

# PC7 PUMP CONTROLLER

## Operation / Maintenance Manual





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## **1** INSTALLATION

#### 1.1 UNPACKING

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

The following items should be included within the shipping container:

<u>Qty</u>	<u>ltem</u>	<u>Description</u>
1	PC7F or PC7P	PC7 PUMP CONTROLLER
1	PC7-Manual	Manual, PC7 Pump Controller

### 1.2 UTILITIES / HOOK-UP

The controller can be mounted by any of three methods. It can be bolted to a wall or deck using the snap on base slots as shown below using four  $\frac{1}{4}$ "(6mm) bolts in the pattern shown below.



MTD0616



**CONTROLLER - BOTTOM VIEW** 







Air Inlet: 3/8" Flaretek (3/8" OD TUBING)

Air Supply: 20-80 PSIG (1.4 – 5.4 BAR), CLEAN DRY AIR OR NITROGEN.

Head Ports: 3/8" Flaretek (3/8" OD PFA TUBING)

**Recommended Maximum Operating Levels:** 80 psig (5.4 bar)

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



## 2 **OPTIONS**

#### 2.1 UNIT IS AVAILABLE IN BOTH PFA AND PP CONSTRUCTION

The PFA unit exterior parts are molded using PFA (Fluoroplastic) and the shuttle assembly is constructed of PEEK & PPS. The PFA unit is intended for severe applications and for compliance with FM4910.

The PP unit exterior parts are molded using Polypropylene (Polyolefin) and the shuttle assembly is constructed of PEEK & PPS. This unit is intended as a lower cost option with similar service life where exposure to oxidizing acids is limited.



## 3 START-UP

- Controller air supply pressure must be regulated to a maximum of 80 psig.
- Open the fluid suction (IN) line valve, if necessary.
- Open the fluid discharge (OUT) line valve, if necessary.
- Adjust the speed control screw fully Clockwise (CW) until fully retracted. **Warning**! Do not apply too much torque to screw or damage may result.



• Open air supply line to operate pump. Operate pump at 20 psig initially to prime pump.

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



### 3.1 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)	Turns on adjustment screw	Cycles Per Minute (+/-15%)
20	0	80
20	1/2	30
40	0	135
40	2	70
60	0	190
60	2	80
80	0	240
80	2	110

**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.



### 4 MAINTENANCE

#### 4.1 PREVENTIVE MAINTENANCE SCHEDULE

The following maintenance schedule is recommended to optimize pump performance and minimize failures.

Adhering to the recommended preventative maintenance schedule along with periodic inspection of the pump will ensure continued efficient operation and overall reliable pump performance.

It is recommended that the Preventive Maintenance Record (Section 4.1.a) be copied, maintained and kept with this unit for future reference.

#### **PC7 Maintenance**

Replacement		Inspection		on		
1 Year	2 Year	6 months	1 Year	2 Year	Component / Comments	
		Х			Fitting Nuts (Connections) P/N (9002914)	
	Х		Х		Detent Legs P/N (305-PD)	
	Х		Х		Shuttle Spool P/N (305-PJ)	
	Х		Х		Spring Bar P/N (305-QA)	
Х					Muffler Media (PC7 Controller) P/N (305-FR)	



Company Name: Company Address:					
Product:			Serial Number:		
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4.1.a Preventive Maintenance Record



### 4.2 RECOMMENDED SPARE PARTS

There are no recommended spare parts for the Purus 20 pump due to it's welded and sealed construction. However there are spare parts available for rebuild of the PC7 pump controller.

PC7 Pump Controller

505-PD	4 EA	LEG, DETENT
305-QA	2 EA	SPRING BAR, DETENT
305-P016	2 EA	SEAL, PTFE, 1.75 X 1.33 X .02 (PC7F ONLY!)
305-P015	2 EA	SEAL, PTFE, 1.82 X 1.33 X .02 (PC7P ONLY!)
305-PJ	1 EA	SPOOL, SHUTTLE
305-P040	1 EA	SCREW, SPEED ADJUSTMENT
305-P048	1 EA	FERRULE, PTFE
305-FR	5 EA	PAD, MUFFLER

### 4.3 TOOLS

The only tool requirements are a Phillips #2 and Straight screwdriver.

### 4.4 PARTS ILLUSTRATION – PC7





### 4.5 PARTS LIST – PC7F

ILL	PART NO	QTY	DESCRIPTION	PM YEAR #	MATERIAL
NO					
1	305-P049	1	NUT, COMPRESSION, PVDF, 3/8		PVDF
2	305-P048	1	FERRULE, PTFE, PC7		PTFE
3	305-P047	1	CAP,PFA,ADJUST,PC7		PFA
4	305-040	1	SCR, ADJUST,PC7		PVDF
5	305-PD	4	LEG,DETENT,PC7		DELRIN
6	305-QA	2	SPRING BAR, DETENT, OSCILLATOR		PEEK
7	305-QB	1	PLATE,SUPPORT,PC7		PVDF
8	305-P007	2	SCR,NYLON,#8-32x.31,SLOVHD		NYLON
9	305-PJ	1	SPOOL, SHUTTLE, OSCILLATOR		PEEK
10	305-P016	2	SEAL,PTFE,GORTEX,1.75x1.33x.02		PTFE
11	305-P050	1	RING,SPLIT,SINGLE TURN,PTFE,-		PTFE
12	305-P014	2	FTG.PVDF.3/8" ME		PVDF
13	AK058	1	ASSY,SHUTTLE SLEEVE		CERAMIC
14	305-P013	2	TUBE,TRANSFER,PFA		PFA
15	305-P009	3	NUT, PVDF, FLR, 3/8T		PVDF
16	305-PA	1	BODY,OSCILLATOR,PFA,PC7		PFA
17	AW036-01	2	ORIFICE, PRESS-IN .024		PEEK
18	305-P011	1	CAP,PFA,PC7		PFA
19	305-FR	4	PAD,MUFFLER,PP,25 MICRON		PP
20	305-QF	1	BASE,PFA,PC7		PFA

### 4.6 PARTS LIST – PC7P

ILL	PART NO	QTY	DESCRIPTION	PM YEAR #	MATERIAL
NO					
1	305-P052	1	NUT, COMPRESSION, PP, 3/8		PP
2	305-P048	1	FERRULE, PTFE, PC7		PTFE
3	305-P046	1	CAP,PP, ADJUST,PC7		PP
4	305-P040	1	SCR, ADJUST,PC7		PVDF
5	305-PD	4	LEG,DETENT,PC7		DELRIN
6	305-QA	2	SPRING BAR, DETENT, OSCILLATOR		PEEK
7	305-QB	1	PLATE,SUPPORT,PC7		PVDF
8	305-P007	2	SCR,NYLON,#8-32x.31,SLOVHD		NYLON
9	305-PJ	1	SPOOL, SHUTTLE, OSCILLATOR		PEEK
10	305-P016	2	SEAL,PTFE,GORTEX,1.75x1.33x.02		PTFE
11	305-P050	1	RING,SPLIT,SINGLE TURN,PTFE,- 016		PTFE
12	305-P045	2	FTG,PP,3/8" ME		PP
13	AK058	1	ASSY,SHUTTLE SLEEVE		CERAMIC
14	305-P013	2	TUBE,TRANSFER,PFA		PFA
15	305-P009	3	NUT,PVDF,FLR,3/8T		PVDF
16	305-P006	1	BODY,OSCILLATOR,PP PC7		PP
17	AW036-01	2	ORIFICE, PRESS-IN .024		PEEK
18	305-P002	1	CAP,PFA,PC7		PFA
19	305-FR	4	PAD,MUFFLER,PP,25 MICRON		PP
20	305-P005	1	BASE,PP,PC7		PP



#### 4.7 CLEAN-UP

Due to possible contamination all components must be flushed clean and neutralized before disassembly to prevent fluid contact with personnel.

#### 4.8 DISASSEMBLY

To disassemble PC7 pump controller for service, remove controller from pump by disconnecting the flare fittings on the PC7 from the transfer tubes connecting it to the pump.

**Caution:** For safety make sure air supply to PC7 has been shut off prior to removal of supply line.

- Unscrew Adjustment Cap from controller body and carefully twist shuttle spool from sleeve by rotating cap assembly.
- Gently remove the cap seal from the seat inside the cap to prevent any damage or possible scratches to sealing surface. Replacement of seal is recommended after service.
- Use a straight blade screwdriver to remove the two retaining screws from the support plate. Next loosen compression nut and ferrule from adjustment screw and gently push the adjustment screw out of the cap by pressing on the end. This assembly contains the only serviceable items. See exploded assembly for part numbers and part locations.
- Inspect parts for wear and replace if necessary.

#### 4.9 ASSEMBLY

• To reassemble detent, twist the adjustment screw into the support plate and then insert 2 each spring bars into slots as per figure 1.



MTD0630

Figure 1

• Next insert 2 each detent legs as shown in Figure 1 and open spring bars to lock assembly as shown in Figure 2.



MTD0631



• Lastly insert 2 ea. detent legs into slots on shuttle spool as shown in Figure 3 and insert into previous assembly.



MTD0632

#### Figure 3

• See completed detent assembly illustrated in Figure 4.



MTD0633



• Insert detent assembly into adjustable cap as shown here and install 2 each retaining screws.



Figure 5

Note: Do not over tighten screws. Cap threads are easily stripped.

• Install ferrule onto adjustment screw with the longest taper toward the adjustment cap. Then install compression nut onto cap per figure 6.



MTD0635

#### Figure 6



- Tighten nut finger tight to engage compression seal.
- Insert Gortex seal into thread end of adjustable cap assembly onto sealing land as shown.



#### MTD0636

#### Figure 7

- Screw cap assembly with seal onto the open end of body assembly carefully inserting shuttle spool into valve body and engage air seal completely.
- Cap requires only moderate installation torque to activate seal. Over tightening can dislocate seal gasket preventing oscillation of the controller valve.



## **5 TROUBLESHOOTING**

#### **Controller Will Not Operate or Cycles Erratically**

Cause:

Solution:

- PC7 cap seal failure
- Debris in shuttle valve
- Insuffisant air pressure
- Remove caps from PC7 and replace PTFE cap seal.
- Isopropyl alcohol clean the shuttle sleeve and spool assy.
- 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.
- Replace adjustment screw assy.
- Spring bar needs replacement if not flat.
- Adjustment Screw Seal failure
- Spring bar failure



## **6 WARRANTY**

#### PC7F OR PC7P CONTROLLER

TREBOR International, Inc. warrants to the purchaser of new equipment manufactured by TREBOR to be free from defects in material and workmanship when used for its intended purpose under normal operating conditions, and maintained according to the Operation/Maintenance Manual.

TREBOR's obligation under this warranty is limited to repairing or replacing, at TREBOR's option and at the TREBOR factory, any part or parts thereof which shall, within 1 year after delivery thereof to the original purchaser, be demonstrated to TREBOR's satisfaction to have been defective. This warranty may be transferred to subsequent owners. The warranty period is based on the original ship date from the factory. All warranty related freight costs shall be borne by the customer.

Excessive wear to pump components caused by pumping abrasive solutions or chemicals, as well as damage caused by ingesting foreign objects shall not be covered by this warranty.

This warranty shall not apply to any equipment which, in the judgment of TREBOR, shall have been repaired or altered outside TREBOR's factory in any way, so as to affect its performance or reliability; subjected to misuse, negligence or accident; or used other than in accordance with TREBOR's printed instructions.

There are no terms, conditions or warranties, expressed, implied or statutory, of merchantability, fitness, capacity, or otherwise, of the goods ordered, other than, or different from, the warranty set forth above. This warranty takes precedence over any other warranty, expressed or implied.

TREBOR neither assumes, nor authorizes any other party to assume for it, any liability in connection with said equipment except as set forth above.