

# PURUS 20


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## Operation / Maintenance Manual

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# 1 INTRODUCTION

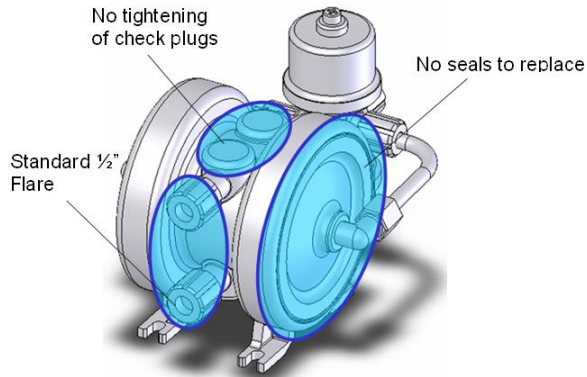


Figure 1-1: Leak Proof Design



Figure 1-2: Optional PC7 Controller

## Revolutionary PFA injection molded high purity disposable pump.

TREBOR'S Purus 20 diaphragm pump offers a unique solution to the constant maintenance or rebuilding of existing chemical pumps currently available on the market. With a revolutionary injection molded PFA design, TREBOR has created an ultrapure pump utilizing proven components with minimal parts. This manufacturing approach has created a reliable, leak proof (Figure 1-1), disposable pump that costs less than most competitors' rebuild kits, while providing the utmost in purity and exceptional performance.

Purus pumps can be externally controlled or installed as a self-contained unit using TREBOR'S PC7 (Figure 1-2) air-powered pump controller that mounts on the Purus 20 (as shown in Figure 1-1).

The Purus 20 is constructed entirely of PFA and PTFE, and includes no elastomers or metal parts for maximum purity and chemical compatibility.

## Product Benefits

- Handles chemical temperatures up to 120°C
- Operating life exceeding 100 million cycles in most applications
- Longer stroke for excellent suction lift and priming capability
- No elastomer seals or gaskets to break down or replace
- No metal parts to corrode or contaminate process
- Extremely compact size
- 100% PFA/PTFE construction for the ultimate chemical compatibility and process purity
- FM4910 compliant
- Cleaned, assembled, and packaged in Class 1000 cleanroom

## 2 INSTALLATION

### 2.1 UNPACKING

After unpacking, the pump should be checked for any damage that may have occurred during shipment. Damage should be reported to the carrier immediately.

**NOTE:** Although extensive efforts are made to deliver pumps to our customers completely dry, new pumps may contain residual moisture from their final DI water test.

The following items should be included within the shipping container:

Qty	Item	Description
1	PURUS 20	PURUS 20 PUMP
1	PC7	PC7 PUMP CONTROLLER (optional)
1	MP20	Manual, Purus 20 pump

### 2.2 UTILITIES / HOOK-UP

The pump is mounted using four ¼" (6mm) bolts. It is recommended that the pump be positioned within 15° from level to maintain self-priming ability and pumping efficiency. Allow sufficient room for tubing connectors.

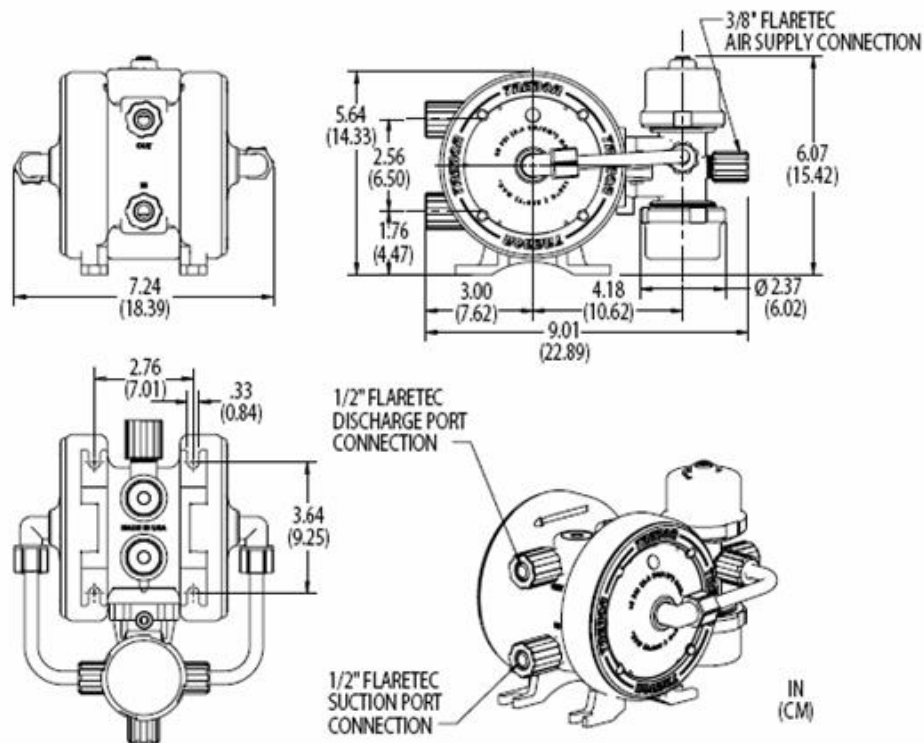


Figure 2-1: Dimensions (w/Mounted PC7 option & flare connection)

**Air Inlet:** 3/8" OD Tubing)

**Air Supply:** 20-80 PSIG (1.4 – 5.4 BAR), clean dry air or inert gas

**Fluid Ports:** 1/2" Flaretec standard (other options available)

For maximum flow the following is recommended

1. Maximize supply line diameter
2. Minimize supply line length
3. Minimize supply line restrictions (i.e. valves, fittings)

**NOTE:** It is recommended that a filter be placed on the discharge side of the pump.

**ATTENTION:** The pump should be operated with clean, dry air or nitrogen. Particulate, water and oils in the air supply can damage the pump.

## 3 OPTIONS

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### 3.1 FLUID PORT CONNECTION OPTIONS

Additional options are available. Please contact Trebor Sales Department for details regarding available options.

- ½" FLaretec (standard)
- ½" Pillar, Super 300 (optional)

### 3.2 HOOK-UP WITH SURGE SUPPRESSOR

For surge suppression Trebor International recommends the use of our SS40 inline surge suppressor. Consult factory for installation and performance specifications. Information also available at [www.treborinternational.com](http://www.treborinternational.com)

**NOTE:** See Surge Suppressor Operation Manual for detailed installation instructions.

## 4 START-UP

- Open the fluid suction (IN) line valve, if necessary
- Open the fluid discharge (OUT) line valve, if necessary
- Pump air supply pressure should be regulated
- Operate pump at 20 psig initially to prime pump
- Increase pressure to attain desired flow, (not to exceed 80 psig)
- Refer to Troubleshooting section, if pump fails to start, or contact Trebor for further assistance.

**ATTENTION:** Prolonged periods (>10 minutes) of running with out fluid can damage critical internal pump parts.



**CAUTION:** When handling potentially dangerous fluids under pressure, the pump and its fittings should be placed in an enclosure away from operators.

### 4.1 PERFORMANCE CHARTS

Pumping capacity is a function of air supply pressure and volume, suction head, suction line restrictions, discharge head, discharge line restriction, and fluid specific gravity and viscosity.

Air Supply Pressure (PSIG)	Discharge Fluid Pressure (PSIG)	Flow (LPM)	Cycles Per Minute	Displacement cc Per Cycle	Air Consumption (CFM)
20	0	14	100	140	4.6
20	10	11	100	110	
40	0	18.5	180	103	6.0
40	20	12.5	104	125	
60	0	20	210	95	7.0
60	30	15	110	137	
80	0	21	218	97	8.0
80	40	16	132	121	

**Table 4-1: Performance Chart**

**NOTE:** Test information is based on specific conditions and limited sampling. Use for general reference only. This information is preliminary and may be changed at a future date.

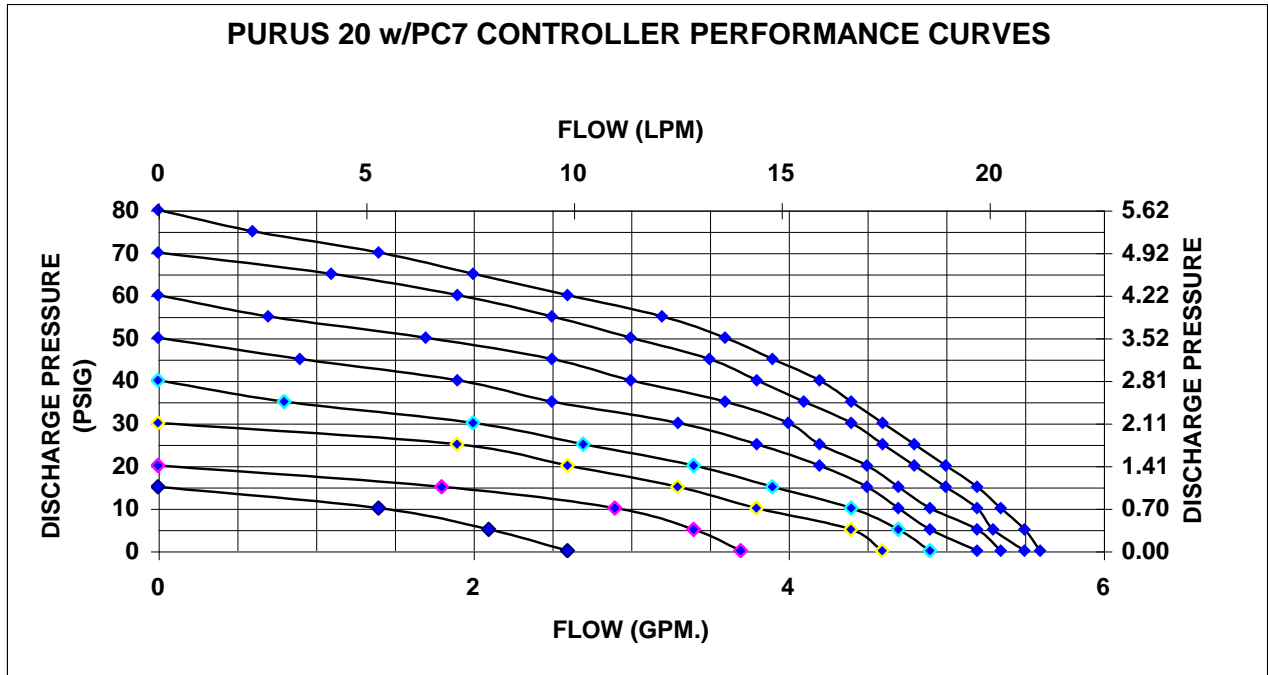


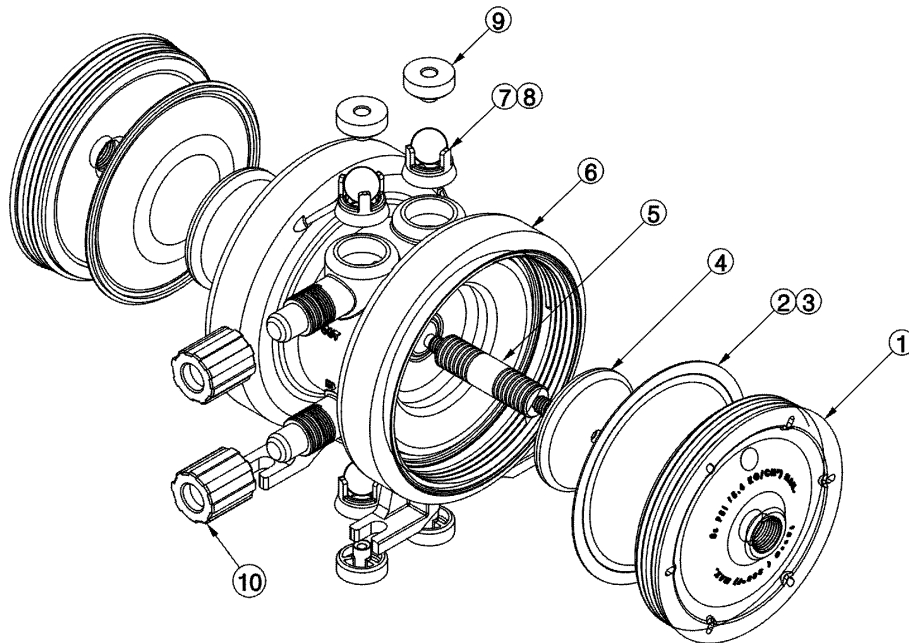
Figure 4-1: Pressure and Capacity chart

## 5 INSPECTION AND MAINTENANCE

### 5.1 MAINTENANCE

TREBOR'S PURUS 20 has no serviceable parts, due to its welded and sealed construction. Please neutralize and dispose of the pump accordingly or contact the factory regarding methods of recycling.

### 5.2 PART REFERENCE ILLUSTRATION – P20



MTD0498

Figure 5-1 Exploded View

### 5.3 PART REFERENCE LIST – P20

ILL NO	QTY	DESCRIPTION
1	2	HEAD
2	2	DIAPHRAGM
3	2	MAIN SEAL,
4	2	PUSH PLATE
5	1	SHAFT
6	1	BODY ASSY
7	2	SUCTION SEAT
8	4	CHECK BALL
9	4	CHECK CAP
10	2	1/2T FLR NUT

## 6 TROUBLESHOOTING

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### Pump Will Not Start, Fails to Operate

Cause:

- Insufficient air pressure
- Debris in shuttle valve
- PC7 (if applicable)

Solution:

- Increase regulated supply pressure or check control valves for proper operation.  
Rotate PC7 speed control screw CW until it stops. Then readjust for correct speed (if applicable).
- Inspect/clean control valve assy.
- Refer to PC7 Manual

### Bubbles in Fluid Discharge

Cause:

- Inlet line fittings not tight
- Flow too high
- Diaphragm failure due to puncture

Solution:

- Check and tighten all fittings on the suction line feeding the pump.
- Under high flow conditions some fluids can cavitate releasing dissolved air bubbles.
- Contact Trebor Customer service for additional service recommendations. Replace pump assy.

### Fluid Leaks

Cause:

- Weld failure of fluid pump
- Fluid leaking from suction or discharge connections

Solution:

- Replace pump assembly (Non Serviceable)
- Inspect tubing and tighten fluid fittings.

### Erratic Cycling

Cause:

- Debris in shuttle valve
- PC7 (if applicable)

Solution:

- Inspect/clean control valve assy.
- Refer to PC7 Manual

## 7 WARRANTY

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See the Trebor Standard Limited Warranty at:  
<http://www.treborintl.com/TechnicalSupport.aspx>