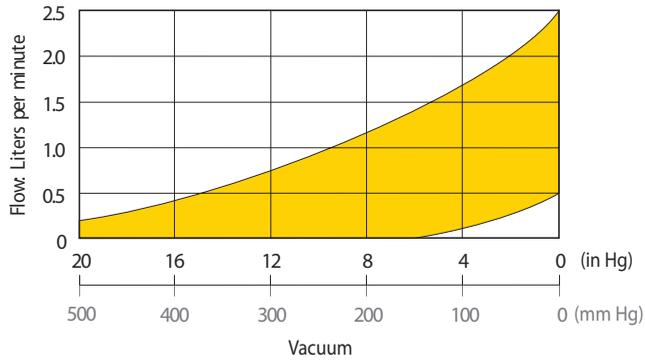
0 - 20 in Hg (508 mmHg)

# CTS Series

## Micro Pumps (air/gas)

### Single Head Micro Diaphragm Pump and Compressor

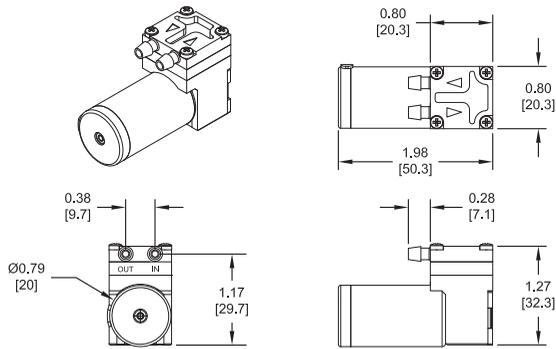
#### Flow



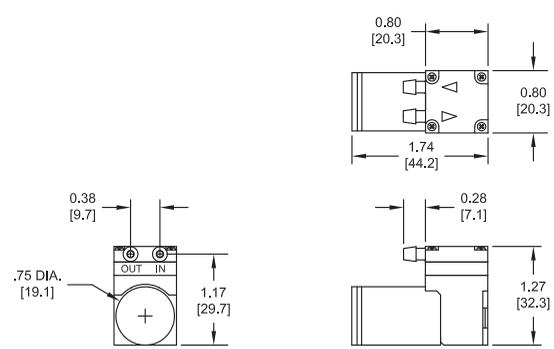
The above performance range illustrates overall performance for all CTS single-headed pumps handling air. Performance may vary depending on altitude. Consult factory with you specific requirements.

#### Dimensions

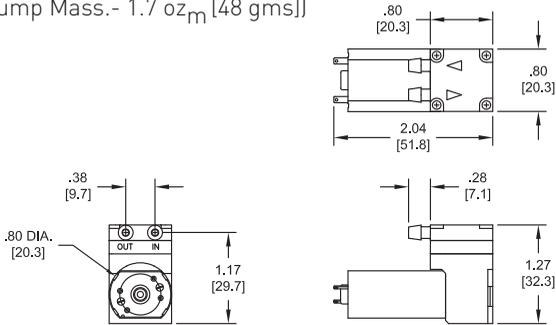
Brushless Motor  
(Pump Mass.- 2.0 oz<sub>m</sub> [57 gms])



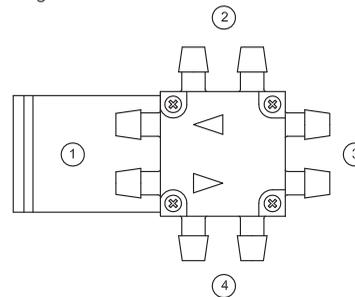
Coreless Motor  
(Pump Mass.- 1.6 oz<sub>m</sub> [45 gms])



Brush Motor  
(Pump Mass.- 1.7 oz<sub>m</sub> [48 gms])



Head Configuration  
(#1 Head Configuration Standard)



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# BTC Series

Up to 6 LPM Free Flow



BTC brushless motor shown

## Typical Applications

- Gas Analysis
- Anesthesia Monitor
- CO2 Monitors
- Patient Monitoring
- Wound Therapy
- Urinalysis

## Performance Data

### Physical Properties

#### Operating Environment:

41 to 158°F\* (5 to 70°C\*)

\*Duty dependent. Consult factory for high temperature applications over 50° C

#### Media:

Most Gases and Liquids

#### Humidity:

0 – 95% RH

#### Noise Level:

As low as 45 dB

#### Wetted Material:

EPDM, AEPDM, Fluorocarbon, Teflon/EPDM Laminate

#### Valves:

EPDM, AEPDM, Perfluoro, Fluorocarbon

#### Pump Head:

Vectra (Liquid Crystal Polymer)

## Mini Pumps (air/gas)

BTC Miniature Diaphragm Pumps and Compressors are a series of brush and brushless DC motor driven pumps designed to handle air and gases. The innovative, compact design incorporates leading edge technologies that allow it to operate harder, hotter, quieter and longer than existing pump designs. The BTC Series offers multiple component configurations allowing them to be used for either vacuum operation, pressure operation, or alternating vacuum and pressure operations.

### Features

#### • Highest Performance/Size Ratio:

innovative and efficient engineering designs enable the BTC Series to push the performance envelope in a lightweight, compact size.

#### • Runs in Hotter Environments:

Selection of advanced materials and our proprietary elastomer diaphragms and valves allow our pumps to operate in increased temperature environments up to 158°F (70°C).

#### • Performs Quieter:

Optimized head, chamber, and flow path reduce noise without compromising performance.

#### • Lasts Reliably Longer:

Using our proprietary advanced diaphragm elastomer and superior brushless motor design sets the highest benchmark for service-free operation that exceeds 10,000 hours.

#### • Installs Easily:

Incorporating the lightweight EZ Mount facilitates simple system assembly while dampening vibration and reducing noise levels.

### Electrical

#### Motor Type (DC):

Brush, Brushless

#### Nominal Motor Voltages (DC):

6, 12, 24 VDC

Other voltages available upon request

#### Current Range:

50 mA - 900 mA\*

\*Dependent on motor type, voltage, pressure/vacuum and flow requirement.

#### Motor Control:

2-wire (Analog or PWM) Brush

2-wire, 3-wire (Analog or PWM)

### Pneumatic

#### Head Configuration:

Single

#### Max Flow:

3.5 LPM (Flat diaphragm)

6 LPM (Convolute diaphragm)

#### Pressure Range:\*

0 - 30 psig (0-193 kPa) Flat

0 - 20 psig (0-138) Convolute

#### Vacuum Range:\*

0 - 23 in Hg (0-584 mmHg) Flat

0 - 20 in Hg (0-580 mmHg) Convolute

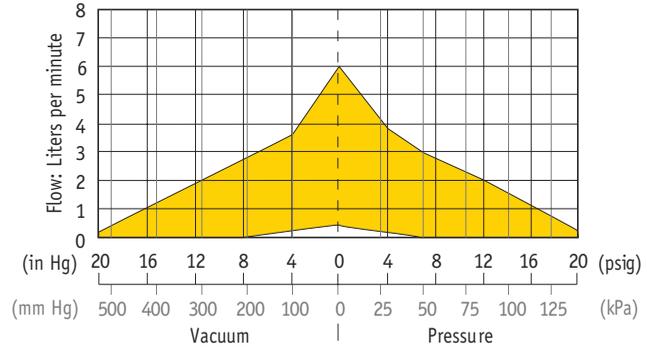
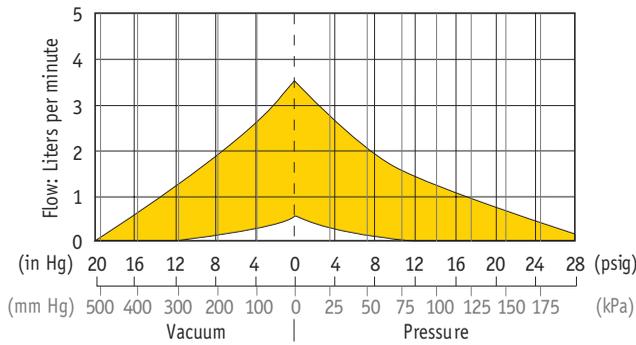
\* Extended pressure and vacuum capabilities available upon request.

# BTC Series

## Mini Pumps (air/gas)

### Single Head Micro Diaphragm Pump and Compressor

#### Flow

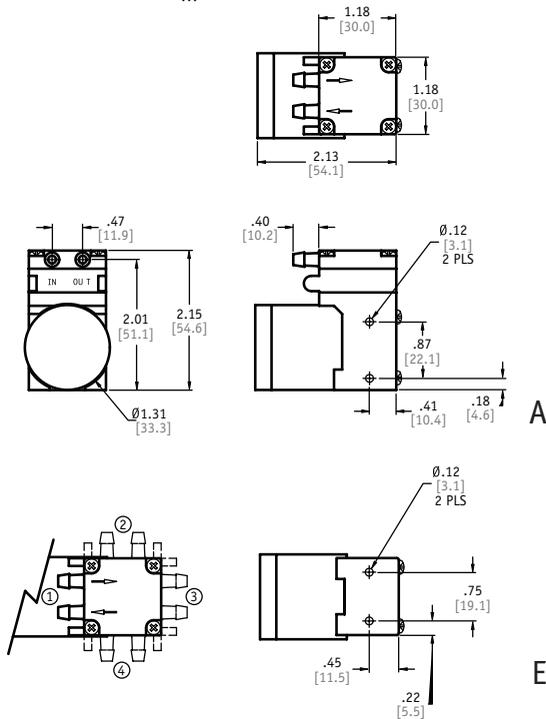


The above performance graph illustrates the overall performance of the BTC handling air at 800 feet (244 m) above sea level at 75° F (24°). Performance will vary depending on barometric pressure and media temperature. Consult factory with your specific requirements.

#### Dimensions

##### Brushless Motor

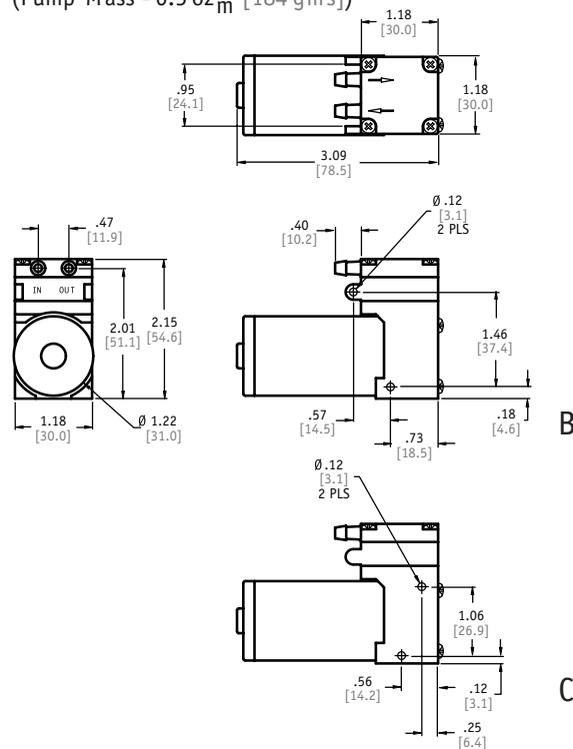
(Pump Mass - 4.5 oz<sub>m</sub> [128 gms])



Head Configuration (#1 Head Configuration is Standard)

##### Brush Motor

(Pump Mass - 6.5 oz<sub>m</sub> [184 gms])



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# TTC Series

## Mini Pumps (air/gas)

Up to 6 LPM Free Flow, Compact design, High Efficiency.



TTC brushless motor shown

### Typical Applications

- Gas Analysis
- Anesthesia Monitor
- CO<sub>2</sub> Monitors
- Patient Monitoring
- Wound Therapy
- Urinalysis
- Trace Detection
- Medical/Training Manikins

### Performance Data

#### Physical Properties

##### Operating Environment:

5 to 70°C\* (41 to 158°F\*)

##### Media:

Most Gases

##### Humidity:

0 – 95% RH

##### Noise Level:

Approx. 45 dB @ 30cm. (12in.)\*\*

#### Wetted Materials

##### Diaphragm:

EPDM, AEPDM, Fluorocarbon

##### Valves:

EPDM, Fluorocarbon, Silicone

##### Pump Head:

Vectra (Liquid Crystal Polymer)

##### Gaskets:

EPDM, Fluorocarbon, others possible

##### Valve Cover:

303 SS

TTC Miniature Diaphragm Pumps and Compressors are a series of brush and brushless DC motor driven pumps designed to handle air and gases. The innovative, compact design incorporates leading edge technologies that allow it to operate more efficiently than existing pump designs. The TTC Series offers multiple component configurations allowing them to be used for either vacuum, pressure, or alternating vacuum and pressure operations.

#### Features:

##### • Highest Performance/Size Ratio

Innovative and efficient engineering designs enable the TTC Series to push the performance envelope in a lightweight, compact size. Operates More Efficiently.

##### • Runs in Hotter Environments

Selection of advanced materials and our proprietary elastomer diaphragms and valves allow our pumps to operate in increased temperature environments.

##### • Performs Quieter

Optimized head, chamber, and flow path reduce noise without compromising performance. A filter-muffler is recommended for optimal noise level.

##### • Lasts Reliably Longer

Using our proprietary advanced diaphragm elastomer and superior brushless motor design sets the highest benchmark for service-free operation that exceeds 10,000 hours.

##### • Installs Easily

Incorporating the lightweight EZ Mount facilitates simple system assembly while dampening vibration and reducing noise levels.

##### • RoHS compliant.



#### Electrical

##### Motor Type (DC):

Brush, Brushless

##### Nominal Motor Voltages (DC):

6, 12, 24 VDC

Other voltages available upon request

##### Power Consumption:

3W - 8W

Lower levels possible depending on application

##### Motor Control:

###### Brush:

2-wire (Analog input or PWM input)

###### Brushless:

2-wire (Analog input or PWM input)

3-wire (Analog input, PWM input or Tachometer output)

4-wire (Tachometer output and Analog input or PWM input)

#### Pneumatic

##### Head Configuration:

Single

##### Max Flow:

3.5 LPM (Flat diaphragm)

6 LPM (Convoluted diaphragm)

##### Pressure Range:

0 - 0.7 bar (0-10 psig)

Flat diaphragm

##### Vacuum Range:

0-406 mmHg (0-16 inHg)

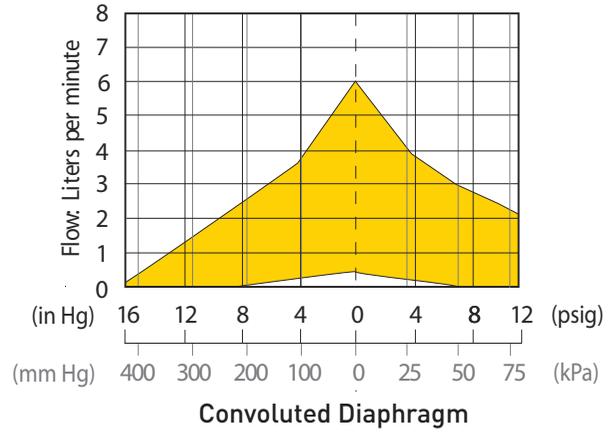
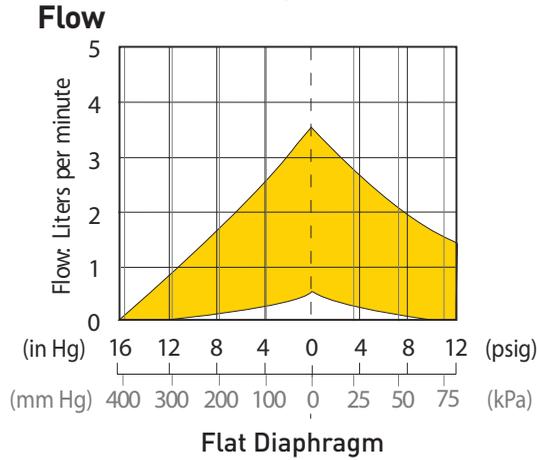
\*Duty dependent. Consult factory for high temperature applications over 50° C

\*\*Application dependent

# TTC Series

## Mini Pumps (air/gas)

### Single Head Micro Diaphragm Pump and Compressor

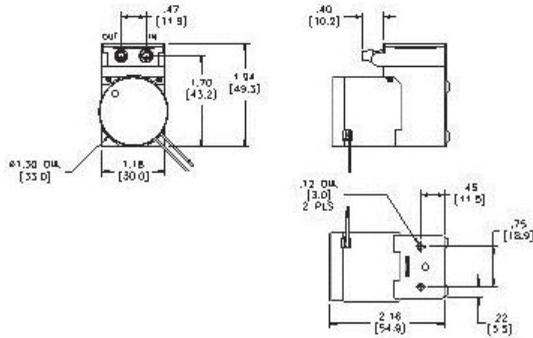


The above performance graph illustrates the overall performance of the TTC handling air at 800 feet (244 m) above sea level at 75° F (24° C). Performance will vary depending on barometric pressure and media temperature. Consult factory with your specific requirements.

## Dimensions

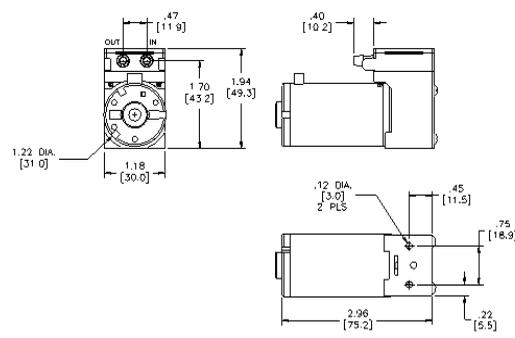
### Brushless Motor

(Pump Mass - 136g [4.8oz])



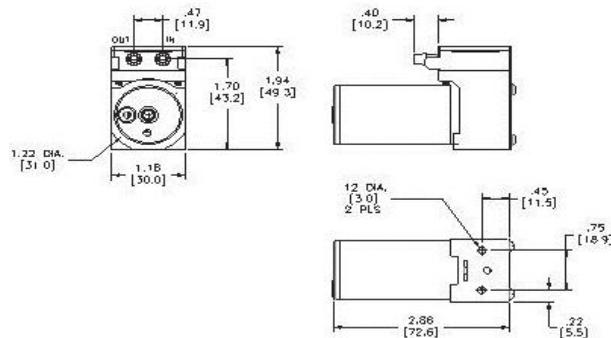
### Brush Motor

(Pump Mass - 184g [6.5oz])

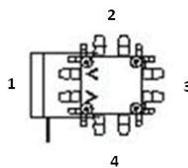


### Slotless Motor

(Pump Mass - 218g [7.7oz])



### Head Configuration Options



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# TTC-IIS Series Mini Pumps (air/gas)

Up to 11 LPM Free Flow, Compact design, High efficiency



TTC-IIS brushless slotless motor shown

## Typical Applications

- Patient Monitoring
- Compression Therapy
- Hemodialysis
- Peritoneal dialysis
- Respiratory care
- Wound Therapy
- Medical/Training Manikins

## Performance Data

### Physical Properties

<b>Operating Environment:</b>
5 to 70°C* (41 to 158°F*)
<b>Media:</b>
Air and Most Gases
<b>Humidity:</b>
0 – 95% RH
<b>Noise Level:</b>
Approx. 45dB @ 30cm (12in)**

### Wetted Materials

<b>Diaphragm:</b>
EPDM, AEPDM, Fluorocarbon, PTFE
<b>Valves:</b>
EPDM, Silicone, Fluorocarbon
<b>Pump Head:</b>
Vectra (Liquid Crystal Polymer)
<b>Gaskets:</b>
EPDM, Fluorocarbon, others possible
<b>Valve Cover:</b>
303 SS

TTC-IIS Single Body Dual Head Miniature Diaphragm Pumps and Compressors are a series of brush and brushless DC motor driven pumps which are tailored to meet the specific performance requirements of your applications. These pumps are designed to handle air and gasses only. The innovative, compact design incorporates leading edge technologies that allow it to operate more efficiently than existing pump designs. The TTC-IIS Series offers multiple component configurations allowing them to be used for either vacuum, pressure, or alternating vacuum and pressure operations.

### Features:

- **Highest Performance/Size Ratio**

Innovative and efficient engineering design enables the TTC-IIS to push the performance envelope in a lightweight, compact size

- **Longevity**

The TTC-IIS pump sets the highest benchmark for service-free performance with our unique brushless DC motor design and advanced proprietary diaphragm elastomer.

- **Light Weight, Compact Size, Quiet Operation**

The TTC-IIS pump design has a unique compact configuration allowing designers to minimize system weight and allotted space requirement for pumps and compressors. A filter muffler is recommended for optimal noise level.

- **Versatile Head Configuration**

Each pump head can be configured to operate independently for a combination of pressure and vacuum.

- **Flexible Mounting Options**

The TTC-IIS maximizes mounting flexibility by offering several ways to mount the pump, as well as four possible port orientations.

- **Contamination-Free**

Parker takes the necessary steps in manufacturing to assure that our 100% oil-free pump and compressor designs maintain the purity of your system. Parker pumps and compressors are commonly used in FDA-approved systems.

- **RoHS compliant.** 

### Electrical

<b>Motor Type (DC):</b>
Brush
Brushless
<b>Nominal Motor Voltages:</b>
6, 12, 24 VDC
Other voltages available upon request
<b>Power Consumption:</b>
2.5W - 10W
Lower levels possible depending on application
<b>Motor Control:</b>
<i>Brush:</i> 2-wire (Analog input or PWM input)
<i>Brushless:</i> 2-wire (Analog input or PWM input)

### Motor Control cont:

3-wire (Analog input, PWM input or Tachometer output)
4-wire (Tachometer output and Analog input or PWM input)

### Pneumatic

<b>Head Configuration:</b>
Dual
<b>Max Unrestricted Flow:</b>
6 LPM (Per head) 11 LPM (Parallel)
<b>Pressure Range:</b>
0 - 0.7 bar (0-10 psig) Parallel Flat diaphragm
<b>Vacuum Range:</b>
0-406 mmHg (0-16 inHg) (Parallel)

\*Duty dependent. Consult factory for high temperature applications over 50° C

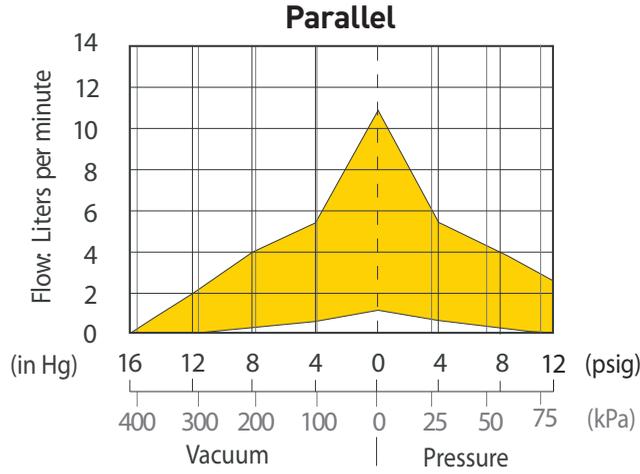
\*\*Application dependent

# TTC-IIS Series

## Mini Pumps (air/gas)

### Miniature Diaphragm Pump and Compressor

#### Flow

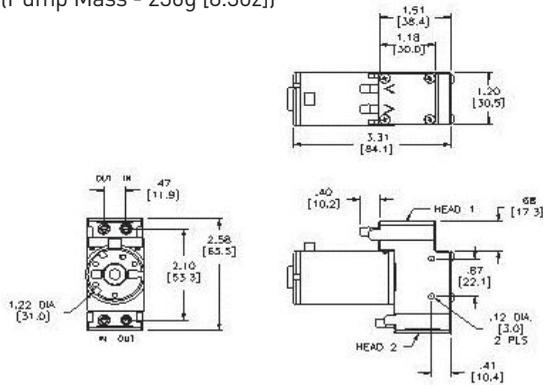


The above performance graph illustrates the overall performance of the TTC-IIS handling air at 800 feet (244 m) above sea level at 75° F (24°). Performance will vary depending on barometric pressure and media temperature. Consult factory with your specific requirements.

#### Dimensions

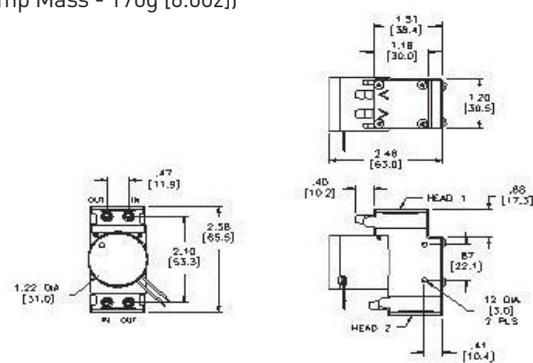
##### Brush Motor

(Pump Mass - 236g [8.3oz])



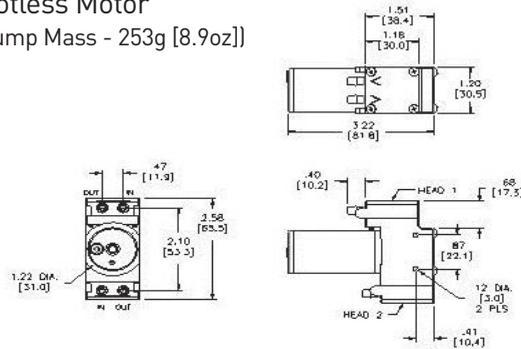
##### Brushless Motor

(Pump Mass - 170g [6.0oz])

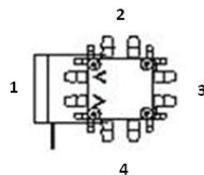


##### Slotless Motor

(Pump Mass - 253g [8.9oz])



#### Head Configuration Options



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# T2-04

Up to 7.5 LPM Free Flow



## Typical Applications

- Industrial Hygiene
- Medical Instruments
- Air over Liquid Control
- Trace Detection
- Fuel Cells
- Particle & Aerosol Sampling

## Mini Pumps (air/gas)

The T2-04 is a twin head pump with a single set of ports that is ideal for higher suction flows in portable gas sampling systems. A unique double diaphragm design minimizes losses inside the pump. With flows up to 7.5 LPM, the efficiency of this pump is without equal. The motor, pump head, and valve combination provide reliable long life operation. The pump was designed for high flow suction applications where low power, small size, and light weight are critical.

## Features

### • High Efficiency

The double diaphragm and patented valve design have been optimized to provide the highest flowrates available with the lowest current draw, especially in vacuum applications. Low power leads to longer battery life and smaller instrument size.

### • Long Life

The wear components of these pumps have been designed to provide maximum life while maintaining high efficiency.

### • Small Size and Lightweight

The pumps fit into the tight spaces demanded of today's battery powered instruments. The lightweight design keeps instrument weight minimized. A single set of barbs provides twice the flow and eliminates tubing 'nests' in the system.

### • Intrinsic Safety Capability

The high efficiency ironless core motor can satisfy intrinsic safety requirements. It has been proven in applications for sampling of medical gases, hazardous gases, particles, and aerosols in a range of fixed and portable instruments.

## Performance Data

### Physical Properties

#### Operating Environment:

32 to 122°F (0 to 50°C)

#### Wetted Material:

Neoprene Rubber, Silicone, Polyphthalamide (PPA)

### Electrical

#### Motor Type:

High Efficiency Ironless Core

#### Nominal Motor Voltages (DC):

6, 12 VDC

Other voltages available upon request

#### Electrical Termination:

5" Wire Leads

### Pneumatic

#### Head Configuration:

Twin

#### Max Flow:

7.5 lpm

#### Max Intermittent Pressure:

11.9 psi (820 mbar)

#### Max Continuous Pressure:

2 psi (138 mbar)

#### Max Intermittent Vacuum:

17.6 in Hg (596 mbar)

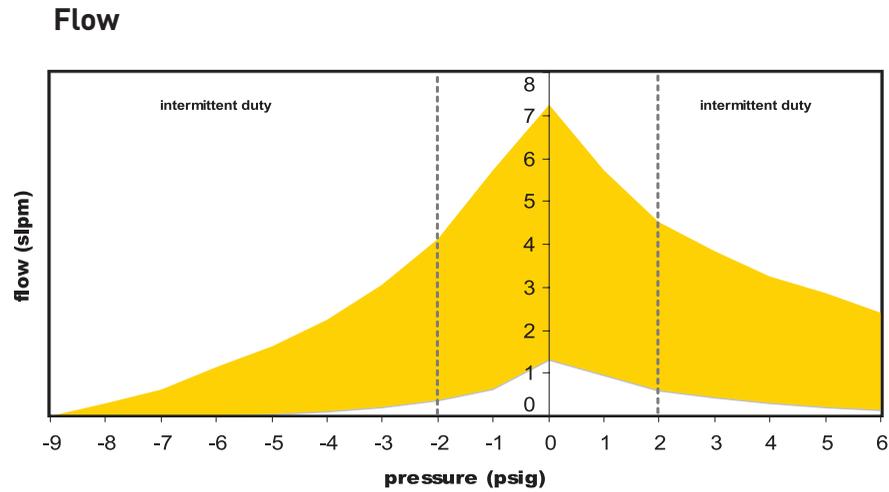
#### Max Continuous Vacuum:

4 in Hg (138 mbar)

# T2-04

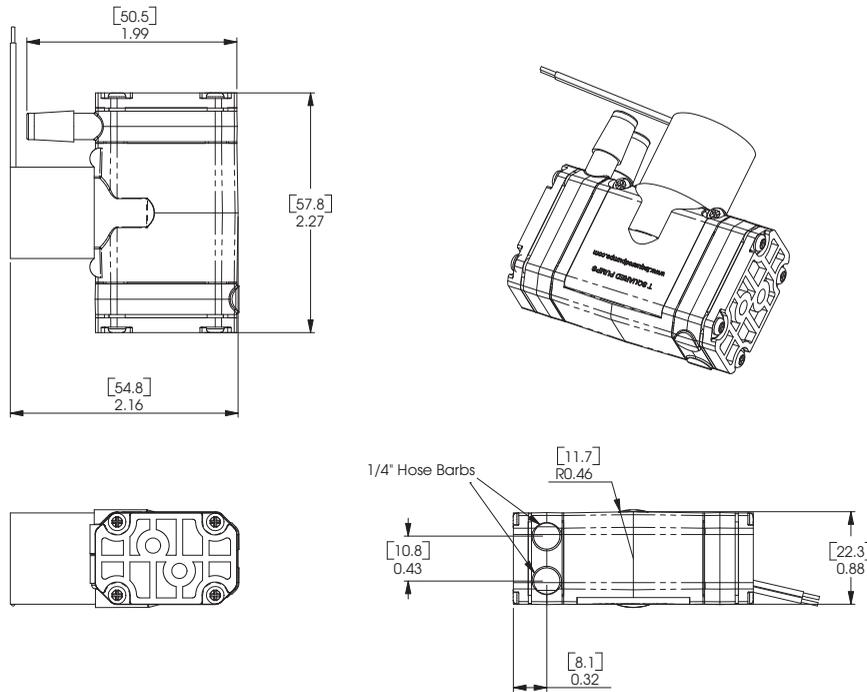
## Mini Pumps (air/gas)

### Typical Flow Curve



NOTE: All performance data is typical based on standard conditions: 70°F and 14.7 psia

### Dimensions



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# BTC-II Series

## Mini Pumps (air/gas)

6 or 11 LPM Free Flow



BTC-II brush motor shown

BTC-II Dual Head Miniature Diaphragm Pumps and Compressors are a series of brush DC motor-driven pumps tailored to meet the specific performance requirements of your applications. These pumps are designed to handle both gases and liquids.

### Features

- **Longevity:**

The BTC-II is configured with a dual ball bearing brush motor, along with our long life pump head technology. The pump will last the life of the motor, or up to 3,000 hours of high intermittent usage. For exceptional life performance with our BLDC motor, use the BTC-IIS.

- **Light Weight, Compact Size:**

The BTC-II Series pump design has a unique compact configuration allowing designers to minimize system weight and allotted space requirement for pumps and compressors.

- **Flexible Mounting Options:**

The BTC-II maximizes mounting flexibility by offering several ways to mount the pump, as well as four possible port orientations.

- **Contamination-Free:**

Parker takes the necessary steps in manufacturing to assure that our 100% oil-free pump and compressor designs maintain the purity of your system. Parker pumps and compressors are commonly used in FDA-approved systems.

- **Dynamically Balanced:**

The BTC-II Series pump design is uniquely balanced to minimize vibration and maximize life.

### Typical Applications

- Emissions Analyzer

### Performance Data

#### Physical Properties

<b>Operating Environment:</b>
41 to 158°F* (5 to 70°C*)
<b>Media:</b>
Most Gases and Liquids
<b>Humidity:</b>
0 – 95% RH
<b>Wetted Material:</b>
EPDM, AEPDM, Fluorocarbon, Teflon/EPDM Laminate
<b>Valves:</b>
EPDM, AEPDM, Perfluoro, Fluorocarbon
<b>Pump Head:</b>
Vectra (Liquid Crystal Polymer)

#### Electrical

<b>Motor Type (DC):</b>
Brush
<b>Nominal Motor Voltages:</b>
6, 12, 24 VDC
Other voltages available upon request
<b>Current Range:</b>
Varies from voltage, flow and pressure requirements.

#### Pneumatic

<b>Head Configuration:</b>
Dual
<b>Max Unrestricted Flow:</b>
6 LPM (Series)
11 LPM (Parallel)
<b>Pressure Range:*</b>
0 - 28 psig (193 kPa) Parallel
<b>Vacuum Range: *</b>
0 - 25 in Hg (635 mmHg) (Series)
0 - 20 in Hg (580mmHg) (Parallel)
* Extended pressure and vacuum capabilities available upon request.

# BTC-II Series

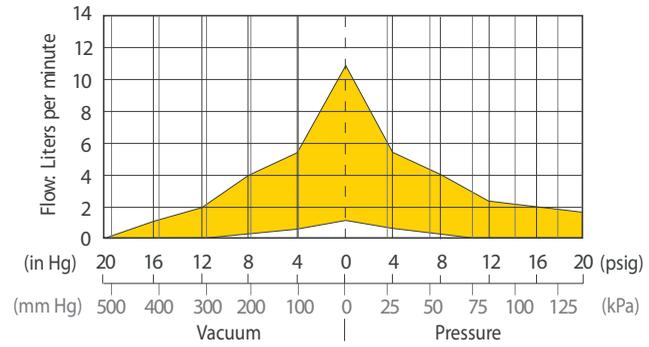
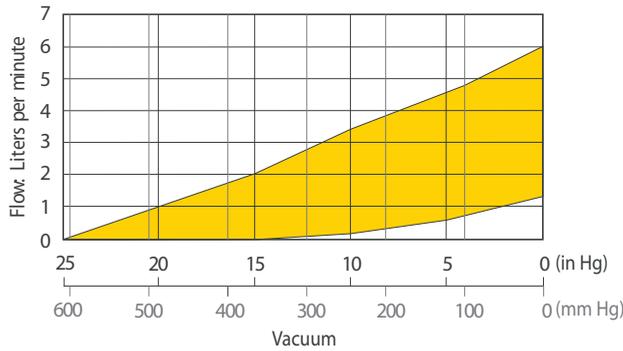
## Mini Pumps (air/gas)

### Dual Head Miniature Diaphragm Pump and Compressor

Flow

Series

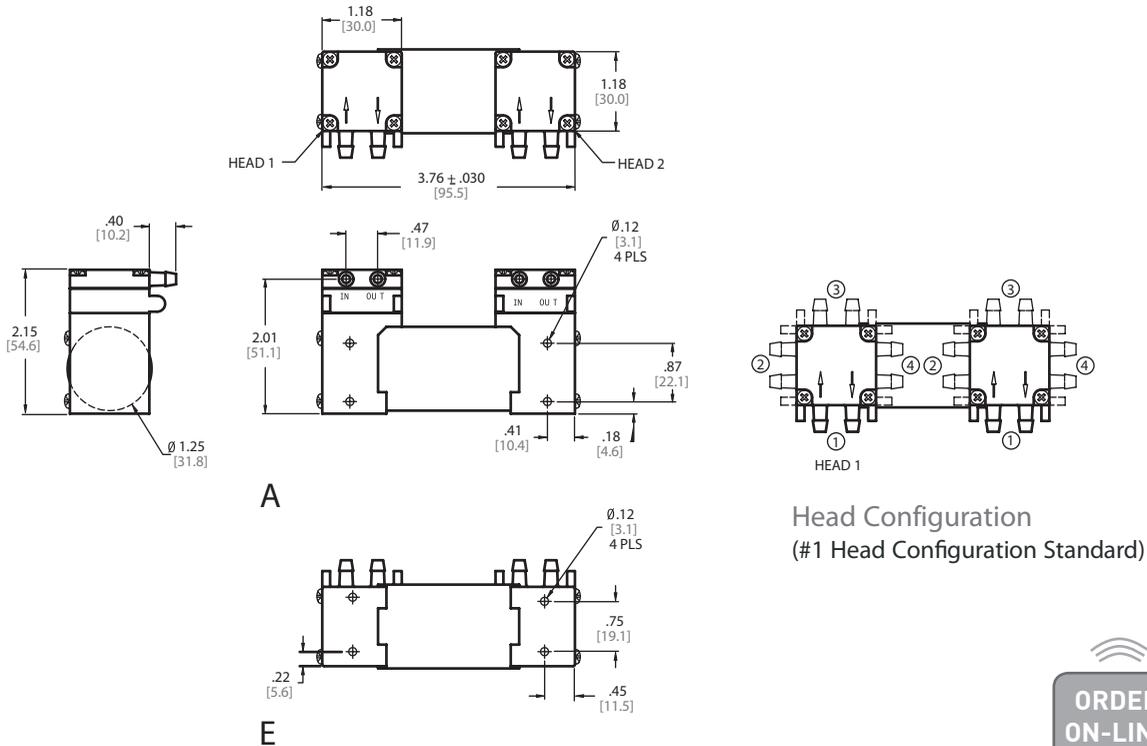
Parallel



The above performance graph illustrates the overall performance of the BTC-II handling air at 800 feet (244 m) above sea level at 75° F (24°). Performance will vary depending on barometric pressure and media temperature. Consult factory with you specific requirements.

### Dimensions

(Pump Mass - 9.1 oz<sub>m</sub> [258 gms])



Head Configuration (#1 Head Configuration Standard)



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# BTC-IIS Series Mini Pumps (air/gas)

Up to 11 LPM Free Flow



BTC-IIS slotless motor shown

## Typical Applications

- Patient Monitoring
- Compression Therapy
- Hemodialysis
- Peritoneal dialysis
- Respiratory care
- Wound Therapy

BTC-IIS Single Body Dual Head Miniature Diaphragm Pumps and Compressors are a series of brush and brushless DC motor driven pumps which are tailored to meet the specific performance requirements of your applications. These pumps are designed to handle both gases and liquids.

## Features

### • Proportional Flow Control:

Three-wire motor available for external pulse width modulation.

### • Longevity:

The BTC-IIS Series pump sets the highest benchmark for service-free performance with our unique brushless DC motor design and advanced proprietary diaphragm elastomer.

### • Light Weight, Compact Size:

The BTC-IIS Series pump design has a unique compact configuration allowing designers to minimize system weight and allotted space requirement for pumps and compressors.

### • Versatile Head Configuration:

Each pump head can be configured to operate independently for a combination of pressure, vacuum and liquid applications. The heads can be configured in series or parallel to increase vacuum, pressure or flow performance.

### • Flexible Mounting Options:

The BTC-IIS maximizes mounting flexibility by offering several ways to mount the pump, as well as four possible port orientations.

### • Contamination-Free:

Parker takes the necessary steps in manufacturing to assure that our 100% oil-free pump and compressor designs maintain the purity of your system. Parker pumps and compressors are commonly used in FDA-approved systems.

## Performance Data

### Physical Properties

#### Operating Environment:

41 to 158°F\* (5 to 70°C\*)

#### Media:

Most Gases and Liquids

#### Humidity:

0 – 95% RH

#### Wetted Material:

EPDM, AEPDM, Fluorocarbon, Teflon/EPDM Laminate

#### Valves:

EPDM, AEPDM, Perfluoro, Fluorocarbon

#### Pump Head:

Vectra (Liquid Crystal Polymer)

### Electrical

#### Motor Type (DC):

Brush Dual Ball Bearings

Brushless Dual Ball Bearings

#### Nominal Motor Voltages:

6, 12, 24 VDC

Other voltages available upon request

#### Current Range:

200 mA - 1400 mA\*

\*Dependent on motor type, voltage, pressure/vacuum and flow requirement.

### Pneumatic

#### Head Configuration:

Dual

#### Max Unrestricted Flow:

6 LPM (Series)

11 LPM (Parallel)

#### Pressure Range:\*

0 - 28 psig (193 kPa) Parallel

#### Vacuum Range:\*

0 - 25 in Hg (635 mmHg) (Series)

0 - 20 in Hg (580mmHg) (Parallel)

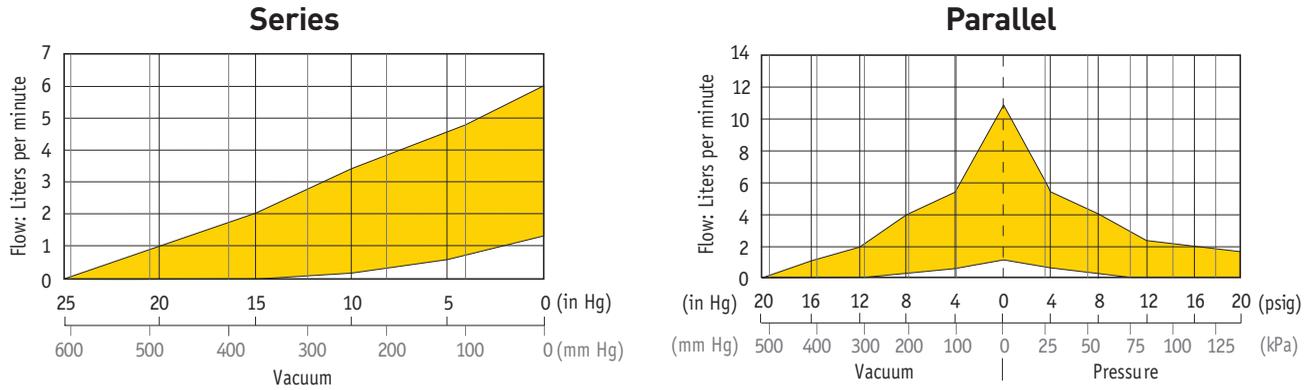
\* Extended pressure and vacuum capabilities available upon request.

# BTC-IIS Series

## Mini Pumps (air/gas)

### Miniature Diaphragm Pump and Compressor

#### Flow

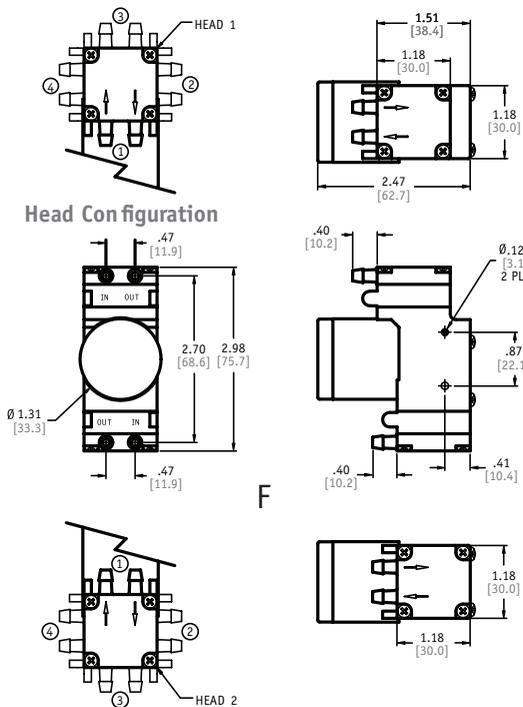


The above performance graph illustrates the overall performance of the BTC-IIS handling air at 800 feet (244 m) above sea level at 75° F (24°). Performance will vary depending on barometric pressure and media temperature. Consult factory with your specific requirements.

#### Dimensions

##### Brushless Motor

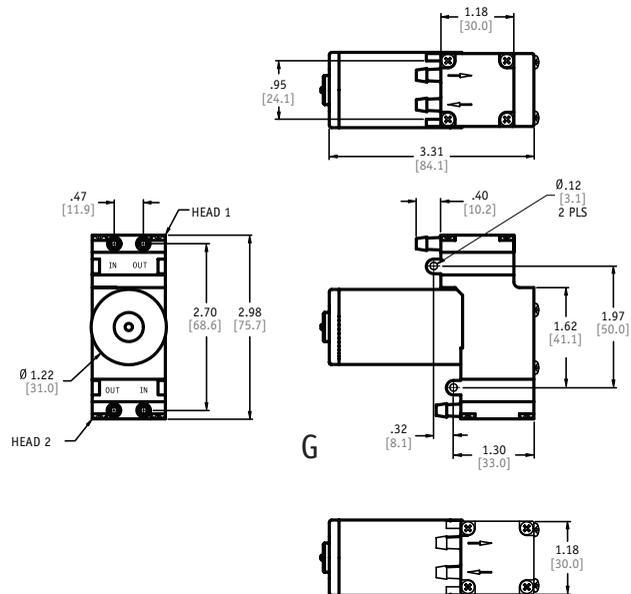
(Pump Mass - 6.0 oz<sub>m</sub> [170 gms])



Head Configuration (#1 Head Configuration Standard)

##### Brush Motor

(Pump Mass - 8.0 oz<sub>m</sub> [227 gms])



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# LTC Series

650 mLPM Free Flow



LTC Series brushless motor shown

## Typical Applications

- Large Format Printers
- Urinalysis
- Photo Processing Printers

## Mini Pumps (liquids)

LTC Series Liquid Pumps are offered in both brush and brushless DC motor drives that can be configured for your specific performance requirements. These pumps are designed to handle a wide range of liquid and gas media.

### Features

- **Patented Fluid-Blok™ Advanced Sealing Technology\*:**  
Redundant sealing techniques eliminate leaks.
- **Self-Priming/Dry Running:**  
Monolithic diaphragm design allows for maximum suction/priming and continuous dry operation.
- **Longevity:**  
Unique brushless DC motor design and advanced proprietary diaphragm elastomer gives the highest benchmark for service-free life.
- **Low Power Consumption:**  
Advanced flow path and efficient valve system design allows for maximum flow with low power consumption.
- **Port Design:**  
Port design allows for top or bottom face seal and is molded for 1/4-28 UNF threaded fittings, as well as four head configurations.
- **Chemical Resistant:**  
Structured to be inert to a variety of media with selected wetted components.
- **Lightweight, Compact Size:**  
Compact configuration allowing designers to minimize system weight and space requirements.
- **Flexible Mounting Options:**  
Maximizes mounting flexibility by offering several mounting options.
- **FDA-Approved Materials:**  
Parker pumps and compressors are commonly used in FDA-approved systems.

## Performance Data

### Physical Properties

**Operating Environment:**

41 to 122°F (5 to 50°C)

**Media:**

Most Liquids and Gases

**Humidity:**

0 – 95% RH

**Wetted Material:**

EPDM, AEPDM, Fluorocarbon, Teflon/EPDM Laminate

**Valves:**

EPDM, AEPDM, Perfluoro, Fluorocarbon

**Pump Head:**

Vectra (Liquid Crystal Polymer)

### Electrical

**Motor Type (DC):**

Brush, Brushless

**Nominal Motor Voltages:**

6, 12, 24 VDC

Other voltages available upon request

**Current Range:**

390 mA - 1.1A\*

\*Dependent on motor type, voltage, pressure/vacuum and flow requirement.

### Pneumatic

**Head Configuration:**

Single

**Max Unrestricted Flow:**

650 mL/min

**Pressure Range:**

0 - 30 psig (207 kPa)

**Vacuum Range:**

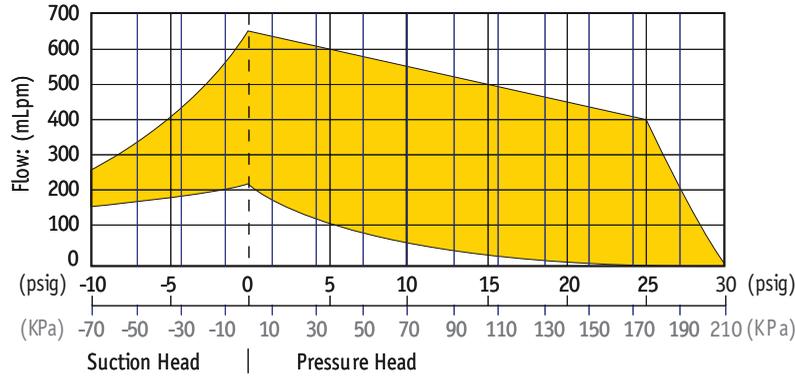
0 - 20 in Hg (508 mmHg)

# LTC Series

## Mini Pumps (air/gas)

### Single Head Miniature Liquid Diaphragm Pump

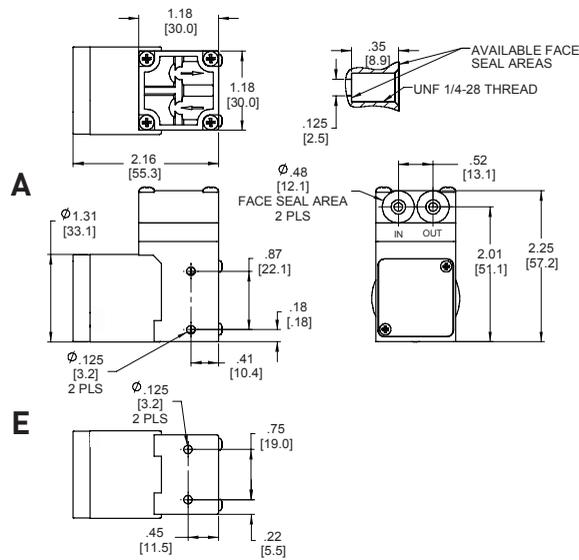
#### Flow



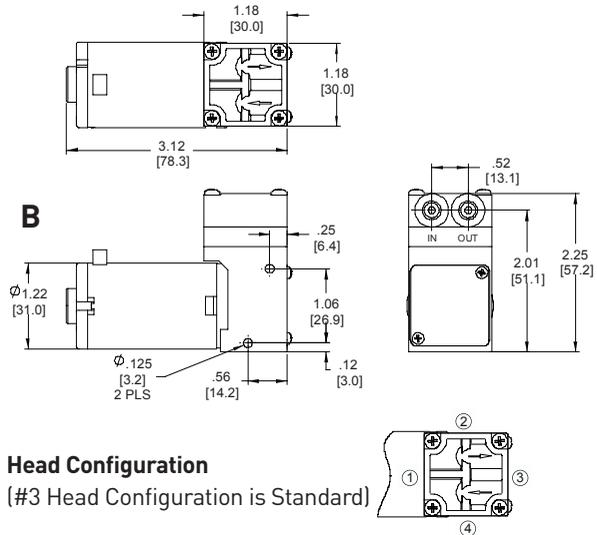
Performance ranges illustrate overall performance for all LTC pumps handling water at room temperature. Performance will vary depending on barometric pressure, media temperature, density, and viscosity.

#### Dimensions

**Brushless Motor**  
Weight - 5.0 oz (142 grams)



**Brush Motor**  
Weight - 7.0 oz (199 grams)



**Head Configuration**  
(#3 Head Configuration is Standard)



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# T2-02

Up to 28.5 LPM Free Flow



## High Capacity Pumps (air/gas)

The T2-02 is a high performance pump that features Parker's patented dynamic valve design. Remarkable performance and efficiency are achieved, particularly at lower loads. With flows up to about 28.5 LPM, this is the most compact and lightweight package in its class. The motor, pump head, and valve combination provide reliable long life operation.

### Features

- **High Efficiency**

The design has been optimized to provide the highest flowrates available with the lowest current draw, especially in vacuum applications. Low power leads to longer battery life and smaller instrument size.

- **Long Life**

The wear components of these pumps have been designed to provide maximum life.

- **Small Size and Lightweight**

The pumps fit into the tight spaces demanded of today's battery powered instruments. The lightweight design keeps instrument weight minimized. Ideal for today's handheld systems that were not possible with yesterday's technology.

### Typical Applications

- Portable Aspirators
- Medical Instruments
- Fuel Cells
- Industrial Systems

## Performance Data

### Physical Properties

**Operating Environment:**

32 to 122°F (0 to 50°C)

**Wetted Material:**

EPDM, CR, PPS+PTFE

### Electrical

**Motor Type (DC):**

Heavy Duty Brush

**Nominal Motor Voltages (DC):**

12, 24 VDC (other options available)

**Electrical Termination:**

18" Wire Leads

### Pneumatic

**Head Configuration:**

Single

**Max Flow:**

12V: 24.2 lpm, 24V: 28.5 lpm

**Max Intermittent Pressure:**

12V: 20 psi (1380 mbar),  
24V: 20.5 psi (1415 mbar)

**Max Continuous Pressure:**

12V & 24V: 2 psi (138 mbar)

**Max Intermittent Vacuum:**

12V: 21.8 in Hg (740 mbar)  
24V: 24.3 in Hg (820 mbar)

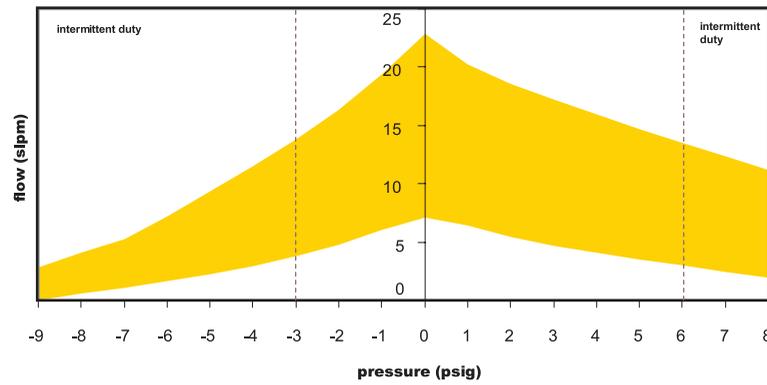
**Max Continuous Vacuum:**

12V & 24V: 4.1 in Hg (138 mbar)

# T2-02

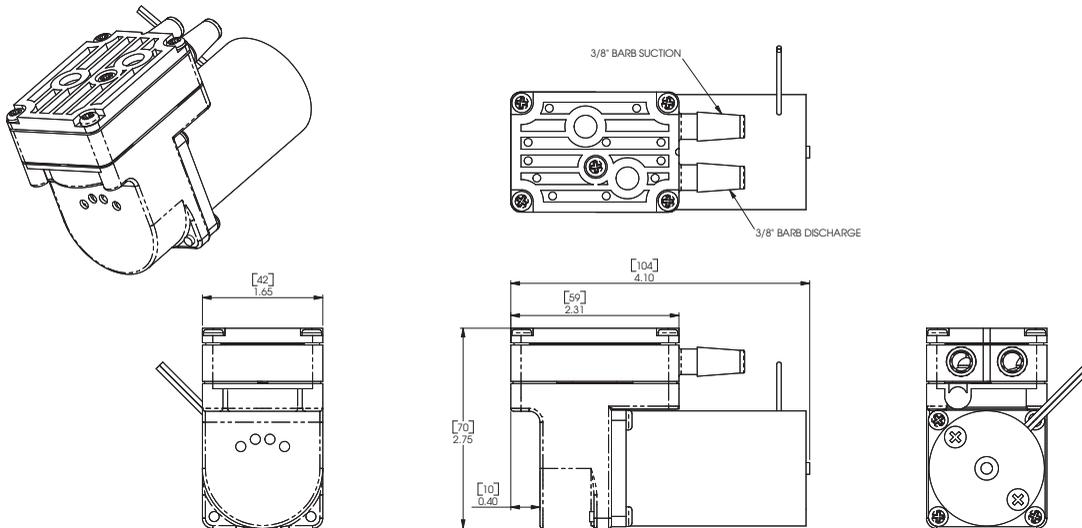
## High Capacity Pumps (air/gas)

### T20-02 Flow



NOTE: All performance data is typical based on standard conditions: 70°F and 14.7 psia

### Dimensions



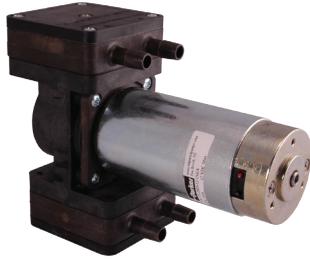
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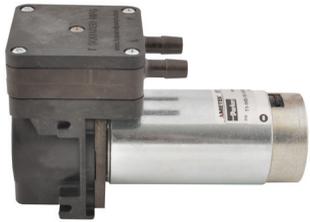


# T2-01

Up to 66 LPM Free Flow



Twin Head Brush



Single Head Brush

## High Capacity Pumps (air/gas)

The T2-01 high-performance pump, available in a single and twin head, features Parker's patented high-efficiency dynamic valve design provides remarkable performance and efficiency. With the most compact and lightweight package in its performance range, this pump is ideal for use in portable air and gas applications.

### Features

- **High Capacity:**

The T2-01 pumps are capable of flow rates greater than 32 lpm with the single head and up to 66 lpm with the twin head.

- **Motor Options:**

T2-01 pumps are available with DC brush and DC brushless motors with integral controllers.

- **Mounting Capabilities:**

The pump body is specially designed with durable mounting ears.

- **Optimized Configuration:**

Parker can configure the pump to meet specific requirements.

- **Additional Features:**

- Oil Free/Contaminant-Free Operation
- Pneumatic Termination: 3/8" Hose Barb
- Electrical Termination: Wire Leads

### Typical Applications

- Portable Aspirators
- Medical Instruments
- Fuel Cells
- Industrial Systems

### Performance Data

#### Physical Properties

<b>Operating Environment:</b>
32 to 122°F (0 to 50°C)
<b>Media:</b>
Most non-condensing gases
<b>Humidity:</b>
5% - 95% RH
<b>Wetted Material:</b>
EPDM
<b>Valves:</b>
Neoprene
<b>Pump Head:</b>
PPS, PTFE

#### Electrical

<b>Motor Type (DC):</b>
Brush, Brushless
<b>Nominal Motor Voltages (DC):</b>
12, 24 VDC (other options available)
<b>Current Range:</b>
.5 A-5.75 A*
*Dependent on motor type, voltage, pressure/vacuum and flow requirement
<b>Motor Control:</b>
2-wire (Analog or PWM) Brush
Multi-wire (Analog or PWM) Brushless

#### Pneumatic

<b>Head Configuration:</b>
Single, Twin
<b>Max Unrestricted Flow:</b>
66 LPM
*Varies depending on pump configuration
<b>Pressure Range:</b>
0 - 20 PSI
<b>Vacuum Range:</b>
0 - 24 in Hg

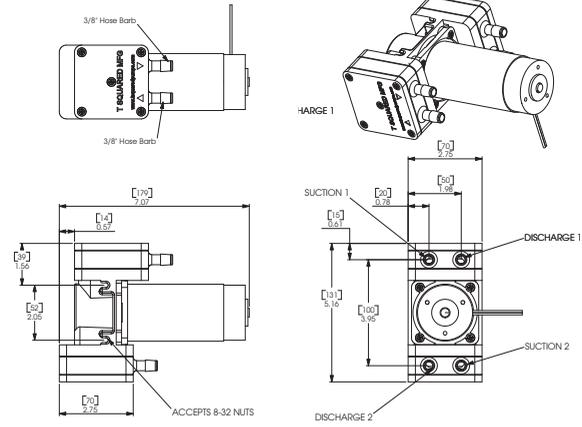
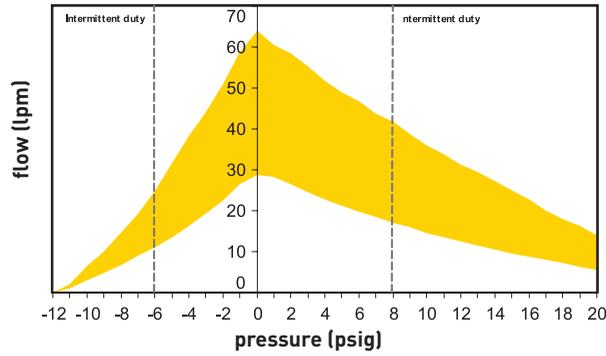
# T2-01

## High Capacity Pumps (air/gas)

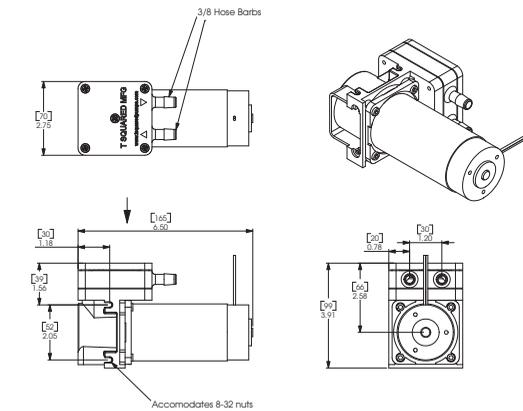
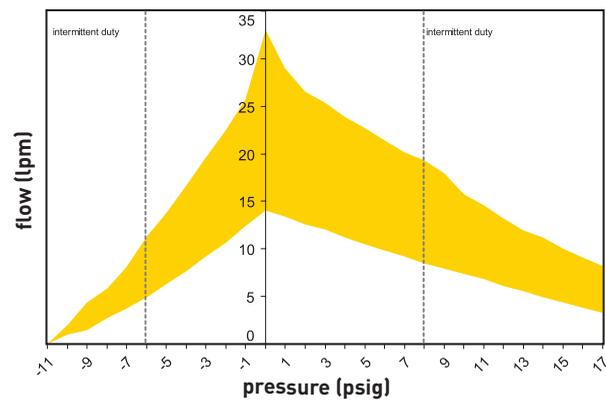
### Flow

### Dimensions

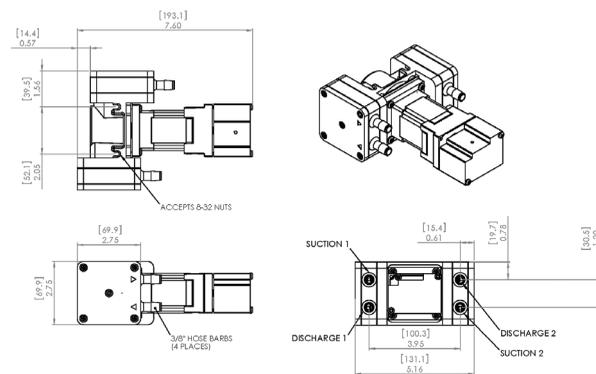
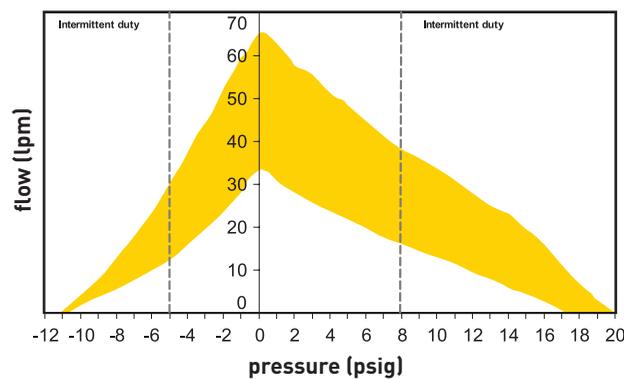
T2-01 TH Flow



T2-01 SH Flow



T2-01 TH Flow (BLDC)



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# Value Added Application-Specific Solutions

## Gassing Control System



- Mixed gassing logic design includes VSO® proportional valves, X-Valve®, pressure switch, pressure sensors, and PCB interface

## Pneumatic Module



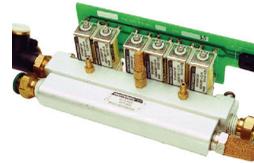
- Integrated valve manifold
- Compact design
- Single electrical connection
- Valves configured per specifications

## Vacuum Gas Control Module



- Tested to  $1 \times 10^7$  cc/sec/atm Helium
- Assembly tested on mass spectrometer

## 6 Position VSO® Proportional Pneumatic Manifold Assembly



- Quick connect fittings
- Circuit board with mass electrical termination

## Magnum Manifold Assembly



- Integrated circuit board with single connection
- Compact design
- Easily adaptable
- 2 way and 3 way designs

## 8 Position SRS Model Pneumatic Manifold



- Integrated pressure/vacuum sensors
- Mixed pneumatic logic design
- Ultem® manifold pressure/vacuum sensors

## 10 Position X-Valve® Pneumatic Manifold



- Mixed pneumatic logic design
- Ultra-miniature design with PCB for mass termination

## 10 Position SRS Model Pneumatic Manifold



- Integrated pressure/vacuum sensors
- Mixed pneumatic logic design
- Ultem® manifold pressure/vacuum sensors

## NOTES

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EPDM = Ethylene Propylene Diene Monomer, CR = Acrylonitrile Butadiene Styrene, PTFE = Polytetrafluoroethylene,  
PPS = Polyphenylene Sulfide  
AEDPM\* is an advanced proprietary elastomer developed by Parker to provide greater longevity than traditional diaphragm materials.

\*US Patent 7,401,543

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## NOTES

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## WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE.

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Parker Hannifin Corporation  
**Precision Fluidics Division**  
26 Clinton Dr., Unit 103  
Hollis, NH 03049  
phone 603 595 1500  
fax 603 595 8080  
[www.parker.com/precisionfluidics](http://www.parker.com/precisionfluidics)