



# BATCH CONTROL SYSTEM

## INTRODUCTION:

Thank you for purchasing the PACER Batch Control System (BCS). The BCS is a unique system specifically engineered to safely and efficiently control the transfer of corrosive liquids. Read and understand the entire operating instructions before operating the BCS. Complete system includes three packages: Batch Control Motor, Control Module with Flow Chamber, and Pump Tube. Please make sure you have received all necessary items.

## TECHNICAL DATA

### CONTROL MODULE

Accuracy: +/- 0.5 % (with use of "teach- in" function)  
+/- 1-2 % (without "teach-in" function)

Repeatability: +/- 0.4%

Voltage: 120V/230V

Language: English, German, Italian, Spanish, French  
Digital LCD display

Enclosure: IP65, NEMA 4

### FLOW CHAMBER /FITTINGS

Axis & Bearings: Ceramic

Measurement Principle: In-Line Rotor

True Union Flow Chamber: Polypropylene & PVDF

Discharge: 1" hose barb or 1" NPT threads

Max. Flow: 25 GPM (85 LPM)

Max. Discharge Pressure: 17 psi (1.2 Bar)

Materials of Construction: Polypropylene or PVDF

Max. Operating Temp.: PP-130°F (55°C)  
PVDF-175°F (80°C)

Pipe Discharge: 1" NPT or 1" hose barb

### ELECTRIC MOTOR(S)

SP-280P-BC Open Drip Proof,  
115V/ 1/ 60 Hz, 1.1 HP

SP-280P-2-BC Open Drip Proof,  
220V/1/ 50 Hz, 1.1 HP, IP 44 enclosure.

SP-ENC-BC TEFC, 115V/1/60 Hz, 1.1 HP

SP-ENC-2-BC TEFC, 220V/1/50 Hz, 1.1 HP, IP 54  
enclosure

## CONNECTION FITTINGS with Part Number

1" MNPT Pump Outlet Fitting	US61652	US61661
1" FNPT Flow Chamber Outlet Fitting	US61653	US61662
1" FNPT Flow Meter Inlet Fitting	US61654	US61663
1" NPT Check Valve	US61655	US61664
1" MNPT Hose Barb	US61659	US61665

## INSTALLATION

- Carefully unpack all three packages.
- Visually inspect all items for damage in shipping.
- Attach Batch Control Motor to the Pump Tube. Fasten connection by tightening green hand wheel on pump to lower assembly of motor.
- Unscrew wing nut from the discharge port of pump tube. This is located directly under green hand wheel. Threads should be visible.
- Fasten Flow Chamber to discharge of pump via coupling nut on chamber.
- Next, place Control Module into inlet of flow chamber. Turn module 45 degrees (1/4 turn) to secure in place. Fasten set screw in rear for more secure connection.
- Plug communication cable into handle of motor. Secure connection by fastening nut.

## CALIBRATION

- Plug power cord to motor into appropriate outlet. The display on Control Module will illuminate. Serial number will flash, followed by **BATCH A & BATCH M**.
- Next, press **ENTER** and **DOWN** directional arrow simultaneously for 5 seconds. This allows you to enter the Calibration/setup menu.
- LANGUAGE** will appear. Press **ENTER**. Use directional arrows to choose desired language.
- UNIT** will display. Press **ENTER**.
- BATCH** will display. Press **ENTER**. Using directional arrows, choose desired measurement unit. (*Gal., Liters, Imp. Liters, Cubic Meters, etc.*) Press **ENTER**.
- Next, select desired unit of measurement for flow rate: *per second, min., hour, etc.* Press **ENTER**.
- K-FACTOR (calibration factor)** will display. Press **ENTER**.
- TEACH Y/N** will appear. Choose **(Y)** or **(N)**. Choose **(Y)** if you want to calibrate the meter for maximum accuracy, +/- 0.5 %.

### Choosing (Y) — Manual Calibration

- Next, you will need a container with a known volume. For example, 5 gallon container.
- Turn the motor switch to the ON position. Press **ENTER**. The BCS system will engage, pumping into your vessel/container.
- Once the container is completely full, press **ENTER**. This will disengage the system. Turn the motor switch to the OFF position.
- Once you have turned the motor OFF, the system will ask you to enter the volume size of the container. Enter volume by using the arrow keys. Press **ENTER**.
- The system will then assign a K-FACTOR. Accept by pressing **ENTER**.

### Choosing (N) — Using Factory Assigned Calibration

A. K 214.7 will display and flash. This is a factory default setting. Using the arrow keys, manually input the factory assigned K-factor. See table 1.1 for Factory assigned K-factors. Once you have input your K-factor, press ENTER.

**TABLE 1.1** Factory assigned K-factors for common acids

Liquid	Specific Gravity	K-Factor Value
Water	1	55
Calcium Nitrate	1.1	55.3
Caustic Soda	1.22	55.6
Nitric Acid (50%)	1.3	55.9
Ferric Chloride	1.4	56.2
Nitric Acid (98%)	1.5	56.5
Sulfuric Acid	1.68	56.83
Stannous Chloride	1.77	57.17
Sulfuric (66° Baumé)	1.89	57.5

Note: Maximum accuracy +/- 1-2%. These K-factors are factory assigned estimations for various liquids. PACER PUMPS in no way accepts responsibility for damaged or inaccurate batch transfers. PACER PUMPS recommends manual calibration for maximum accuracy.

9. **OPTIONAL** will display. Press **ENTER**. Make sure default setting on screen reads MEM + MAN. Press **ENTER**. A1-A7 will appear. These are your seven programmable batch settings. Use the directional arrows to choose desired volumes for each setting. All seven settings do not have to be used! Press **ENTER** to scroll through unused settings (A1-A7).
10. **OVERFILL** will display. Factory setting, do not change. Use directional key to scroll through.
11. **ALARM** will display. Factory setting, do not change. Use directional key to scroll through.
12. **RELAY** will display. Factory setting, do not change. Use directional key to scroll through.
13. **TOTAL** will display. Option **Y** or **N**. Choosing **NO** will keep totalizer and settings after each use. Choosing **YES** restores factory settings and totals are set back to zero.
14. **END**. Press **ENTER** to complete calibration. This will bring you back to the main menu. **BATCH A** or **BATCH M**.

### OPERATION / BATCHING

Select either **BATCH A** (automatic) or **BATCH M** (manual).

#### BATCH M

1. Press **ENTER**.
2. Use directional keys to select desired volume of liquid to transfer. The **DOWN** arrow toggles left to right. The **UP** cursor toggles from 0 – 9.
3. Once you select the correct volume, press **ENTER**.
4. Select **Y (YES)** by pressing **ENTER** if the volume is correct. Selecting **N (NO)** will allow you to choose the correct volume. After selecting (**Y**), the system will engage and the batching process will begin. Once the correct volume is transferred, the system will disengage and the process is complete.

#### BATCH A

**NOTE:** This option must be pre-programmed prior to use. See Calibration Instructions for set-up.

1. Press **ENTER**
2. Use directional arrow to select appropriate batch setting A1-A7. Press **ENTER**.
3. Select **Y (YES)** to begin a batch. Selecting **N (NO)** will allow you to choose batch setting. Upon selecting **Y**, the system will engage and the batching process will begin. Once the preset volume is transferred, the system will disengage. To repeat the same batch, press **ENTER** and choose **Y**.

### ADDITIONAL INFORMATION

1. Pressing the **DOWN** key while transferring will display Flow Rate.
2. To pause during a batch, press **ENTER**. To continue the process, press **ENTER**.
3. The Batch Control System is equipped with two options for maintaining a record of volumes transferred throughout the life of the system. The **MAIN COUNTER** is displayed on the main menu after **BATCH A / BATCH M**. This will be displayed in your chosen unit of measurement (gal., L, ml, etc.) This can be reset to zero in the calibration menu.
4. The **DAILY COUNTER** is displayed on the main menu after the **MAIN COUNTER**. A decimal point after the unit of measurement indicates the **DAILY COUNTER**.
5. **MAINTENANCE**- The Batch Control System is designed to be maintenance free. If the system becomes clogged, simply clean the wetted components with a compatible, safe cleaning agent.



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