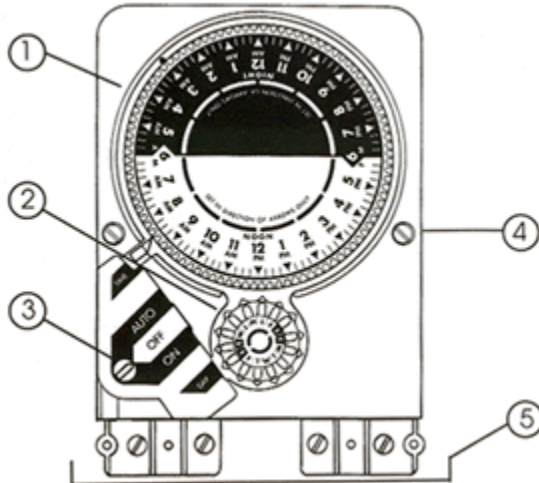


HYDROTEK® 1000 / 2000 SINGLE STATION CONTROLLER INSTALLATION / TROUBLESHOOTING

CONTROLLER FUNCTIONS



1. TIME DIAL - Rotates one clockwise revolution every 24 hours. Controller is programmed for automatic (AUTO) operation with the insertion of timing pins in the time dial holes. Once properly set, correct time of day is shown by the alignment of the arrow labeled "TIME" with the time shown on the time dial.

2. DAY WHEEL AND RETAINED PIN ASSEMBLY - Has 14 pin locations for a 2 week program. Controller will operate in AUTO only on the days programmed by the depression of the day wheel pin. Once properly set, correct day is shown by the alignment of the arrow labeled "DAY" with the day shown on the wheel.

3. AUTO-OFF-ON SWITCH KNOB - Indicates the function of the controller by turning to ON, for manual operation, AUTO, for automatic operation and OFF, to stop manual (ON) and automatic (AUTO) functions.

4. CHASSIS SCREWS - Secures controller chassis to enclosure.

5. ELECTRICAL CONNECTION STRIP (2000 SERIES) - Allows for input and output electrical connection. Consult Electrical Circuit and Connection Diagrams prior to wiring.

SETTING AND OPERATION INSTRUCTIONS

- **TO SET DAY OF WEEK AND TIME OF DAY:**

Turn the Day Wheel until correct day is indicated by arrowed labeled "DAY" .
Turn the Time Dial CLOCKWISE until the correct time is indicated at the arrow labeled "TIME".

CAUTION: Set Time Dial in CLOCKWISE direction only. DO NOT FORCE TIME DIAL IN REVERSE DIRECTION.

- **TO OPERATE MANUALLY:**
Turn Auto-Off-On switch to ON. When operation is no longer needed , turn Auto-Off-On switch back to OFF.
- **TO SET DAILY OPERATION:**
There are 14 days to program on the Day Wheel. For each day that operation is desired, the day wheel pin should be pushed down fully. For days where operation is not desired, the day wheel pins should be pulled out gently.
- **TO SET OPERATING TIMES:**
The 24 hour Time Dial has ninety-six 15 minute increments. The timing pins should be inserted in the Time Dial to indicate the desired operating times. Included with each controller is a package of white 15 minute pins. Longer timing periods may be obtained by placing white pins directly next to each other in Time Dial. Also available are shorter duration 7 minute pins (yellow) and 4 minute pins (orange).
- **TO SET CONTROLLER TO OPERATE A MULTIPLE ZONE VALVE:**
The operating times for each zone are represented by one pin or by a group of pins in the Time Dial. Omit at least one pin between each zone of pins in Time Dial.
- **TO START AUTOMATIC OPERATION:**
Once the correct time and day have been set and the desired operating times have been programmed, the Auto-Off-On switch knob should be turned to Auto.

ELECTRICAL CONNECTION INSTRUCTIONS

****PRIOR TO INSTALLATION OR SERVICE, DISCONNECT POWER TO CONTROLLER**

For 1000 Series Controllers:

- Remove controller face from enclosure by removing two chassis screws.
- Make wire connections as indicated by Electrical Circuit and Connection Diagram and secure connections with wire nuts provided.
- Reinstall controller in enclosure.

For 2000 Series Controllers:

- Remove lower cover on controller face.
- Make wire connections to electrical connection strip as indicated by electrical Circuit and Connection Diagram.
- Reinstall lower cover on controller face.

CAUTIONS:

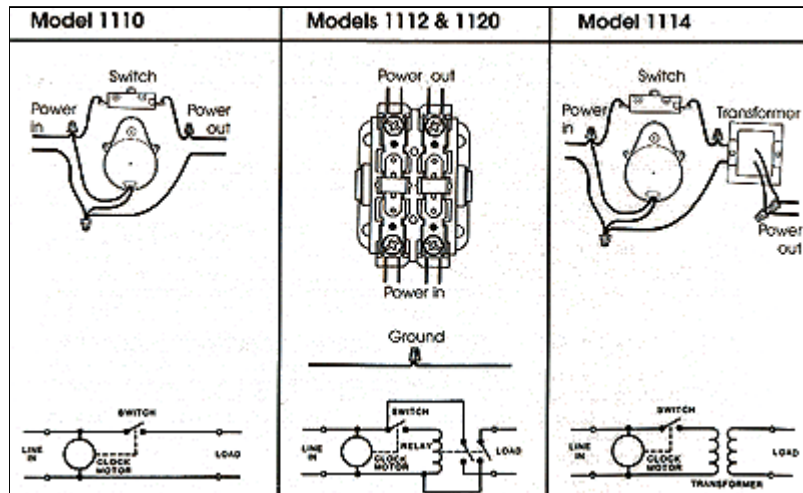
PRIOR TO INSTALLATION OR SERVICE, DISCONNECT POWER TO CONTROLLER

- Ensure proper controller has been selected for the application .
- Use appropriate gauge wire and ensure that all wiring meets local code.

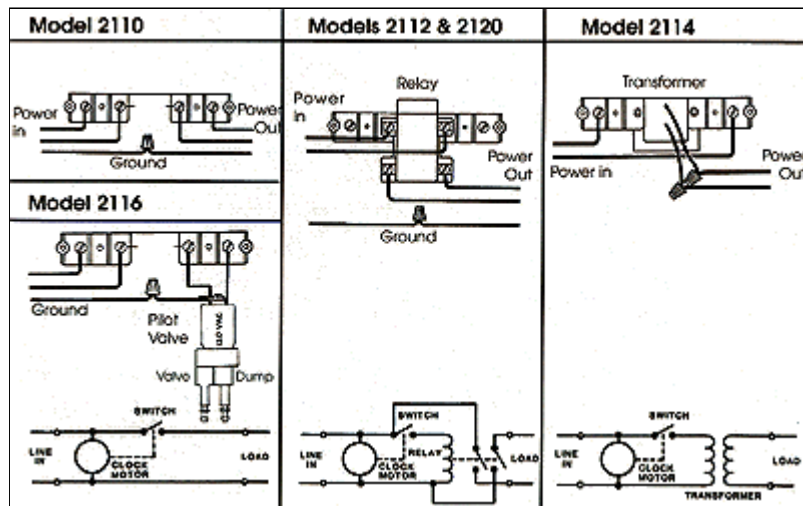
- When making wire connections, do not pull excessively on controller wires as they can become disconnected
- Properly ground controller.
- When reinstalling controller face or lower cover, do not trap wires between standoffs and screws.

ELECTRICAL WIRING AND CIRCUIT DIAGRAMS

1000 Series



2000 Series



SETTING AND CONNECTION INSTRUCTIONS

Setting Instructions:

- To operate 2200 Series Controller every 10 minutes continuously, make sure that all 14 CYCLE WHEEL pins are pushed in.
- When setting TIME DIAL, turn only in a CLOCKWISE direction. Never force

TIME DIAL in reverse direction.

- To operate Controller manually, turn AUTO-OFF-ON SWITCH to ON. When operation is no longer needed, turn back off.

Electrical Connection Instructions

CAUTIONS:

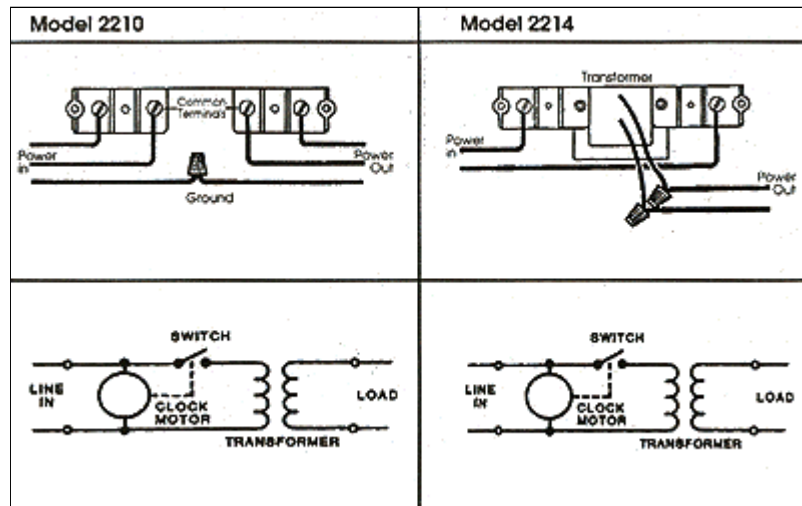
PRIOR TO INSTALLATION OR SERVICE, DISCONNECT POWER TO CONTROLLER

- Ensure proper controller has been selected for the voltage application.
- Use appropriate gauge wire and ensure that all wiring meets local code.
- Properly ground controller
- When reinstalling controller face or lower cover, do not trap wires between standoffs and screws.

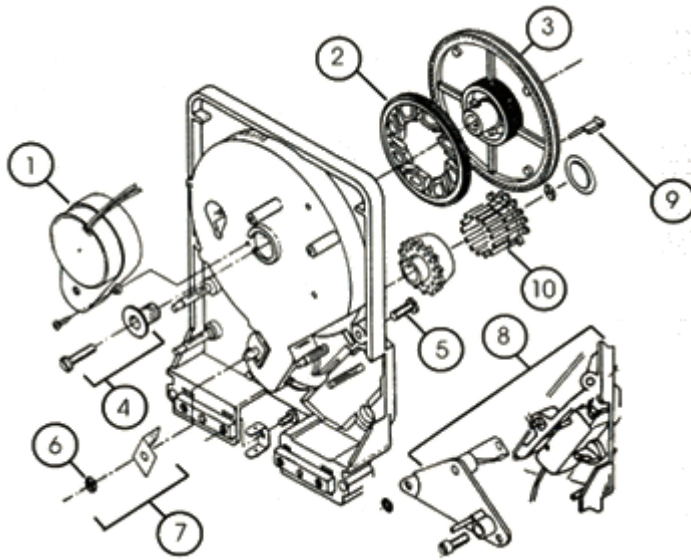
INSTRUCTIONS

- Remove lower cover on controller face
- Make wire connections to electrical connection strip as indicated by Wiring Diagram
- Reinstall lower cover on controller face.

WIRING DIAGRAM



CONTROLLER DIAGRAM



PARTS LIST

1	110 VAC motor, 60 cycle 220 VAC motor, 60 cycle	1111025 1122025
2	Drive gear	1000103
3	Time dial	1000102
4	Time dial retainer and screw	1000104
5	Chassis screws(4)	4331214
6	Black retainer nuts(10)	1009932
7	Day wheel metal spring assembly	1000117
8	Switch assembly(switch,adj screw,arm,spring,knoband cover)	1000120
9	15 minute white timing pin(18) 7 minute yellow timing pin(18) 3 minute orange timing pin(18) Mixed assortment of timing pins(6 each) 1 hour black timing pin (6)	1009955 1009956 1009957 1009947 1009959
10	14 day retained pin set for day wheel	1000114

OTHER COMPONENTS

Relay, 110 VAC, 60 Hz coil, double throw, single pole, 2 HP	1000 Series 2000 Series	1300110 1320110
Relay, 220 VAC, 60 Hz coil, double throw, single pole, 2HP	1000 Series	1300220 1320220

	2000 Series	
Transformer, 110 VAC input, 24 VAC, 30 VA output		1211027
Transformer, 220 VAC input, 24 VAC, 20 VA output		1222024
Key lock (2000 Series)		1009915
Pilot valve for model 2116 (w/o solenoid)		1003042
Solenoid with 110 VAC coil		6000813

TROUBLESHOOTING

IMPORTANT

Disconnect power prior to working on power or load

1. PROBLEM: Controller fails to keep proper time.

CAUSE: No power or improper voltage to motor.

SOLUTION: Check Electrical Circuit and Connection Diagram for proper connection of power to controller. Check voltage supply to ensure voltage to motor is 120 or 240 volts as specified for model type

CAUSE: Clock motor running but time dial not turning. Drive gear located behind time dial may be broken.

SOLUTION: Remove time dial and inspect drive gear. Install new drive gear noting "this side out". Reinstall time dial and be sure it turns freely clockwise.

II. PROBLEM: Controller improperly staying ON.

CAUSE: Switch is being activated.

Solution: Ensure that wires do not push against switch or relay.

Solution: Ensure that wires leading to switch are not pulled out.

CAUSE: Controller improperly wired.

SOLUTION: Check Electrical Circuit and Connection Diagram and make sure that input wires are not wired directly to load.

CAUSE: Switch adjustment needed for proper automatic operation.

SOLUTION: Make needed switch point adjustment as outlined in part IV of Troubleshooting Guide.

CAUSE: Switch knob not in OFF position.

SOLUTION: Turn Auto-Off-On switch to OFF.

III. PROBLEM: Controller does not turn ON in manual mode.

CAUSE: No power to controller.

SOLUTION: Be sure that controller is properly wired as per Electrical Circuit and connection Diagram.

SOLUTION: Check circuit breaker.

IV. PROBLEM: Controller fails to operate properly in automatic (AUTO) mode.

CAUSE: Daywheel not properly programmed.

SOLUTION: Check setting and Operation Instructions for programming day wheel.

CAUSE: Auto-Off-On knob not set properly.

SOLUTION: Turn Auto-Off-On knob to Auto position.

CAUSE: Switch needs adjustment.

SOLUTION: Remove controller face from enclosure after disconnecting power to unit. The switch adjustment Screw is located on the switch cover. A clicking of the switch should be heard when the switch Arm is slowly pulled back at the halfway point between the edge of the time dial and the far edge of the timing pin. With a small screwdriver tighten the screw clockwise to cause the switch to Activate sooner. If switch is activating sooner than desired, turn adjustment screw counterclockwise slightly.

CAUSE: Switch contacts or relay worn out.

SOLUTION: Replace switch or relay (see parts list), ensuring controller is properly rewired. (Note: A nut driver tool is available to assist in removing black retainer nuts.)

Should the above troubleshooting tips fail to correct the problem you may be having, please consult your local K-Rain distributor for service or replacement.

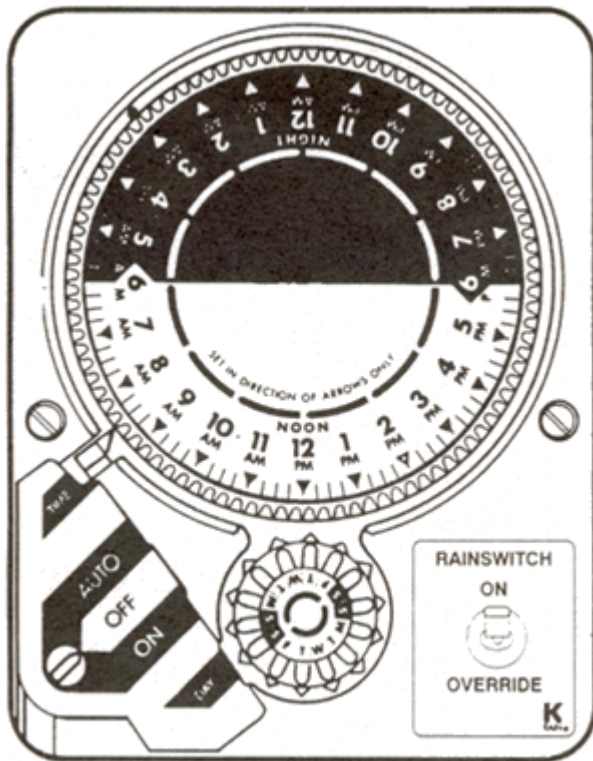
INSTALLATION INSTRUCTIONS

Models 2510, 2514, and 2520

Rainswitch Ready Controllers

Features:

- Prewired for easy connection of "Rainswitch."
- Allows for manual override of Rainswitch from controller face.
- Can be used with most brands of normally closed Rainswitches.*

Rainswitch Control Switch (lower right)**CONTROLLER FACE**

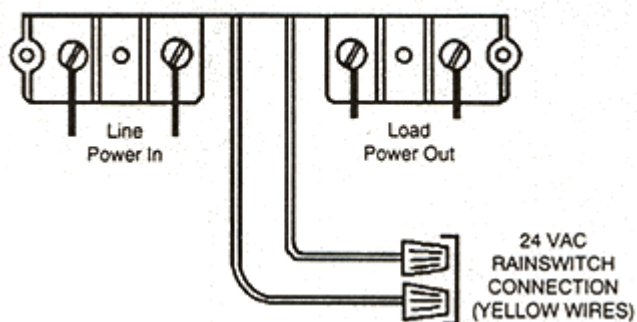
"ON" position - Allows Rainswitch to function and break water cycling if "WET".

"OVERRIDE" position - Allows for manual operation of controller if Rainswitch is "WET".

NOTE: If no Rainswitch is used, switch must be in position for controller to function.

WIRE CONNECTION DIAGRAMS

(Caution : always disconnect power at source prior to installing or servicing this unit)

Models 2510, 2514 and 2520

Models	2510	2520	2514
Power In	110 VAC	220 VAC	110 VAC
Power Out	110 VAC	220 VAC	24 VAC
	Relay Contactor rated up to 2 H.P.	Relay Contactor rated up to 2 H.P.	Built in Transformer

- Remove lower cover and connect input (LINE) and output (LOAD) wires to proper terminals as shown above.
- Drill suitable hole in bottom of controller and connect rainswitch leads to yellow leads using wire nuts provided and follow Rainswitch manufactures mounting directions.
- **Note:** If no rainswitch is used, switch must be in "**OVERRIDE**" position for controller to function.
- Reinstall lower cover
- See 1000 / 2000 booklet for programming and operating instructions

* May be used with Mini Klik II, Toro Rainswitch model 850-74, or other normally closed Rainswitch devices.