

PC15CP PUMP CONTROLLER

Operation / Maintenance Manual

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1 PC15CP INSTALLATION

1.1 PC15CP OVERVIEW

The PC15CP Pump Controller is designed to operate Trebor's Purus CP pump. Cross-phase timing results in overlapping pump strokes which produces a near pulse-less pump output.

Note: Attach the included muffler prior to installation.

1.2 PC15CP INSTALLATION

The PC15CP pump controller can be installed in any orientation. Pump controller mounts using two 1/4" (6mm) bolts and should be mounted above the level of the fluid feeding the pump. Allow clearance for tubing connectors.

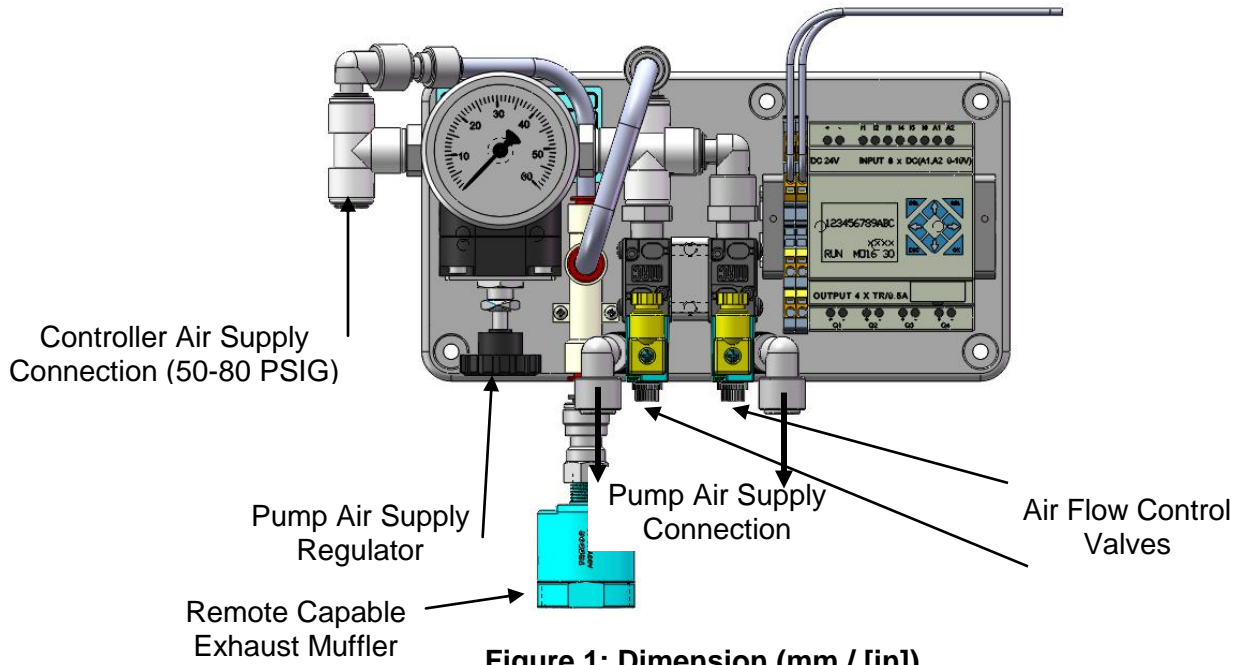
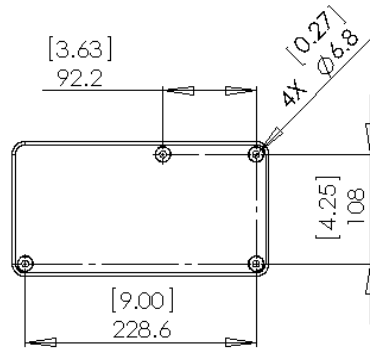


Figure 1: Dimension (mm / [in])

1.3 PC15CP UTILITIES / HOOK-UP

<u>Utility</u>	<u>Pump</u>
Air Inlet:	<ul style="list-style-type: none"> • 1/4" Diameter (6mm) supply tube.
Air Supply:	<ul style="list-style-type: none"> • 80±5 PSIG (.55±.03 MPa), clean dry air or inert gas
Power	<ul style="list-style-type: none"> • 24VDC - 500mA
Controller Weight:	<ul style="list-style-type: none"> • 4.4 lbs (2.0 Kg)

ATTENTION: Air supplied to the PC15CP pump controller must be regulated to 80±5 PSIG. A secondary regulator controls pump air supply pressure.

- Air supply connections between the pump and the pump controller are required.

NOTE: 3/8" tubing or larger is required for distances exceeding 3 meters between the pump and the pump controller.

- 24VDC is required to operate the pump controller.
 - Terminal blocks are insulation displacement type. Insert 18 gage wires into the indicated location and push down lever to complete connection, see Figure .

NOTE: Follow local wiring codes and applicable wiring standards to insure proper power and over-current protection.

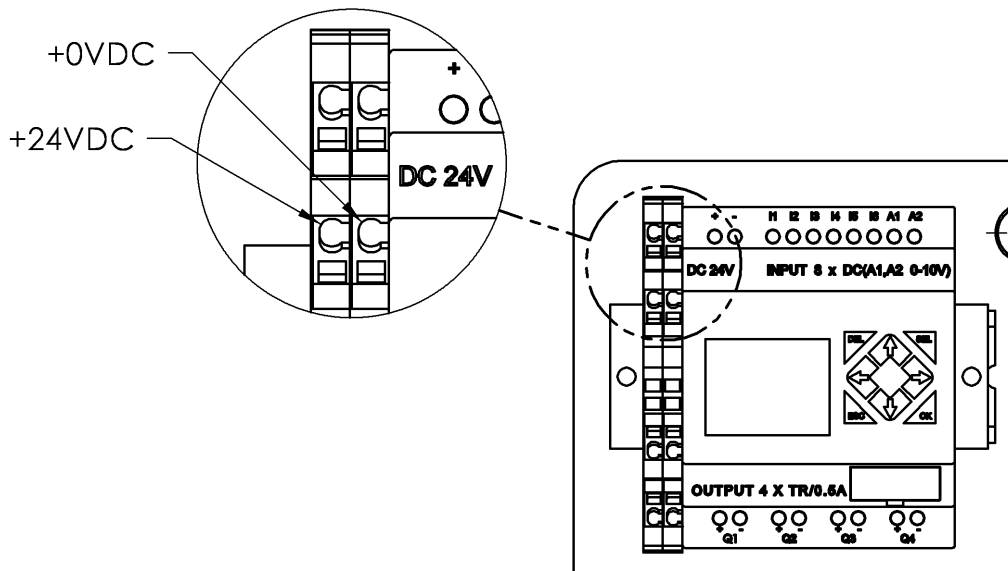


Figure 2: 24VDC Connection

2 PC15CP CONTROLLER OPERATION

The controller is operated by using the buttons located on the PLC, see Table 2-1.

Table 2-1: PLC Buttons

Button	Action from “Home Page”	Action from “Menu Pages”
←	Scroll through Menu pages	Go to Home page
→	Enables/Disables controller cycling	Navigate between Menu pages
↑	Increases pump cycle rate on Home page	Increase values
↓	Decreases pump cycle rate on Home page	Decrease values

2.1 TURNING PUMP ON AND OFF

From the Home Page, pressing the RIGHT arrow key (→) will start and stop the cycling of the pump controller. When cycling, a cursor will oscillate under positions “1” & “2”.



Figure 3: Controller Cycling

2.2 ADJUSTING CONTROLLER

2.2.a Suggested Controller Values

<u>Flow Rate</u>	<u>CPM</u>	<u>Air Flow Control</u>	<u>Overlap</u>
- 1-4 LPM:	“000030”	“3” Turns from closed	20
- 3-6 LPM:	“000056”	“3½” Turns from closed	25
- 0-1 LPM:	“000010”	“1½” Turns from closed	10

Please contact Trebor Service Group for any updates on these settings.

2.2.b Cycle Rate

From the Home Page, press the LEFT arrow key (←) to open the Cycle Rate. From there the cycle rate can be adjusted by pressing the UP (↑) and DOWN (↓) arrows.

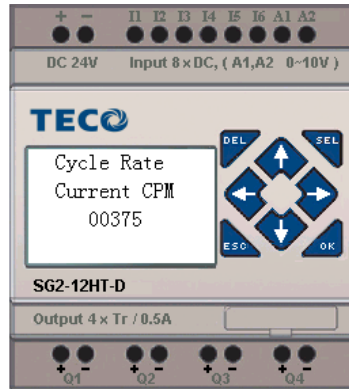


Figure 4: Cycle Rate Page

Press the LEFT arrow key (←) to return to the home page.

Press the RIGHT arrow key (→) to open the Overlap page.

2.2.c Overlap

From the Cycle Rate Page, press the RIGHT arrow key (→) to open the Overlap page. From here the overlap delay can be adjusted by pressing the UP (↑) and DOWN (↓) arrows.



Figure 5: Overlap Page

Press the LEFT arrow key (←) to return to the home page.

Press the RIGHT arrow key (→) to open the Maintenance Alarm page.

2.3 MAINTENANCE ALARM

2.3.a Maintenance Alarm Counter

The Maintenance Alarm Counter page is a visual display indicating how many cycles the pump has run since the last maintenance counter reset. The top 6 digits MSB (most significant bit) displays cycle count in millions while the lower digits LSB (least significant bits) display values up to one million.



Figure 6: Maintenance Counter Display Page

When the maintenance counter MSB value exceeds the alarm setting a service alarm will be initiated. The alarm can be acknowledged and silenced by pressing both the UP (↑) and DOWN (↓) arrow keys simultaneously while viewing this page.

Note: Resetting this counter is only possible on the Maintenance Alarm status page.

From the Maintenance Alarm Counter Page the following can be done:

- Pressing the RIGHT arrow key (➡) advances the menu screen to the maintenance alarm page.
- Pressing the LEFT arrow key (⬅) or (ESC) key will return the display to the HOME page
- Pressing both the UP (↑) and DOWN (↓) arrow keys simultaneously the maintenance alarm can be silenced.

2.3.b Maintenance Alarm Status

The Maintenance Alarm status page displays the MSB value that the maintenance counter from the previous page must reach in order to activate the maintenance alarm output Q4 (see Figure 7).

Press either the UP (↑) or DOWN (↓) arrow key to change the alarm set point value (MSB). This is the value at which service is requested. When this value is zero, the maintenance alarm is deactivated (default state).

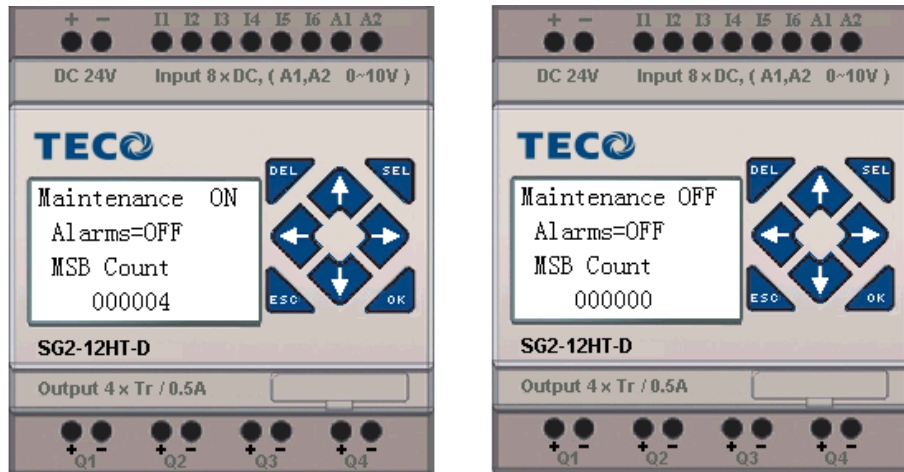


Figure 7: Maintenance Alarm ON and OFF

Note: The factory default setting of 000000 prevents the maintenance alarm from operating. The MSB value must be ≥ 000001 to enable the Maintenance Alarm Output.

In the Figure 6, the MSB shows the factory default setting of 000000. If the setting were set to 000010 and the maintenance counter reached 10 million cycles, the maintenance alarm output (Q4) will be activated (ON) as indicated by the Alarms = ON/OFF line in the display.

Pressing both the UP (↑) and DOWN (↓) arrow keys simultaneously while viewing this page will reset the maintenance counter to zero resetting the alarm output.

Note: Performing this procedure resets the maintenance counter on the previous page to zero and should only be used once maintenance has been performed as prescribed.

To silence the alarm output (Q4) return to the maintenance counter page by pressing the RIGHT arrow key (→) then proceeding as outline previously.

The following actions can be done from the Maintenance Alarm page:

- Pressing the RIGHT arrow key (→) will move to the Maintenance Alarm Counter page
- Pressing the LEFT arrow key (←) or (ESC) key will return the display to the HOME page
- Pressing both the UP (↑) and DOWN (↓) arrow keys simultaneously will reset the maintenance counter to zero resetting the alarm output.
- Pressing either the UP (↑) or DOWN (↓) arrow key will change the alarm set point value (MSB). This is the value at which maintenance service is requested. When this value is zero, the maintenance alarm is deactivated.

3 REMOTE OPERATION

To operate the controller by a remote signal, the following conditions must be met:

- Input 1 (I1) must have a source input sufficient (>9 VDC) to activate the input as indicated in the display below to activate the remote operation capabilities.
- Input 2 (I2) must have a switched source input sufficient (>9 VDC) to activate the input in conjunction with I1 to turn the controller ON (High Signal) or OFF (Low Signal) as shown in the display below.



Figure 8: Remote Mode (ON)

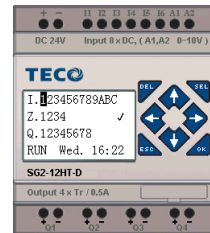


Figure 9: Remote Mode (OFF)

During remote operation, the controller can be manually stopped by pressing the RIGHT arrow key (➡) from the HOME page, this will locally stop controller oscillation. While in the override stop state, the cursor under the position 8 will be ON (Figure 8).

To resume pump operation toggle input I2 changing its state (ON state to the OFF state) resetting output 8 and then turning I2 on again. In order to turn the controller on locally exit out of remote mode (I1 = OFF) then from the Home Page, press the RIGHT arrow key (➡) will start and stop the control of the pump as normal.

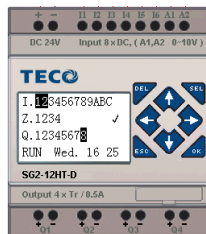


Figure 10: Local Override Stop Display

Pump status feedback is provided on output Q3. As indicated in Figure 8 and 9 this output may be wired to provide an indication signal of pump operation

4 SPARE PARTS

The following list represents spare parts we recommend for on-site system repair.

PART NO.	DESCRIPTION	RECOMMENDED SPARE QTY.
98003972	Valve, Solenoid	1

Consult factory for other parts not shown above.

4.1 SOLENOID VALVE REPLACEMENT

- Remove nut from machine screw mounting valve to mounting panel.
- Identify and remove air transfer tubes from push connect ports.
- Disconnect solenoid electrical connectors.
- Remove and replace valve assembly.
- Reverse removal procedure for reassembly.

5 TROUBLESHOOTING

SYMPTOMS	SOLUTIONS
<ul style="list-style-type: none"> Pump turns on when on/off switch is activated, but the pump is running slow 	<ul style="list-style-type: none"> Increase cycle rate setting to a maximum of 375.
<ul style="list-style-type: none"> Pump flow does not increase with cycle rate 	<ul style="list-style-type: none"> Confirm regulated air supply pressure at 50-80 psig. Increase pump discharge pressures if discharge pressure is not surging! Reduce inlet suction (Lift) requirements.
<ul style="list-style-type: none"> Pump is surging (discharge pressure variation >4 psig) 	<ul style="list-style-type: none"> Initiate controller calibration to reduce pulsation. Contact Trebor Reduce inlet suction requirements. Increase cycle rate.
<ul style="list-style-type: none"> Controller display does not turn on 	<ul style="list-style-type: none"> Check power supply voltage >19VDC.
<ul style="list-style-type: none"> Pump will not run 	<ul style="list-style-type: none"> Check pump regulator pressure is above 15 psig. Check controller air supply pressure <> 50-80 psig. Check if remote operation enabled.
<ul style="list-style-type: none"> Pump will not prime 	<ul style="list-style-type: none"> Increase cycle rate. Check controller supply pressure is >50 PSIG.

6 CONTACT INFORMATION

6.1 GENERAL CONTACT INFORMATION

Web: www.treborintl.com
Phone Number: (801) 561-0303
Toll Free Number: (800) 669-1303
Fax Number: (801) 255-2312
Email: treborinfo@idexcorp.com
treborsales@idexcorp.com
Address: Trebor International
8100 South 1300 West
West Jordan, Utah 84088 U.S.A.

6.2 TECHNICAL SUPPORT

Email: treborservice@idexcorp.com
Phone Number: (801) 244-6156

6.3 REGIONAL REPRESENTATIVES

Web: www.treborintl.com