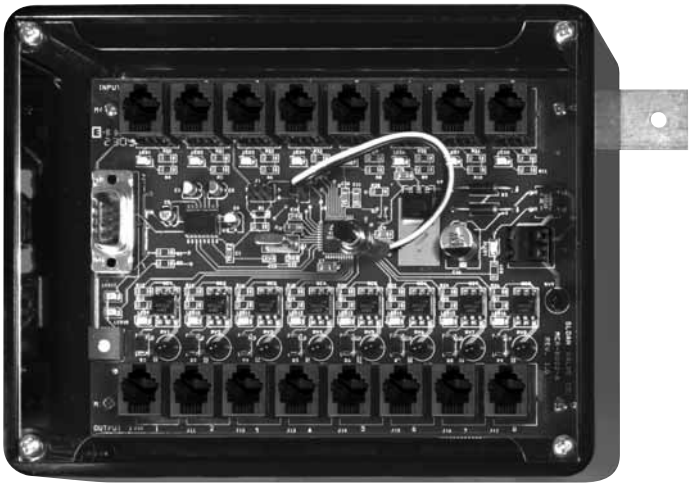
PROGRAMMED WATER TECHNOLOGIES
A SLOAN VALVE COMPANY

MCR 4004-A, MCR 8002-AX AND MCR 8003-AX CONTROLLERS INSTALLATION AND PROGRAMMING INSTRUCTIONS



Installation of the PWT MICROPlumb® MCR 4004, MCR 8002 and MCR 8003 Series Controllers incorporates the latest advances in microprocessor technology to provide maximum control of your plumbing system. MICROPlumb's patented sensing and metering products can be programmed to do just about anything you require, when you require it, including the ability to Delay and Lock-Out fixture activation.

MICROPlumb products control showers, water closets, lavatories and combination fixtures and help maintain operation of ON/OFF/DELAY.

These modular, flexible systems for new constructions, retrofit or expansion applications have few moving parts, no mechanical metering devices, and operate on low voltage to ensure safety and reliability.

The following instructions will serve as a guide when installing the MCR 4000 and MCR 8000 Series Controllers. As always, good safety practices and care are recommended when installing your new controller.

LIMITED WARRANTY

Programmed Water Technologies, a Sloan Valve Company, warrants its products to be made of first-class materials, free from defects of material or workmanship under normal use and to perform the service for which they are intended in a thoroughly reliable and efficient manner when properly installed and serviced, for a period of one year from date of purchase for MICROPlumb® products. During this period, PWT will, at its option, repair or replace any part or parts which prove to be thus defective if returned to PWT, at customer's cost, and this shall be the sole remedy available under this warranty. No claims will be allowed for labor, transportation or other incidental costs. This warranty extends only to persons or organizations who purchase PWT's products directly from PWT for purpose of resale.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN NO EVENT IS PROGRAMMED WATER TECHNOLOGIES RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY MEASURE WHATSOEVER.

PRIOR TO INSTALLATION

Install the items listed below:

- 24 VAC step-down transformer
- Push buttons
- Flushometer
- Lavatory/Shower solenoids

IMPORTANT: All electrical wiring is to be installed in accordance with national/local codes and regulations.

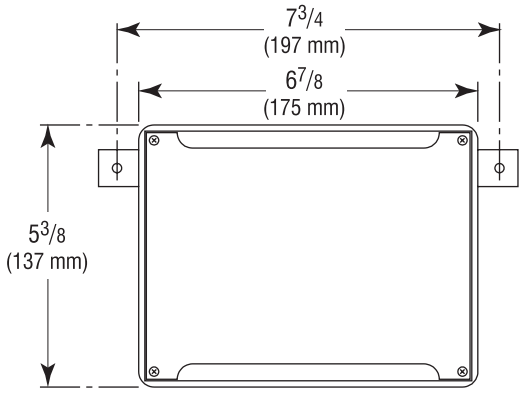
Made in the U.S.A.

INSTALLATION INSTRUCTIONS

Step 1 — Mount Controller

1. Remove plastic cover from front of controller.
2. Install controller so that all cables for solenoids enter from the bottom and all cables from push buttons enter at top. Controller must be located within 200 ft. from furthest push button and within 200 ft. of power supply transformer.
3. Mount controller to wall using mounting screws and plastic anchors.

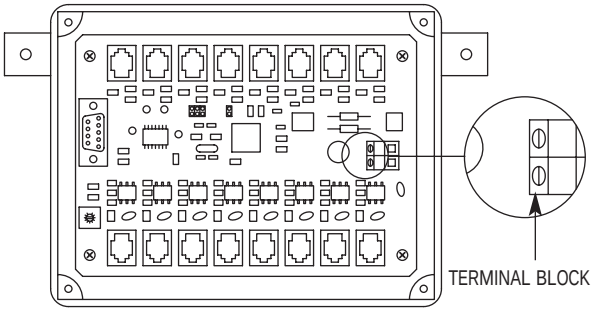
NOTE: Extension cables are available as an accessory item from PWT. ***Using extension cables other than PWT supplied cables with this installation may void your warranty.***



Step 2 — Connect Power Supply

1. Make sure power is off to 24 VAC transformer.
2. Run 18-gauge wire from secondary side (24 VAC output) of transformer to terminal block inside controller.
3. Turn power on and look for power indicator to illuminate.
4. Turn power off until push buttons and solenoids are installed.

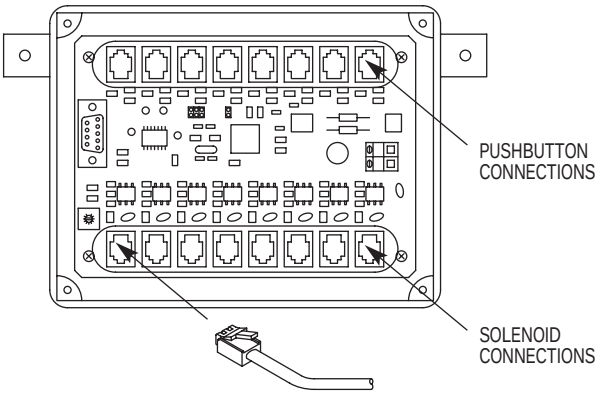
IMPORTANT: Be sure that wire is completely inserted into terminal and that no strands are crossing from one side to the other.



Step 3 — Connect Push Button and Solenoid

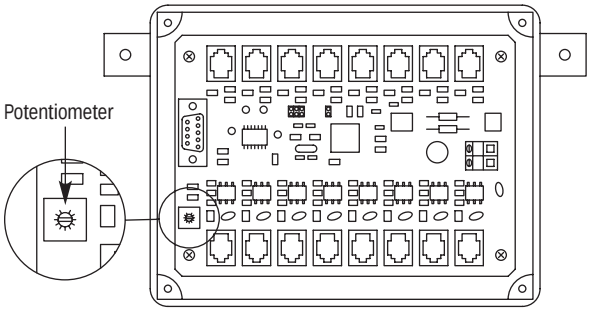
1. Plug RJ-11 connectors from push buttons into appropriate input connections in controller. Refer to Operating Chart sheet for input/output designations.
2. Plug RJ-11 connectors from Flushometers, lavatories and/or shower solenoids into appropriate output connections in controller. Refer to Operating Chart sheet for input/output designations.
3. Power up controller.

IMPORTANT: Make sure that all push buttons are connected to the input and solenoids connected to output. Improper connections will result in failure of controller and/or push buttons and solenoids and will require replacement.



Step 4 — Adjusting the Potentiometer

1. Turn on power to controller.
2. Wait for LED 17 and LED 18 to stop flashing.

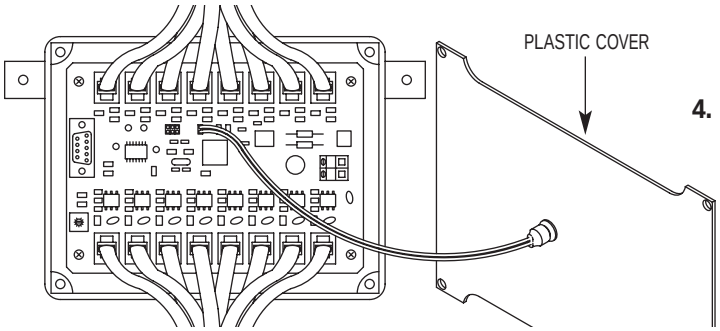


3. Turn potentiometer to maximum counterclockwise setting. This is zero position.
4. Slowly turn potentiometer clockwise. Count the number of times that LED 18 flashes. Each flash relates to a time increment that increases either a runtime or lockout time. When adjusting runtime, each flash equals 30-seconds. When adjusting a lockout, each flash equals 15-minutes.
5. Repeat steps 2-4 until LED flashes for appropriate timing adjustment. Run times can be adjusted in 30-second increments from a minimum of 30-seconds to a maximum of 17-minutes. Lockout times can be adjusted in 15-minute increments from 0 to a maximum of 225-minutes.

Step 5 — Reinstall Plastic Cover/Connect Reset Button

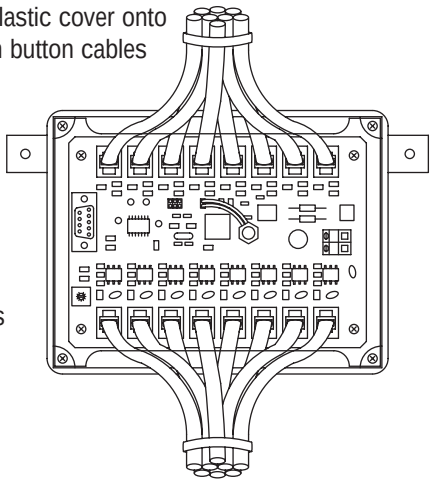
1. Carefully remove protective paper from both sides of plastic cover, taking care not to damage reset switch.

2. Positioning the cover so that reset switch in on right-hand side, connect RJ-11 connector of reset switch into connection in control box (located directly below 24 VAC terminal connection).



3. Carefully position plastic cover onto box so that all push button cables are going through opening at top of box and all solenoid cables are going through opening at bottom of box.

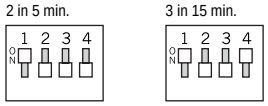
4. Insert cover screws and tighten.



Application Settings for MCR 4004-A Controller

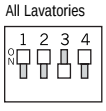
The MCR 4004-A controller can be configured for different applications including all closet, all shower, all lavatories and combination by setting an on-board 4-position dip switch.

All Closets: Used to control up to 4 water closets.*



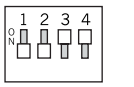
All Showers: Used to control up to 4 single runtime showers.

All Lavatories: Used to control up to 4 single runtime water lavatories.

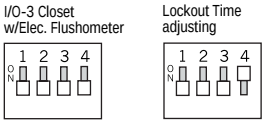


Combination: Used to control combination fixtures.

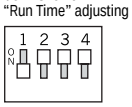
1. I/O-1 used to control a hot water.
2. I/O-2 used to control a cold water.



3. I/O-3 used to control a closet.**



4. I/O-4 used to control a shower



* On water closets only, first dip switch in ON position activates random delay flushing. In OFF position, random delay flushing is deactivated.
Note: the dip switches are factory set in the OFF position which equals an all closet (4) function – 2 flushes in 5 minutes with 1 hour lockout and no random delay.

**Standard setting: via dip switch #4 in OFF position activates 2 flushes in 5 minutes with a 60 second lockout for a third activation attempt within the 5 minute time frame.
Option: via dip switch #4 in ON position activates 3 flushes in 15 minutes with a 60 minute lockout time.

PWT TROUBLESHOOTING GUIDE — NON-COMMUNICATING SYSTEM

1. PROBLEM: No water is delivered to any fixture when the push buttons are pressed.

INDICATOR: No LED lights are illuminated.

CAUSE: No electricity is being supplied to the controller.

SOLUTION: Ensure that the main power is turned on. Check breaker and transformers. Make sure transformer is supplying 24 VAC (Volts AC). If no voltage is detected, replace transformer.

INDICATOR: Red LED lights are flashing.

CAUSE: Controller is in "LOCK-OUT" mode.

SOLUTION: Press reset button on face plate or disconnect power to controller for 10-seconds. LED light will stop flashing.

INDICATOR: LED light on input does not illuminate when button is activated.

CAUSE: Push button is defective, RJ-11 jack is not in correctly, or reed switch magnets are fouled (MCR 60-A button).

SOLUTION: Unplug RJ-11 Jack then reinstall. Activate push button and check for LED to illuminate.

If this does not fix the problem, move a working input line to the problem terminal then activate button. If the LED light illuminates, you know the original push button is damaged or defective. Replace with new button. If the button is an MCR 60-A, replace the magnets inside the push button assembly (MCR 22-A) or the reed switch (MCR 18-A).

2. PROBLEM: MCR-250-A unit false triggers (activates by itself).

INDICATOR: Input LED light stays on or shows a constant dim light.

SOLUTION: The reed switch is to close to the push rod. Turn off the water supply to the valve. Remove reed switch from valve body. Remove B-39 Seal. Push reed switch sensor back into the retaining spring away from the push rod. Reassemble. Check LED light on input. If LED is still illuminated, repeat action until LED light only illuminates when button is activated.

3. PROBLEM: Input LED illuminates when button is pressed but valve does not activate.

CAUSE: Control board output jack is not properly connected or is defective.

SOLUTION: Disconnect RJ-11 plug from the jack and then reconnect. If this does not fix the problem, plug a working valves' output RJ-11 plug into problem output jack. Cycle the valve using alternate push button.

INDICATOR: NO LED light at output jack. Damaged or defective output jack on the board. Replace board.

CAUSE: Wiring pigtail to valve damaged or defective.

SOLUTION: Replace pigtail or for 603-ESM valve, replace MCR 1001-A solenoid operator.

4. PROBLEM: Flush valve does not function after output LED illuminates.

INDICATOR: Valve makes a "CLICKING" sound but does not flush.

CAUSE: No water is being supplied to valve.

SOLUTION: Make sure the water supply is turned on at the control stop. Check to see if any ball or gate valves have been turned off up stream of the control stop.

CAUSE: The EL-163-A Solenoid shaft assembly is fouled or jammed.

SOLUTION: Turn the power off to the valve (Failure to do so could result in damage to the solenoid coil). Remove the EL-166 nut from the solenoid operator. Use a spanner wrench or pliers to remove the EL-163-A solenoid shaft assembly from the valve. Clean and/or replace as necessary. Be sure to replace the plunger spring when reassembling solenoid shaft assembly.

CAUSE: The EL-128-A actuator assembly is clogged or needs to be replaced.

SOLUTION: Shut off water to the valve. Remove the solenoid assembly. Take out and replace/or clean the EL-128-A cartridge assembly. Make sure the PISTON RING is on the PLUNGER PISTON.

5. PROBLEM: Little or no water is delivered to bubbler or shower head after output LED has activated.

CAUSE: Water supply stops are closed or partially open.

SOLUTION: Open stops.

CAUSE: Debris is clogging solenoid filter.

SOLUTION: Shut off water supply. Remove, clean, and reinstall solenoid filter.

CAUSE: Solenoid is worn or faulty.

SOLUTION: Turn off water supply. For MCR 139-A, Rebuild with ETF-1009-A solenoid repair kit, or replace MCR 139-A. For MCR 194-A, Rebuild with or replace MCR 194-A.

CAUSE: Flow restrictor in bubbler or shower head is clogged with debris.

SOLUTION: BUBBLER- Remove compression nut from 3/8 O.D. Nylon tubing connecting to bubbler. Remove and Clean flow restrictor.
SHOWER - Remove shower. Remove and Clean flow restrictor.

6. PROBLEM: Bubbler or shower does not stop delivering water or continues to drip after programmed run time has lapsed.

INDICATOR: Output LED does not turn off after programmed run time.

CAUSE: Short or moisture at output connection.

SOLUTION: Push the reset button on the face plate. If output LED light turns off reactivate the valve. If LED remains on remove RJ-11 connection. Clean output jack and plug with electrical contact cleaner. Reinstall.

CAUSE: Debris is clogging solenoid.

SOLUTION: Turn off water supply. For MCR 139-A, Rebuild with ETF-1009-A solenoid repair kit, or replace MCR 139-A. For MCR 194-A, Rebuild with or replace MCR 194-A.

7. PROBLEM: Flush valve runs non-stop (run on) or has a slow leak.

CAUSE: Diaphragm by pass hole is clogged and/or filter ring needs to be cleaned.

SOLUTION: Shut off water at control stop. Remove top cap and inside cover. Remove and clean diaphragm assembly. Re-install. In reverse order.

CAUSE: Valve body seat is nicked or defective.

SOLUTION: Replace valve body.

8. PROBLEM: Toilet flushes without activation.

INDICATOR: Button is not pressed and solenoid does not fire.

CAUSE: Crack in the inside cap cover (A-71).

SOLUTION: Shut off water to the valve. Remove top cap and inside cover. Replace inside cover (A-71). Reassemble.

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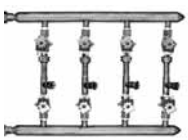



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