DEMA® 80-77-4 Probeless Detergent Control DEMAMaster™

This instruction sheet will describe the setup and operating procedure for the DEMA Probeless Detergent Control Board. The full wiring diagrams and tubing hook up configurations for DEMAMaster units can be found in the instruction sheets supplied with those units describing the full assembly and DEMAMaster installation.

All installations must be in accordance with city, county, state or provincial electrical codes and be performed by a certified electrician.

When hooking up the a control board or installing a DEMAMaster dispenser, all electrical power must be turned off to the dish machine and any other circuit that is to be used for the installation. Lockout and tag procedures should be observed when installing this device. Never open the DEMAMaster unless power has been turned off. Signals may be present from dish machine, even with the power turned off. Only use electrical code approved insulated wiring and electrical fixtures with this installation

This control board is designed to deliver chemical product automatically to commercial dish machines. To properly fit this control board into an application, it is necessary to understand that this board will deliver a chemical product based on either counting operations (door type dish machine) or time for continuos power (conveyor type dish machines).

The DEMA Probeless control board has the following features:

- 2 banks of DIP switches for configuration (see detergent calibration for details)
- Requires 24VAC 50/60Hz input power for proper operation (24VAC power in terminals)
- 24VAC power out for powering an additional DEMA control board.
- A 24VDC output for a pump/motor or solenoid valve
- A coin cell battery type CR2032 for initial charge clock operation.

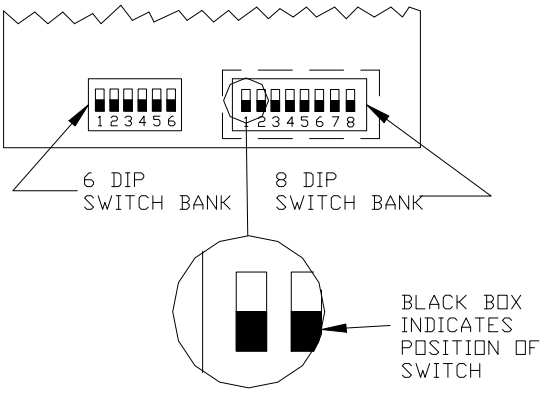
These features are shown on the photograph of the control board in this instruction sheet.

Detergent Calibration

For liquid detergent applications, it will be necessary to prime the pump system on the DEMAMaster, prior to the calibration procedure described in this section. The system can be primed by pressing the "Detergent Prime" button on the front of the DEMAMaster. The system is primed when the chemical has filled the pump discharge tubing up the to injection point on the dish machine. This can only be done while power is being supplied to the probeless detergent board.

Note: *If Detergent Prime button is held less than 5 seconds, the pump or valve will run for the amount time that has been set for initial charge or until button is pushed again.*

The detergent set up involves the use of the DIP switches on the probeless detergent control board. There is a bank of 6 and 8 switches located directly on the control board. The detergent concentration should be setup so that the desired level of concentration is maintained while dish machine is being used. The concentration can be tested by use of a titration test kit (DEMA P/N 81-53), not included.



If "X" is shown on a dip switch in the different modes shown below, it indicates that the DIP switch is not used in that particular mode!

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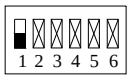
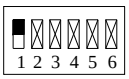
1. **Door or Conveyor mode:** 6 DIP Switch Bank, Switch **1**



OFF = Door Mode



ON = Conveyor Mode

2. **Initial Charge Time:** Sets the amount of Initial Charge based on time. See switch diagrams below for the DIP switch configuration.

0		1 MIN 20 SEC	
5 SEC		1 MIN 25 SEC	
10 SEC		1 MIN 30 SEC	
15 SEC		1 MIN 35 SEC	
20 SEC		1 MIN 40 SEC	
25 SEC		1 MIN 45 SEC	
30 SEC		1 MIN 50 SEC	
35 SEC		1 MIN 55 SEC	
40 SEC		2 MIN	
45 SEC		2 MIN 5 SEC	
50 SEC		2 MIN 10 SEC	
55 SEC		2 MIN 15 SEC	
1 MIN		2 MIN 20 SEC	
1 MIN 5 SEC		2 MIN 25 SEC	
1 MIN 10 SEC		2 MIN 30 SEC	
1 MIN 15 SEC		2 MIN 35 SEC	

3A. **Dead Cycle Count – Door Mode Only**

Sets the amount of wash cycles (door operations) that will take place before a recharge will occur. See table below for DIP switch configuration.

Example: *If the Dead Cycle Count is set to 3, there will be three wash cycles where no detergent will be added. On the 4th cycle a recharge will occur.*

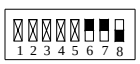
0 CYCLES		4 CYCLES	
1 CYCLE		5 CYCLES	
2 CYCLES		6 CYCLES	
3 CYCLES		7 CYCLES	

3B. **Dwell Time Setting – Conveyor Mode Only**

Sets the amount of time between a charge and a recharge. See table below for DIP switch configuration. ***Example:*** *Dwell Time is set for 1 min 30 sec. After the probeless control supplies an initial charge or a recharge, 1 minute and 30 seconds must expire before the next recharge will occur.*

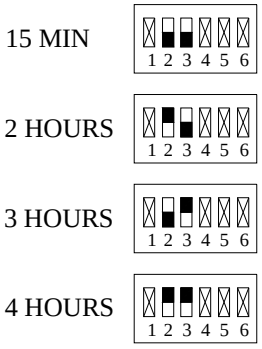
0		4 MIN	
15 SEC		4 MIN 15 SEC	
30 SEC		4 MIN 30 SEC	
45 SEC		4 MIN 45 SEC	
1 MIN		5 MIN	
1 MIN 15 SEC		5 MIN 15 SEC	
1 MIN 30 SEC		5 MIN 30 SEC	
1 MIN 45 SEC		5 MIN 45 SEC	
2 MIN		6 MIN	
2 MIN 15 SEC		6 MIN 15 SEC	
2 MIN 30 SEC		6 MIN 30 SEC	
2 MIN 45 SEC		6 MIN 45 SEC	
3 MIN		7 MIN	
3 MIN 15 SEC		7 MIN 15 SEC	
3 MIN 30 SEC		7 MIN 30 SEC	
3 MIN 45 SEC		7 MIN 45 SEC	

4. **Recharge Time:** Sets the amount of time that the pump or valve will operate to replenish chemical product into the dish/cleaning machine wash tank. See diagrams below for DIP switch configuration.

1 SEC		5 SEC	
2 SEC		6 SEC	
3 SEC		7 SEC	
4 SEC		8 SEC	

5. **Initial Charge Clock – Door Mode Only**

This is used to provide an initial charge after a set amount of time expired without using the DEMAMaster. See the table below for the DIP switch configuration. ***Example:*** *Initial Charge Clock is set for 2 hours. If no power has been supplied to the pro-bless control for at least 2 hours, the probeless control will provide an initial charge the next time power is supplied.* This feature is adjustable as shown in diagram below, while in door mode only. **When the unit is in the conveyor mode, the initial charge clock defaults to 1 hour.**



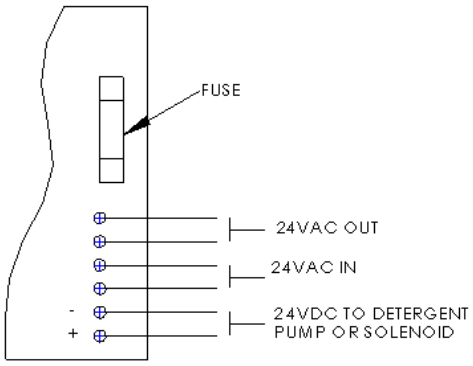
Note: When the coin cell battery (CR2032) is removed this will disable the initial charge clock. This will cause the probeless control to deliver recharges each time it is powered up. It is possible to deliver an initial charge anytime without the coin cell battery by pressing and releasing the "Detergent Prime" switch on the front face of the DEMAMaster unit.

Operation

The user of the DEMAMaster only needs to perform the following:

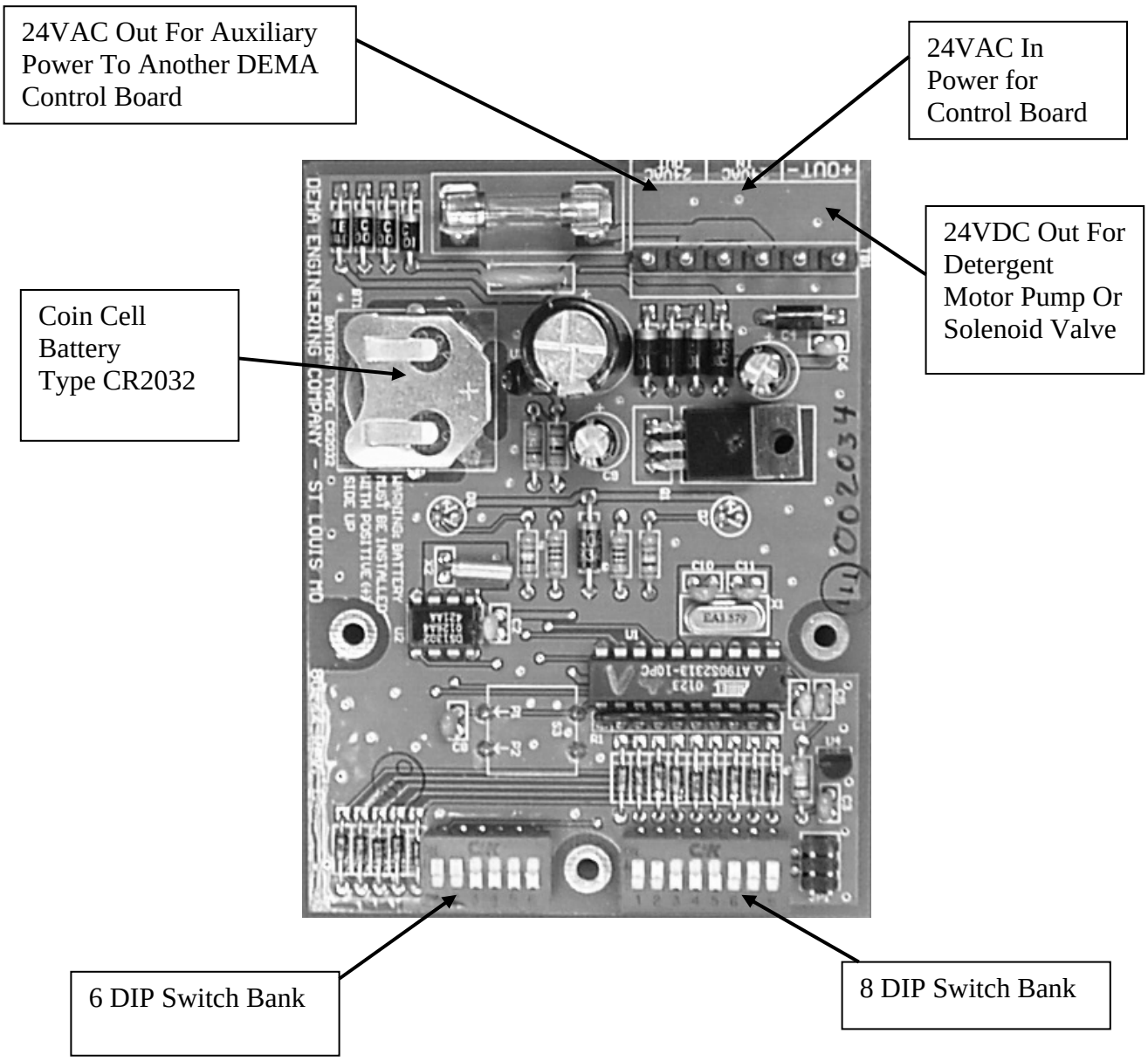
- When changing to a new container of detergent, prime the pump by pressing and holding the "Detergent Prime" until the pump and lines or primed.
- If dish machine tank is emptied and refilled, an initial charge can be delivered by pressing the "Detergent Prime" button for less than 5 seconds.

Note: *The DEMAMaster probeless board is designed with a 5-second delay when powered up. This means that the detergent pump or valve will not operate until continuous power is supplied to the board for at least 5 seconds.*



80-77-4 Probeless Control Wiring Diagram

DEMA® 80-77-4 Probeless Detergent Control DEMAMaster™



80-77-4 Probeless Control Board

Return Policy

No merchandise may be returned for credit without DEMA Engineering Company's written permission. Return Merchandise Authorization (RMA) number required in advance of return.

Warranty

DEMA products are warranted against defective material and workmanship under normal use and service for one year from the date of manufacture. This limited warranty does not apply to products that have a normal life shorter than one year or failure and damage caused by chemicals, corrosion, improper voltage supply, physical abuse or misapplication. Rubber and synthetic parts such as "O"-rings, diaphragms, squeeze tubing and gaskets are considered expendable and are not covered under warranty. This warranty is extended only to the original buyer of DEMA products. If products are altered or repaired without prior approval of DEMA, this warranty will be void.

Defective units or parts should be returned to the factory with transportation prepaid. If inspection shows them to be defective, they will be repaired or replaced without charge. F.O.B. factory DEMA assumes no liability for damages. Return merchandise authorization number to return units for repair or replacement must be granted in advance of return.