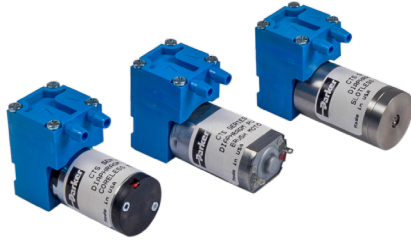


CTS Series

2.5 LPM Free Flow




Micro Diaphragm Pumps (air/gas)

Parker's CTS Micro Diaphragm Pump Model delivers up to 2.5 slpm of flow into a compact 20 mm wide package. Configurable with three different motors to meet your application's specific needs and life expectations

Applications

- Gas Analyzers
- Patient Monitoring
- CO₂ Monitors
- Compression Therapy
- Negative Pressure Wound Therapy
- Surgical Instruments
- Medical Consumer Devices

Features

- CTS Series Pumps set the highest benchmark for life-expectancy with our advanced proprietary diaphragm elastomer.
- CTS Series Pumps have a unique, compact, and lightweight design making it ideal for portable applications.
- Our 100% oil and grease-free pump and compressor design maintains the purity of your system and are commonly used in FDA-approved systems.
- CTS Series Pumps are uniquely balanced to minimize noise and vibration and to maximize life.
- RoHS compliant. 

Product Specifications*

Physical Properties

Operating Environment¹:

41 to 122°F (5 to 50°C)

Storage Environment:

-4 to 212°F (-20 to 100°C)

Media:

Air, Argon, Helium, Nitrogen, Oxygen, and other non-reacting gases

Humidity:

0 – 80% Relative Humidity

Pump Assembly Rated Life³:

PMDC Iron Core Brush -

up to 1,500 hrs

Coreless Brush - up to 3,000 hrs

Brushless Slotless - > 10,000 hrs

Weight:

1.7 oz. (48 g) PMDC Iron Core Brush

1.6 oz. (45 g) Coreless Brush

2.2 oz. (62 g) Brushless Slotless

Electrical

Motor Type (DC):

PMDC Iron Core Brush

Coreless Brush

Brushless Slotless

Nominal Motor Voltages⁴:

PMDC Iron Core Brush:

6, 9, 12

Coreless Brush: 6, 9, 12, 24 VDC

Brushless Slotless: 6, 9, or 12 VDC

Other voltages available upon request.

Max Power at Nominal Voltage:

See Performance

Specification Curves

Electrical Termination:

Iron Core Brush: Metal Terminals

Brush: 24 AWG Wire Leads, Length 20" (508 mm)

Brushless Slotless: 24 AWG Wire Leads, Length 20" (508 mm)

Pneumatic

Head Configuration:

Single

Maximum Unrestricted Flow:

2.5 LPM (See Performance Specifications)

Pressure Range:

0 - 24 psig (0 - 1.65 bar)

Vacuum Range:

0 - 20 in Hg (0 - 508 mm Hg)

Filtration:

40 microns - recommended

Wetted Materials

Diaphragm:

EPDM, AEPDM, FKM

Valves:

EPDM, AEPDM, FKM

Pump Head:

PSU (Polysulfone)

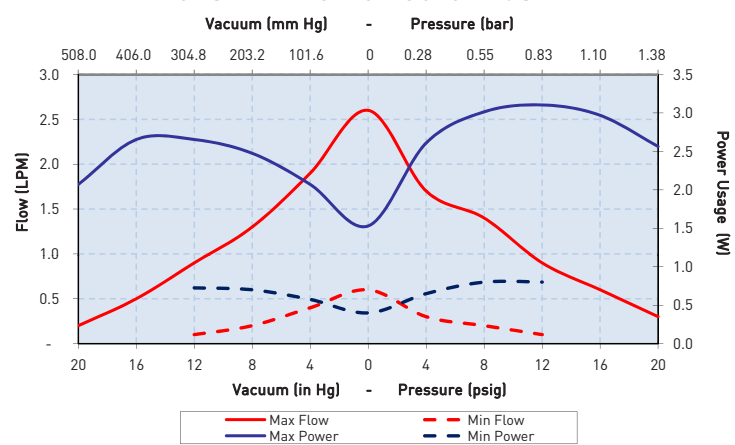
* See Appendix A for details.

CTS Series

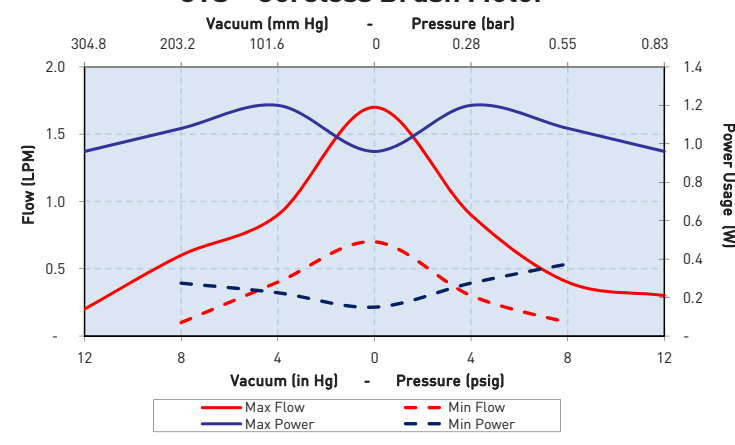
Micro Diaphragm Pumps (air/gas)

Performance Specifications

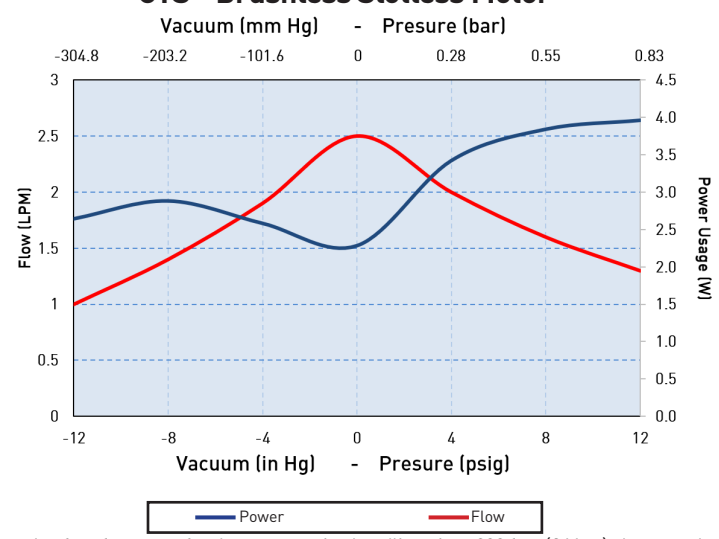
CTS - PMDC Iron Core Brush



CTS - Coreless Brush Motor



CTS - Brushless Slotless Motor

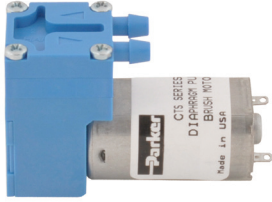
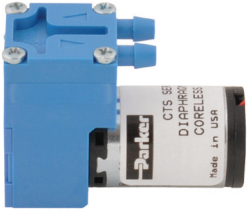
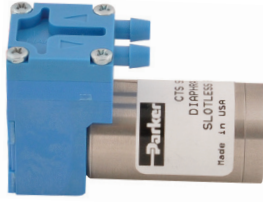


The above graphs represent an example of performance for the pump series handling air at 800 feet (244 m) above sea level at 75°F (24°C). Performance will vary depending on barometric pressure and media temperature. A variety of configurations can be accommodated to meet application requirements. Curves are representative of standard pump configurations. Pump configurations could be customized for higher or lower flows depending on specific customer requirements.

Please contact Parker Precision Fluidics Applications Engineering for other considerations.



Sizing and Selection

CTS Series	PMDC Iron Core Brush	Coreless Brush Motor	Brushless Slotless Motor
			
	PMDC Iron Core Brush	Coreless Brush Motor	Brushless Slotless Motor
Efficiency¹	Good	Best - Brush Motor Efficiency Up to 90% motor efficiency	Better Up to 75% motor efficiency
Life²	Good - up to 1,500 hrs	Better - up to 3,000 hrs	Best - 10,000 hrs
Cost	Best	Better	Premium
Noise	Good	Better	Best

See Appendix A for details.

Mounting Guidelines:

- Mounting may be accomplished by using double-sided tape or wire zip ties secured to the motor housing or using a nylon cable tie with a length of at least 4" (100 mm).
- Hole in the center of the bottom of housing is for manufacturing only—not to be used for mounting.

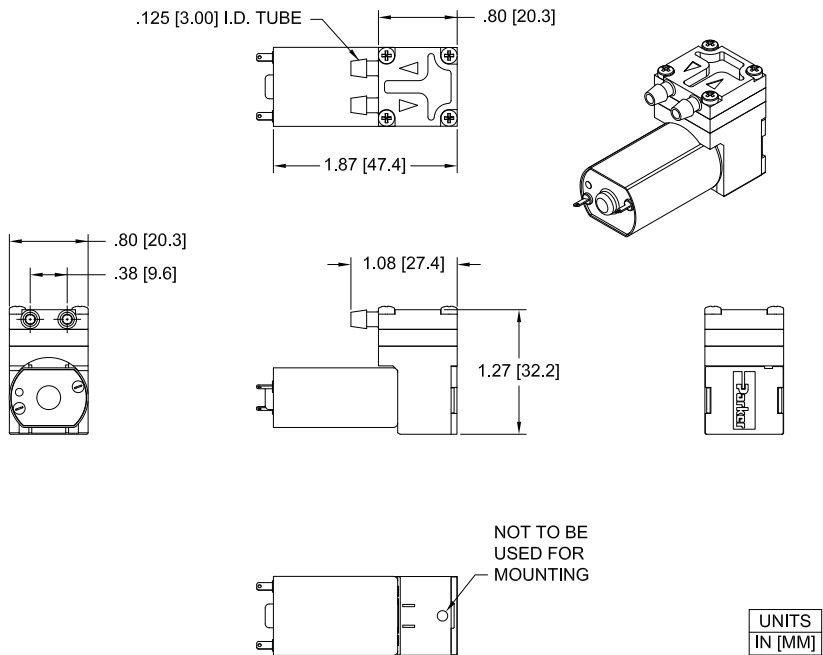
Port Connections:

- Barbs are sized for 1/8" (3 mm) ID tubing, 70-80 durometer recommended.
- Flow direction is marked on the pump head with arrows.

Mechanical Integration

Dimensions

PMDC Iron Core Brush



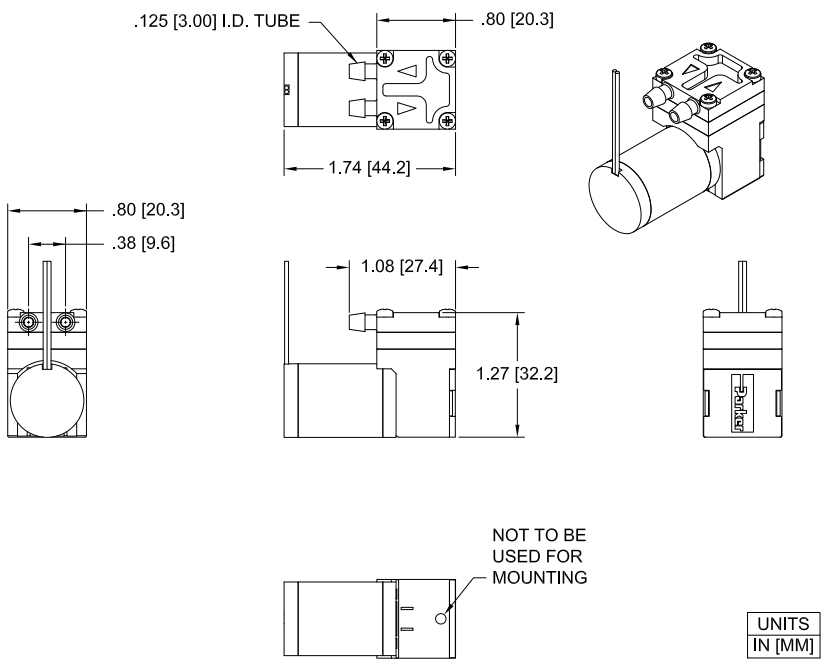
CTS Series

Micro Diaphragm Pumps (air/gas)

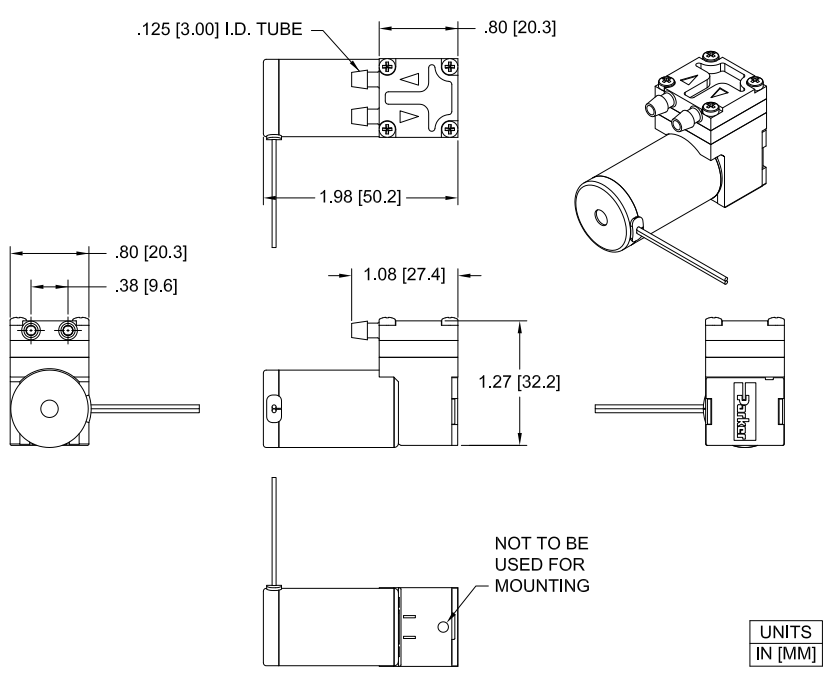
Mechanical Integration

Dimensions

Coreless Brush Motor



Brushless Slotless Motor



Electrical Integration and Motor Control

PMDC Iron Core Brush Motor

Metal Terminals	Polarity of the terminals is marked on the motor with the red dot marking the positive terminal.
-----------------	--

Coreless Brush Motor

2 Wire	Red (+), Black (-)
Wire specification	24 AWG, Insulation OD 0.038 in (0.97 mm), 20" (508 mm) Wire Leads

Brushless Slotless

2 Wire	Red (+), Black (-)
Wire specification	24 AWG, Insulation OD 0.042 in (1.07 mm), 20" (508 mm) Wire Leads

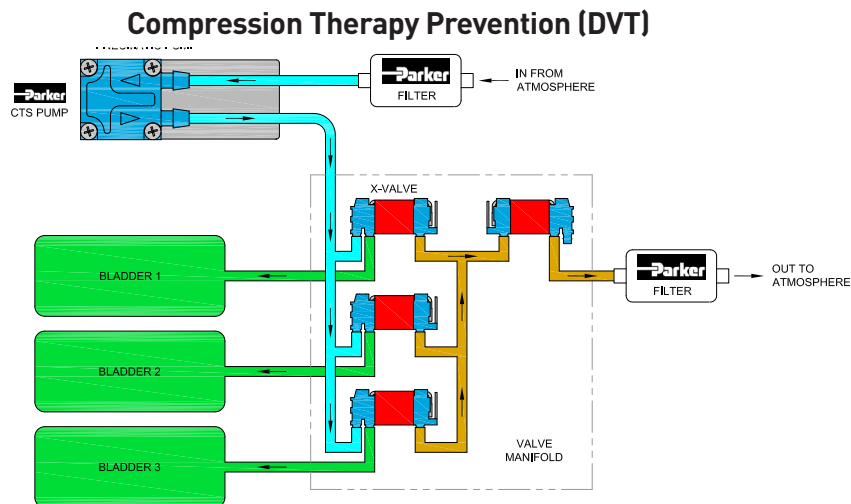
Key Things to Remember

The pump is not a pressure holding device. An external check valve is recommended, if there is a pressure holding requirement.

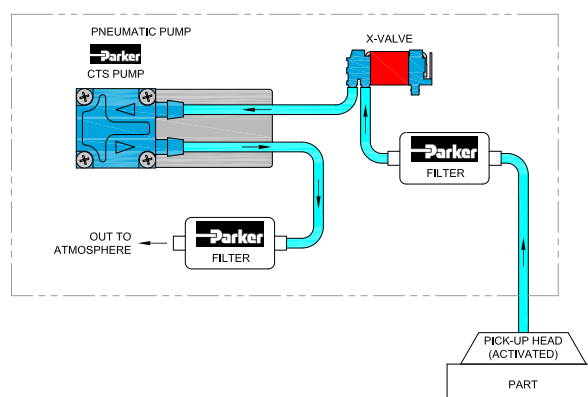
Onboard PWM control is not provided with this pump.

Pump orientation does not affect performance or life.

Typical Flow Diagram



Pick-up Head

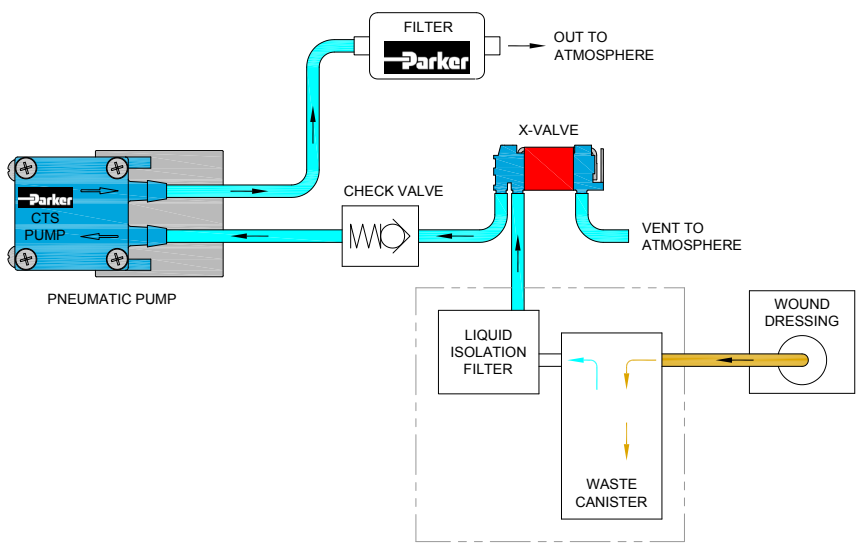


CTS Series

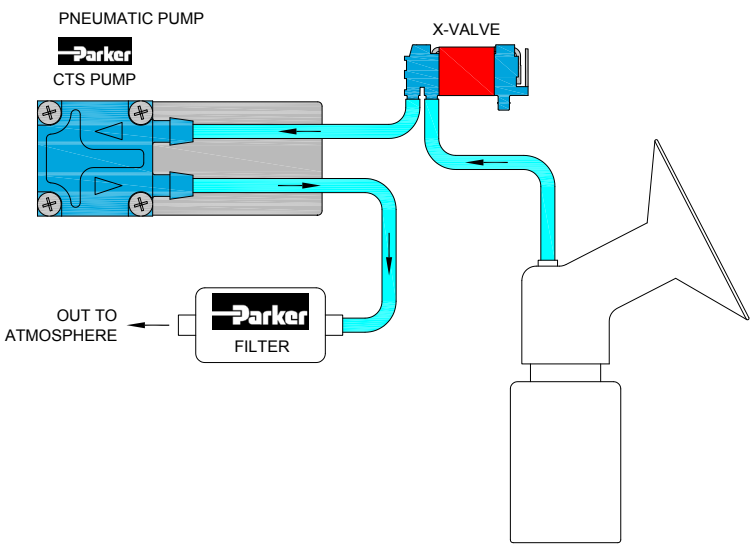
Micro Diaphragm Pumps (air/gas)

Typical Flow Diagram

Negative Pressure Wound Therapy (NPWT)



Breast Pump



CTS Series

Micro Diaphragm Pumps (air/gas)

Ordering Information

Configuration	Voltage	Speed at Nominal Voltage	Part Number	-16 inHg -406 mmHg	-12 inHg -305 mmHg	-8 inHg -203 mmHg	-4 inHg -102 mmHg	0 Free Flow	4 PSIG 276 mbar	8 PSIG 552 mbar	12 PSIG 827 mbar
CTS Iron Core Brush Motor 	6	3940	E155-11-060	-	0.15	0.32	0.52	0.78	0.48	0.29	0.14
	9	6050	E163-11-090	-	0.19	0.52	0.80	1.53	0.82	0.46	0.19
	12	8460	E155-11-120	-	0.27	0.81	1.24	1.73	1.18	0.66	0.35
	6	7310	E161-11-060	-	0.20	0.65	1.00	1.78	1.01	0.54	0.15
	6	5000	E265-13	-	-	-	-	1.60	1.20	0.90	0.70
	9	7350	E107-13-090	-	-	-	-	2.50	1.70	1.40	0.90
	12	7570	E129-13-120	-	-	-	-	2.60	1.80	1.40	1.00
	6	4850	E107-12-060	0.22	0.47	0.74	1.08	1.88	-	-	-
	6	6600	E253-12	-	0.90	1.30	1.70	2.30	-	-	-
	12	7900	E129-12-120	0.50	0.90	1.40	1.90	2.50	-	-	-
	9	7450	E107-12-090	0.50	0.90	1.30	1.90	2.60	-	-	-
CTS Coreless Motor 	5	2800	E134-11-050	-	0.10	0.21	0.35	0.54	0.31	0.16	-
	6	6700	E164-11-060	-	0.26	0.58	0.96	1.36	0.88	0.54	-
	9	8350	E165-11-090	-	0.35	0.73	1.10	1.60	1.10	0.75	0.46
	12	7000	E134-11-120	-	0.20	0.60	0.90	1.70	0.90	0.45	0.30
	12	6950	E146A-12	0.40	0.70	1.05	1.50	2.10	-	-	-
	9	7600	E245-12	0.50	0.90	1.30	1.80	2.40	-	-	-
CTS Brushless DC Motor 	6	3950	E243-11	-	0.17	0.34	0.55	0.74	0.53	0.34	0.16
	12	8000	E258-11	-	-	0.32	0.68	1.00	0.67	0.22	-
	9	6000	E244-11	-	0.29	0.54	0.92	1.39	0.88	0.60	0.22
	12	8000	E257-11	-	-	0.78	1.15	1.75	1.10	0.70	-
	5	4200	E256-13	-	-	-	-	1.30	0.95	0.70	0.50
	5	4150	E256-12	0.25	0.49	0.72	1.00	1.32	-	-	-
	12	7650	E259-12	0.40	1.00	1.40	1.90	2.50	-	-	-

*PCD: Peak Current Draw

Note: The Ordering Information Section includes a few selected part numbers for the product line. Other performances and configurations are available. Please contact your Sales Representative or an Application Engineer to discuss your application needs.



Chemical Compatibility Chart*

Chemical	Chemical Compatibility of Wetted Path Materials			
	FKM	EPDM	AEPDM	PSU
Air	1	1	1	1
Ozone (1000 ppm)	4	4	4	1
Oxygen	1	1	1	1
Ethylene (Ethene)	1	4	1	1
Acetylene	1	1	1	1
Propane	1	4	4	1
Methane	1	4	4	1
Nitrogen	1	1	1	1
Carbon Dioxide	1	2	2	1
Halothane (Up to 5%)	1	4	4	-

*The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for details.

Compatibility Legend

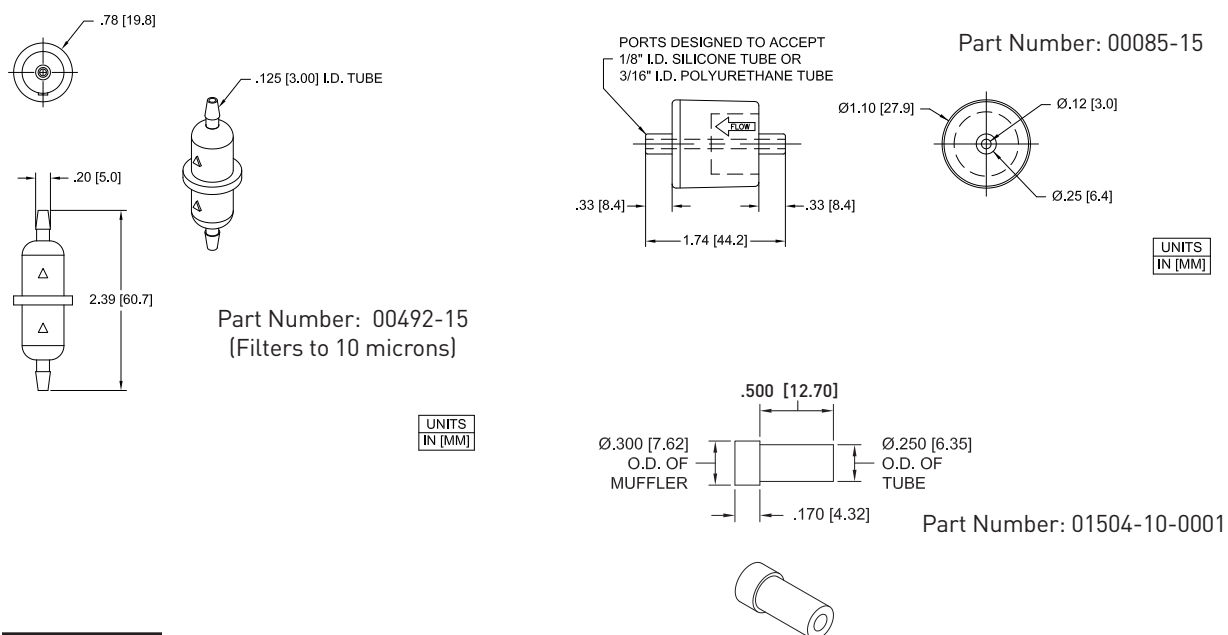
- EXCELLENT
Minimal or no effect
- GOOD
Possible swelling and/or loss of physical properties
- DOUBTFUL
Moderate or severe swelling and loss of physical properties
- NOT RECOMMENDED
Severe effect and should not be considered

Note: Consult factory for other gases.

Accessory Information

A **Filter-Muffler** is always recommended in the air inlet or outlet to reduce noise and risk of debris that may affect pump performance. See *Typical Flow Diagrams* for installation guidelines and Note 2 in Appendix at the end on noise

Typically a 40 micron filter is recommended to be supplied by the customer. Following are three other options of filtering specifications



Accessory Ordering Information

Part No.	Filtering Level (Micron)	Filter Area	Operating Limitations		Wetted Materials
00492-15	10	1.71 in sq (11 sq cm)	Max Temperature 80°C	Min Temperature 32°C	Polypropylene
01540-10-0001	75-90	.02 in sq (16 sq mm)	80°C	32°C	Polyethylene
00085-15	0.01	.39 in sq (252 sq mm)	110°C	32°C	Nylon
Filter-Mufflers: To assist with filtration and optimize noise reduction. Tubing: Recommendation 1/8" ID.					

Please click on the Order On-line button below (or go to www.parker.com/precisionfluidics/cts) to configure the CTS Miniature Diaphragm Pump for your application.

Serviceable – PPF products are designed for use through the rated life and Parker does not sell replacement parts, nor is it recommended to service these in the field

Note: In addition to Parker's innovative and flexible pump designs, we offer applications engineering expertise to our customers in order to configure and recommend the optimal pump for the application. Contact Parker Applications Engineering to discuss and configure alternate pump configurations to meet your specific application requirements. Providing information on the following requirements will assist us in developing an optimal solution for your application:

- Noise
- Operating Pressure / Vacuum
- Power Consumption
- Life Requirement
- Function in the Application
- Size
- Motor Control
- Media
- Voltage



Parker Hannifin Precision Fluidics Division reserves the right to make changes. Drawings are for reference only.

Appendix A

All performance data is typical based on standard conditions: 70°F and 14.7 psia (21°C and 1 bar).

1. Duty Dependent. For operation above 122°F (50°C) consult factory
2. Noise is dependent on the configuration and operation of the pump in the application. Parker has the ability to tailor the pump configuration when noise is a critical criterion in the effort to meet the performance requirements of the application. Noise level is tested to Parker protocol P-105.
3. Life rating can vary depending on application and operating conditions.
4. Custom motor options available. 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
5. Current range is dependent on motor type, voltage, pressure/vacuum and flow requirement. Lower levels possible depending on application.