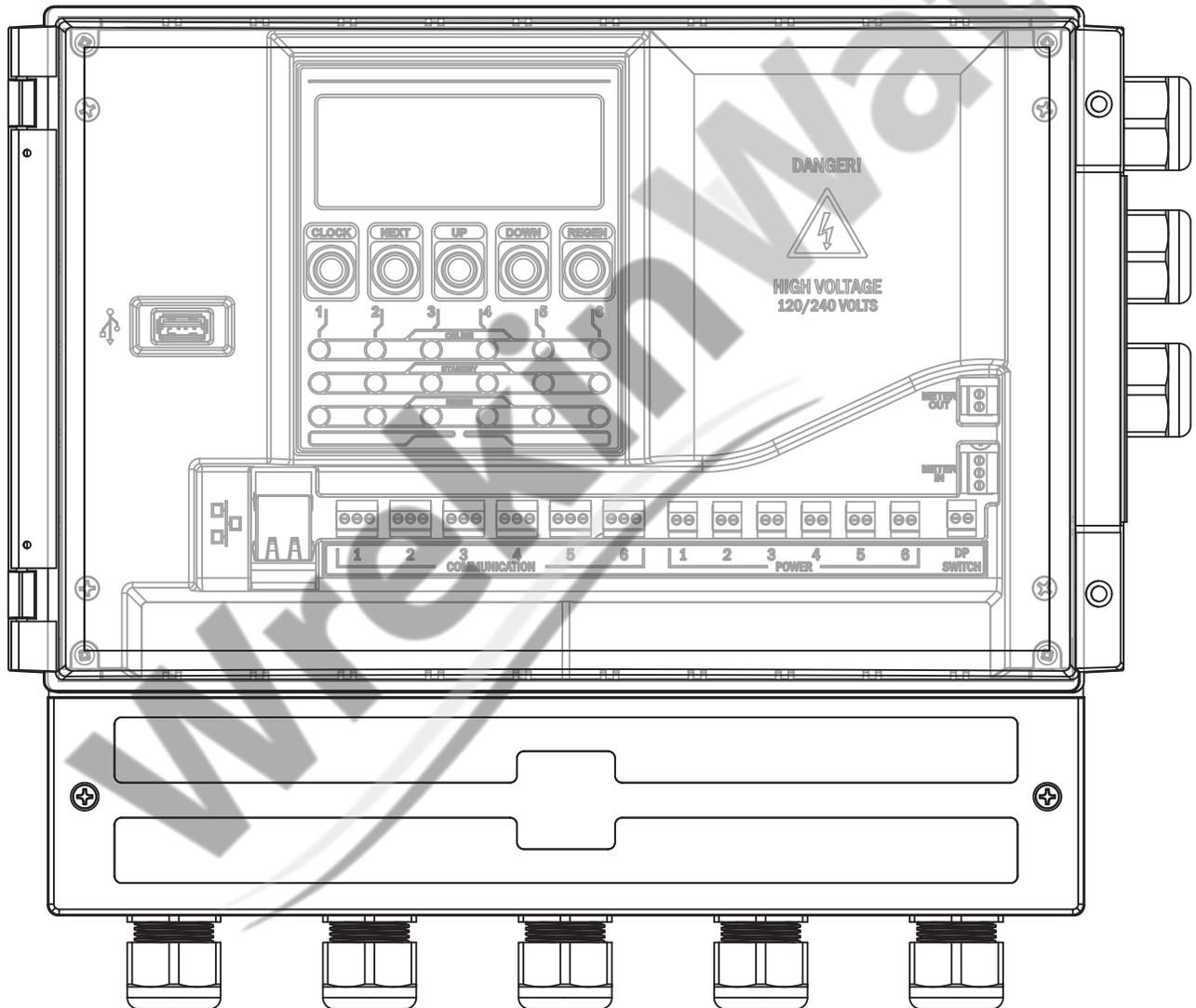


# System Controller Exploded Parts View and Wiring for V3030 and V3030-01



**WrekinWater**

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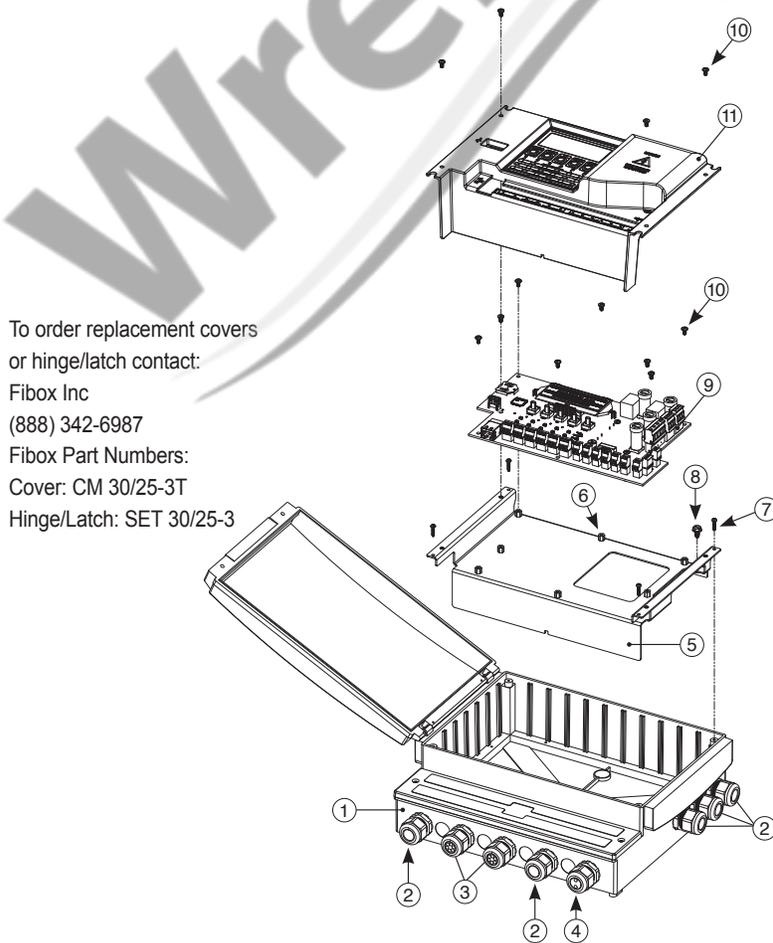
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V3030 SYSTEM CONTROLLER ASY W/CORD AND V3030-01 SYSTEM CONTROLLER ASY WO/CORD

Drawing No.	Order No.	Description	Quantity	
			V3030	V3030-01
1	V3858-01	SC FIBOX PC 30/25-3 MACHINED (does not include strain reliefs)	1	1
2	V3866	STRAINRELIEF 1HOLE ASY	5	5
3	V3865	STRAINRELIEF 6HOLE ASY	2	2
4	V3867	STRAINRELIEF 2HOLE ASY	1	1
5	V3827	SC BRACKET SHEET METAL (does not include standoffs)	1	1
6	V3860	STANDOFF #6-32X1/4 MXF SS	8	8
7	V3859	SCREW #4-24X1/2 TYPE 25 SS TC	4	4
8	V3861	SCREW #10-32X3/8 GREEN ZINC	1	1
9	V3870-BOARD	SC PCB REPLACE	1	1
10	V3917	SCREW PANHD 6-32X1/4-BR STGR	12	12
11	V3826-01	SC BEZEL PLASTIC HSYELLOW ASY	1	1
Not Shown	V3864-01	SC POWER CORD 7FT ASY	1	
Not Shown	V3868-01*	SC JUMPER WIRE BROWN		1
Not Shown	V3869-01*	SC JUMPER WIRE BLUE		1
Not Shown	V3186-01	WS1 AC ADAPTER CORD ONLY 15FT	Separate Purchase	
Not Shown	V3186-36	WS1 AC ADAPTER CORD ONLY 36FT	Separate Purchase	
Not Shown	V3474	WS ALT CONNECT CORD 8 FT BLK	Separate Purchase	
Not Shown	V3475-12	WS2H/3 SYSCONNECTCORD 12FT RED	Separate Purchase	
Not Shown	V3475-24	WS2H/3 SYSCONNECT CORD 24FT BL	Separate Purchase	
Not Shown	V3475-36	WS2H/3 SYSCONNECTCORD 36FT YEL	Separate Purchase	
Not Shown	V3880	TERMINAL BLOCK 3POS 5.08MM (Relay)	Shipped with Systems and Replacement Boards. Available for Separate Purchase if Lost or Damaged	
Not Shown	V3881	TERMINAL BLOCK 4POS 7.62MM (System Controller Power)		
Not Shown	V3882	TERMINAL BLOCK 2POS 3.5MM (Communication or Meter In)		
Not Shown	V3883	TERMINAL BLOCK 3POS 3.5MM (Valve Power, DP or Meter Out)		

8" length of wire for plugging unused 6 hole or 2 hole strain relief openings. 4 red plugs for plugging unused 1 hole strain relief openings.

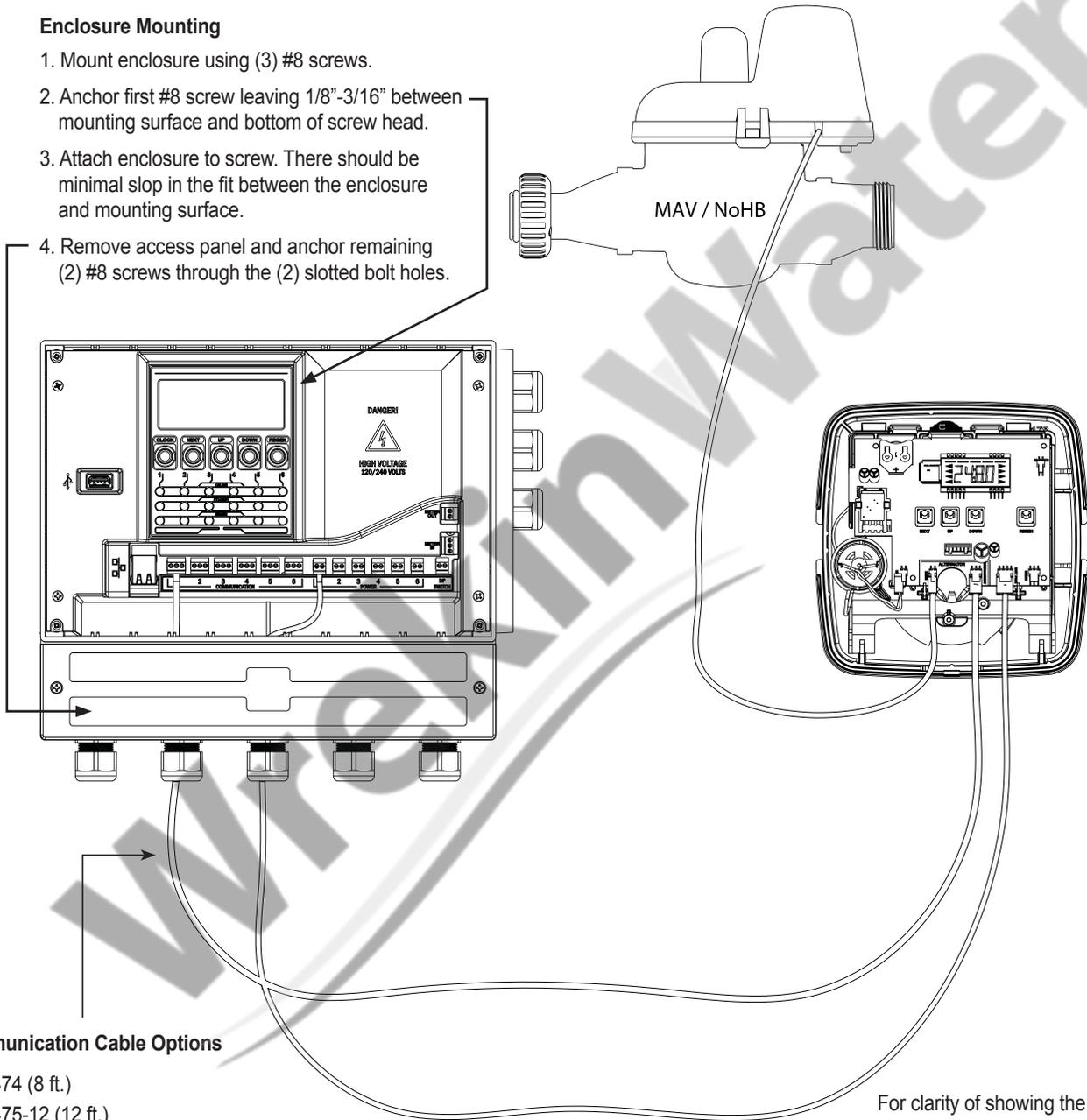
\*NOTE: Two jumper wires are needed if hard wiring 120VAC, one jumper wire is needed for hard wiring 240VAC.



## Typical Wiring Diagram (only one valve shown)

### Enclosure Mounting

1. Mount enclosure using (3) #8 screws.
2. Anchor first #8 screw leaving 1/8"-3/16" between mounting surface and bottom of screw head.
3. Attach enclosure to screw. There should be minimal slop in the fit between the enclosure and mounting surface.
4. Remove access panel and anchor remaining (2) #8 screws through the (2) slotted bolt holes.



### Communication Cable Options

1. V3474 (8 ft.)
2. V3475-12 (12 ft.)
3. V3475-24 (24 ft.)
4. V3475-36 (36 ft.)

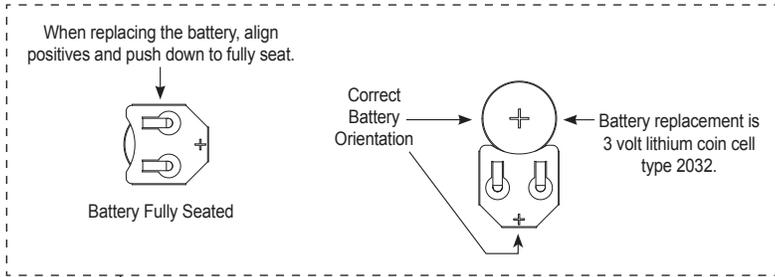
Cut off one end. Strip outer casing.  
Strip wires to 1/4".

### Power Cord Options

1. Cut off AC Adapter. Strip outer casing (about 1"). Strip wires to 1/4".
2. Purchase V3186-01 (15 ft. length). Trim wire ends to 1/4".
3. Purchase V3186-36 (36 ft. length). Trim to desired length. Strip outer casing (about 1"). Strip wires to 1/4". To provide strain relief this cord must be knotted inside the back plate and the system controller box.

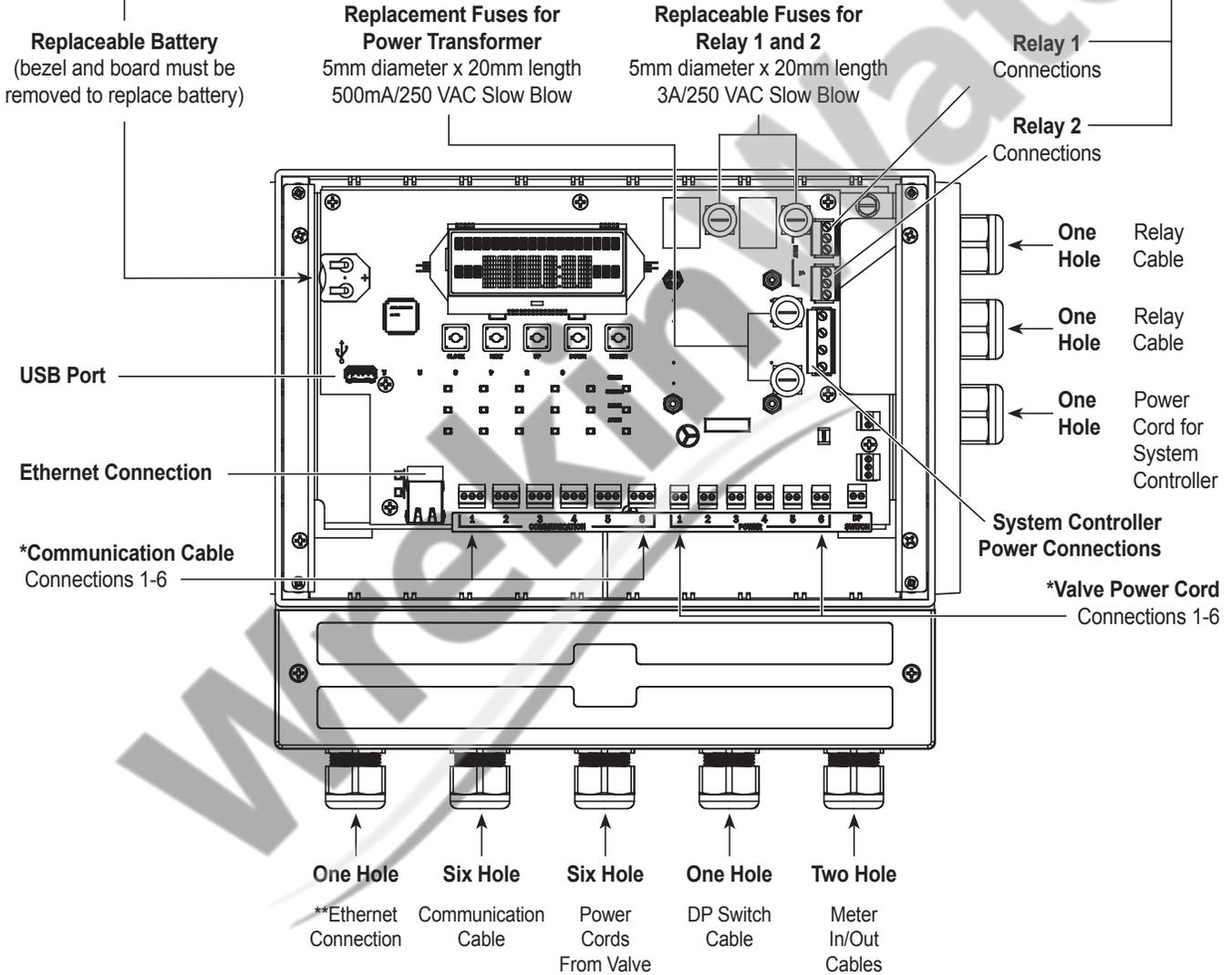
For clarity of showing the connections to the circuit board, the cords have not been routed through the back plate. MAV's contain two and no hardwater bypasses contain one V3805 STRAIN RELIEF COVER KIT for back plates that have a knockout to route additional cords.

Electrical Layout



Typical Relay Output Wiring		
	Relay Energized Load Energized	Relay Not Energized Load Energized
N.C.		AC Load
COM	AC Line (Hot)	AC Line (Hot)
N.O.	AC Load	

Equipment connected to Relay Terminals must not exceed a maximum AC load of 1.5A at 250VAC. Relay's are non-latching (i.e. if power is lost, returns to non-energized position).



\*Use Communication Cable and Power Cord Connections in consecutive ascending order, starting with 1.

\*\*If using Ethernet Cable remove rubber grommet and slice lengthwise to wrap around cord.

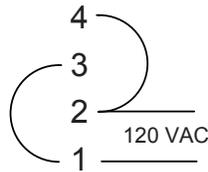
Use 8" length of wire for plugging unused 6 hole or 2 hole strain relief openings. Use red plugs for plugging unused 1 hole strain relief openings.

**Power Wiring 50/60HZ**

Power transformer primary winding is isolated. No polarity required on A/C input power wires.

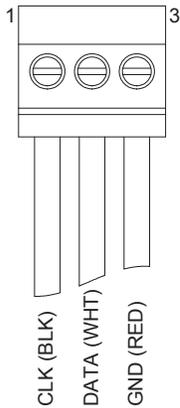
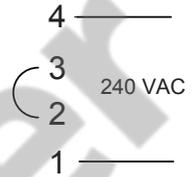
**120VAC**

Apply power to pins 1 & 2.  
 Install jumper between pins 1 & 3.  
 Install jumper between pins 2 & 4.  
 Attach grounding wire to metal bracket.

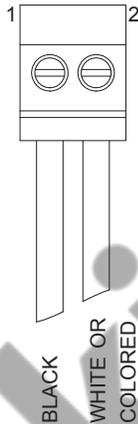


**240VAC**

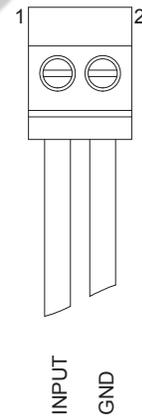
Apply power to pins 1 & 4.  
 Install jumper between pins 2 & 3.  
 Attach grounding wire to metal bracket.



**Communication Wiring**



**Valve Power Wiring**



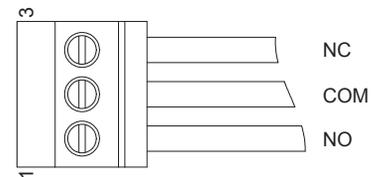
**DP Switch**

NOTE: If using V3186-36, knot inside of the valve back plate and inside of the system controller box to provide strain relief.

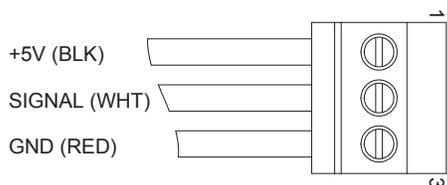


24V MAX

**Meter Out**



**Relay Out**



**Meter In**

Typical Relay Output Wiring		
	Relay Energized Load Energized	Relay Not Energized Load Energized
<b>N.C.</b>		AC Load
<b>COM</b>	AC Line (Hot)	AC Line (Hot)
<b>N.O.</b>	AC Load	

Equipment not to exceed a maximum AC load of 1.5A at 250VAC.

## System Controller Trouble Shooting Guide

Problem	Possible Cause	Solution
1. No display on System Controller and/or on system valves	<ul style="list-style-type: none"> <li>a. No power at electric outlet</li> <li>b. System Controller power cord not plugged into outlet or power cord end not connected to System Controller PC board power terminal block</li> <li>c. Improper power supply wiring to system valves</li> <li>d. Improper power supply voltage</li> <li>e. Defective system controller circuit board</li> </ul>	<ul style="list-style-type: none"> <li>a. Repair outlet or use another outlet that is working properly</li> <li>b. Plug power cord into outlet and verify proper power cord wiring to the circuit board</li> <li>c. Verify proper voltage is being delivered to System Controller</li> <li>d. Verify proper voltage is being delivered to system valves</li> <li>e. Replace circuit board</li> </ul>
2. System Controller display does not indicate that water is flowing (Refer to System Controller Programming Manual for system controller water flow display)	<ul style="list-style-type: none"> <li>a. Bypass/isolation valve in bypass position</li> <li>b. If the system type is set for "Series", a flow meter is not wired into the meter input located on the System Controller</li> <li>c. System valves are not properly programmed and/or their meters are not properly connected</li> <li>d. Restricted/stalled meter turbine</li> <li>e. Defective flow meter</li> <li>f. Defective system controller circuit board</li> </ul>	<ul style="list-style-type: none"> <li>a. Turn bypass/ isolation handles to service position</li> <li>b. Wire the flow meter into the meter input located on the System Controller</li> <li>c. Verify that all system valves are properly programmed and all required meter cables are installed securely into the proper 3-pin connectors located on each board</li> <li>d. Remove meter and check for rotation and foreign material</li> <li>e. Replace flow meter</li> <li>f. Replace system controller circuit board</li> </ul>
3. System Controller not displaying proper flow rate	<ul style="list-style-type: none"> <li>a. System Controller meter size not set properly</li> </ul>	<ul style="list-style-type: none"> <li>a. Verify actual meter size and reprogram System Controller to match</li> </ul>
4. System valve regenerates at the wrong time of day	<ul style="list-style-type: none"> <li>a. Time of Day is not set correctly</li> <li>b. Regeneration Time is not set correctly</li> <li>c. Control valve set to Immediate Regeneration (or equivalent)</li> </ul>	<ul style="list-style-type: none"> <li>a. Reset Time of Day</li> <li>b. Reset Regeneration Time</li> <li>c. Reset control valve programming to Delayed Regeneration (or equivalent)</li> </ul>
5. System valves do not automatically regenerate when a manual regeneration is initiated	<ul style="list-style-type: none"> <li>a. The System Controller will not allow more than one valve to be regenerating at the same time</li> <li>b. In some cases, the System Controller will not allow regen when a Valve Error has been detected by the System Controller</li> <li>c. In some cases, the System Controller will not allow a regen when a communication error (Error 412) has been detected</li> <li>d. Defective System Controller circuit board</li> </ul>	<ul style="list-style-type: none"> <li>a. Wait for the system valve in regeneration to finish</li> <li>b. Reset valve error on system valve</li> <li>c. Verify communication wiring to system valves</li> <li>d. Replace system controller circuit board</li> </ul>

## System Controller Trouble Shooting Guide

Problem	Possible Cause	Solution
6. Connected control valves do not regenerate automatically, but do when a manual regeneration is initiated	<ul style="list-style-type: none"> <li>a. Bypass/isolation valves in bypass position</li> <li>b. Meter(s) is(are) not connected to the proper system valve(s)</li> <li>c. Restricted/stalled meter turbine(s)</li> <li>d. Incorrect programming of system valve(s)</li> <li>e. Meter wire not installed securely into system valve 3-pin connector</li> <li>f. Defective flow meter(s)</li> <li>g. Defective system valve boards</li> </ul>	<ul style="list-style-type: none"> <li>a. Turn bypass/isolation valves handles to service position</li> <li>b. Connect meter(s) to the proper 3-pin connections on system valves</li> <li>c. Remove meter(s) and check for rotation and foreign material</li> <li>d. Verify system valve programming</li> <li>e. Verify that all required meter cables are installed securely into the proper 3-pin connector located on each system valve board</li> <li>f. Replace malfunctioning meter</li> <li>g. Replace malfunctioning system valve board(s)</li> </ul>
7. 402 Error (Water Usage Memory)	<ul style="list-style-type: none"> <li>a. Corrupt water usage information is stored in the memory of the System Controller</li> </ul>	<ul style="list-style-type: none"> <li>a. Contact your OEM</li> </ul>
8. 403 Error (Program Memory)	<ul style="list-style-type: none"> <li>a. Corrupt program settings are stored in the memory of the System Controller</li> <li>b. Can occur when flash programming new software</li> </ul>	<ul style="list-style-type: none"> <li>a. Contact your OEM</li> <li>b. If this error occurs due to programming new software, unplug the System Controller from electrical outlet and plug the power cord back into the outlet to clear the error</li> </ul>
9. 404 Error (Diagnostic Memory)	<ul style="list-style-type: none"> <li>a. Corrupt diagnostic display information is stored in the memory of the System Controller</li> </ul>	<ul style="list-style-type: none"> <li>a. Contact your OEM</li> </ul>
10. 410 Error (Version Mismatch of Configuration File)	<ul style="list-style-type: none"> <li>a. Occurs when downloading a invalid configuration file</li> <li>b. Can occur when flash programming new software</li> </ul>	<ul style="list-style-type: none"> <li>a. Contact your OEM</li> <li>b. If this error occurs due to programming new software, unplug the System Controller from electrical outlet and plug the power cord back into the outlet to clear the error</li> </ul>
11. 411 Error (No External Memory)	<ul style="list-style-type: none"> <li>a. Occurs if external memory can not be found by the System Controller microprocessor, or the flash or SD card is not installed.</li> </ul>	<ul style="list-style-type: none"> <li>a. Contact your OEM</li> </ul>
12. 412 Error (Communication Error)	<ul style="list-style-type: none"> <li>a. Loss of communication between System Controller and system valves</li> <li>b. Number of units set on System Controller does not match actual number of system valves</li> <li>c. Pressing the “NEXT” and “REGEN” buttons simultaneously to perform a reset to clear error codes causes this error to flash quickly and then go away</li> </ul>	<ul style="list-style-type: none"> <li>a. Verify wiring connections from system controller to system valves</li> <li>b. Check for poor connections,</li> <li>c. such as a loose wires</li> <li>d. Check for broken or cut</li> <li>e. communication cable</li> <li>f. Go into controller programming and set proper number of units</li> <li>g. The display normally appears as part of the Next/Regen reset process then quickly disappears</li> </ul>
13. 413 Error (MAC Undefined)	<ul style="list-style-type: none"> <li>a. MAC address for network operation is not defined</li> </ul>	<ul style="list-style-type: none"> <li>a. Contact your OEM</li> </ul>
14. 414 Error (Network Memory)	<ul style="list-style-type: none"> <li>a. Corrupt network settings are stored in the memory of the System Controller</li> </ul>	<ul style="list-style-type: none"> <li>a. Contact your OEM</li> </ul>

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**CLACK CORPORATION**  
**FIVE-YEAR SYSTEM CONTROLLER CIRCUIT BOARD**  
**LIMITED WARRANTY**

Clack Corporation (“Clack”) warrants to OEM that its System Controller circuit board when all holes are plugged in the box, and the box and cover are not damaged, will be free from defects in material and workmanship under normal use and service for a period of five years from the date of shipment of such System Controllers from Clack’s plant in Windsor, Wisconsin when installed and operated within recommended parameters. Fuses on circuit boards are not under warranty. No warranty is made with respect to defects not reported to Clack within the warranty period and/or defects or damages due to neglect, misuse, alterations, accident, misapplication, physical damage, or damage caused by fire, acts of God, freezing or hot water or similar causes. No warranty is offered for outdoor installations where the System Controller is not under cover.

Clack’s obligation to OEM under this Limited Warranty shall be limited, at its option, to replacement or repair of any System Controller board covered by this Limited Warranty. Prior to returning a System Controller board, OEM must obtain a return goods authorization number from Clack and return the System Controller board freight prepaid. If any System Controller board is covered under this Limited Warranty, Clack shall return the board repaired, or its replacement, prepaid to the original point of shipment.

**CLACK GIVES THIS WARRANTY TO OEM IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND HEREBY EXPRESSLY DISCLAIMS ALL OTHER SUCH WARRANTIES. CLACK’S LIABILITY HERE UNDER SHALL NOT EXCEED THE COST OF THE PRODUCT. UNDER NO CIRCUMSTANCES WILL CLACK BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR ANY OTHER LOSS, DAMAGE OR EXPENSE OF ANY KIND, INCLUDING LOSS OF PROFITS, ARISING IN CONNECTION WITH THE INSTALLATION OR USE OR INABILITY TO USE THE SYSTEM CONTROLLER OR ANY WATER TREATMENT SYSTEM THE SYSTEM CONTROLLER IS INCORPORATED INTO.**