

1000/2000

SINGLE STATION
CONTROLLER





K-RAIN MANUFACTURING CORP.

1640 Australian Avenue

Riviera Beach, FL 33404 USA

PH: 1-561-844-1002 / 1-800-735-7246

FAX: 1-561-842-9493

WEB: <http://www.krain.com>

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INTRODUCTION

The 1000 and 2000 Series single station controllers are attractive, versatile and cost effective ON-OFF programmable time controls. These UL rated controllers may be used to control irrigation equipment, swimming pool pumps and other equipment requiring reliable automatic and manual control.

FEATURES

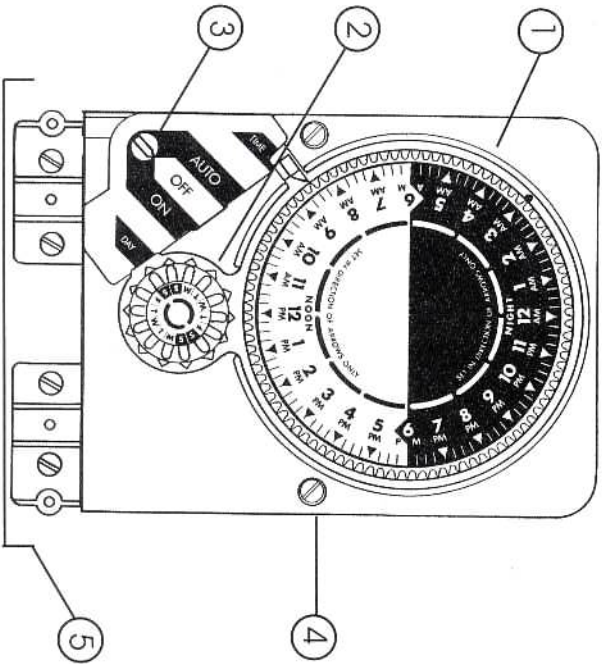
- Flexible timing capabilities, from minutes to hours.
- "Skip-a-day" program feature with 14 day retained pin wheel.
- Shockproof, raintight, rugged UL rated plastic construction.
- Keypad and easy-to-wire screw terminals (2000 Series)
- Wide variety of control and voltage options:

Short duration controls available for mist or drip application.
Built-in pump start relays available.
220 VAC, 110 VAC or 24 VAC outputs available.

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CONTROLLER FUNCTIONS



- 1. TIME DIAL**
Rotates one clockwise revolution every 24 hours. Controller is programmed for automatic (AUTO) operation with the insertion of firing 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 day 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 Diagram prior to wiring.

SETTING AND OPERATION INSTRUCTIONS

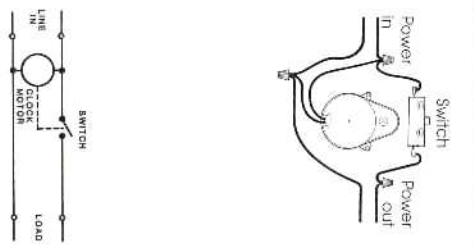
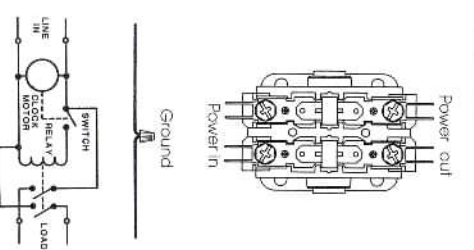
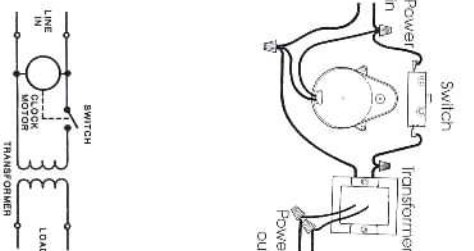
- **TO SET DAY OF WEEK AND TIME OF DAY:**
Turn the Day Wheel until correct day is indicated by arrow labeled "DAY". Turn the Time Dial CLOCKWISE until the correct time is indicated of the arrow labeled "TIME".
- **CAUTION:** Set Time Dial in CLOCKWISE direction only.
DO NOT FORCE TIME DIAL IN REVERSE 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. Omnit 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

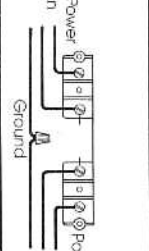
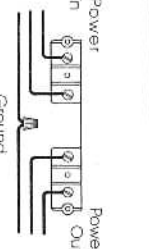
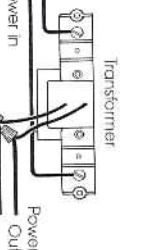
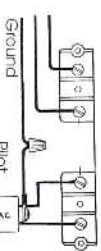
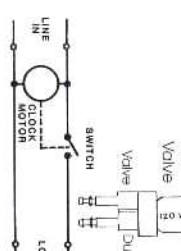
- ** PRIOR TO INSTALLATION OR SERVICE, DISCONNECT POWER TO CONTROLLER ****
- For 1000 Series Controllers:**
- Remove controller face from enclosure by removing two chassis screws.
 - Make wire connections as indicated by Electrical Circuit and Connection Diagram and secure connections with wire nuts 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

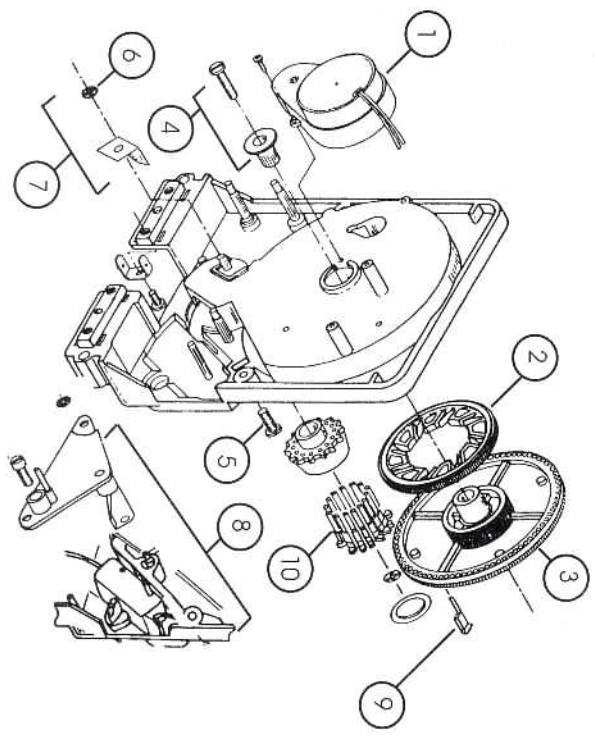
1000 Series

<p>Model 1110</p> 	<p>Models 1112 & 1120</p> 	<p>Model 1114</p> 
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2000 Series

<p>Model 2110</p> 	<p>Models 2112 & 2120</p> 	<p>Model 2114</p> 	
<p>Model 2116</p> 			

CONTROLLER DIAGRAM



PARTS LIST

- 1 110 VAC motor, 60 cycle
- 2 220 VAC motor, 60 cycle
- 3 Drive gear
- 4 Time dial
- 5 Time dial retainer and screw
- 6 Chassis screws (4)
- 7 Black retainer nuts (10)
- 8 Doy wheel metal spring assembly
- 9 Switch assembly (switch, adj. screw, arm, spring, knobband cover)
- 10 15 minute white timing pin (18)
- 11 3 minute yellow timing pin (18)
- 12 3 minute orange timing pin (18)
- 13 Mixed assortment of timing pins (6 each)
- 14 1 hour black timing pin (6)
- 15 14 day retained pin set for day wheel

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, 2 HP

	1000 Series
	2000 Series
	1300220
	1320220
	1211027
	1222024
	1009915
	1003042
- Transformer, 110 VAC input, 24 VAC, 30 VA output
- Transformer, 220 VAC input, 24 VAC, 20 VA output
- Key lock (2000 Series)
- Pilot valve for model 2116 (w/o solenoid)

TROUBLESHOOTING

TROUBLESHOOTING (continued)

IMPORTANT

Disconnect power prior to working on power or load

I. PROBLEM:

CAUSE:

SOLUTION:

Controller fails to keep proper time.

No power or improper voltage to motor.

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:

SOLUTION:

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

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:

CAUSE:

SOLUTION:

SOLUTION:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

Controller Improperly staying ON.

Switch is being activated.

Ensure that wires do not push against switch or relay.

Ensure that wires leading to switch are not pulled out.

Controller Improperly wired.

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

Switch adjustment needed for proper automatic operation.

Make needed switch point adjustment as outlined in part IV of Trou-

bleshooting Guide.

Switch knob not in OFF position.

Turn Auto-Off-On switch to OFF.

III. PROBLEM:

CAUSE:

SOLUTION:

SOLUTION:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

Controller does not turn ON in manual mode.

No power to controller.

Be sure that controller is properly wired as per Electrical Circuit and Connection Diagram.

Check circuit breaker.

IV. PROBLEM:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

CAUSE:

SOLUTION:

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

Daywheel not properly programmed.

Check Setting and Operation instructions for programming day wheel.

Auto-Off-On knob not set properly.

Turn Auto-Off-On knob to AUTO position.

Switch needs adjustment.

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 of

the halfway point between the edge of the time dial and the for 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.

Switch contacts or relay worn out.

Replace switch or relay (see parts list), ensuring controller is properly

rewired. (Note: A nut driver tool is available to assist in removing block

retainer nuts.)

CAUSE:

SOLUTION:

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.

TWO YEAR LIMITED WARRANTY

NOTES

K-Rain products carry a "LIMITED WARRANTY". For two years from the date of purchase, K-Rain will repair or replace (at K-Rain's option) the product or any part if the product is found to be defective as to workmanship or material. This warranty does not extend to damage to a K-Rain product resulting from misuse, neglect or abuse, normal wear and tear, or accident, to exterior appearance or color or due to improper installation.

This warranty extends only to an original user of a K-Rain product.

IN NO EVENT SHALL K-RAIN BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO ONE YEAR FOLLOWING DATE OF PURCHASE. Some states do not permit the exclusion or limitation of incidental or consequential damages or of implied warranties. Therefore, the above exclusions or limitations may not apply to you.

If a defect arises in a K-Rain product within the two-year warranty period, you should promptly contact your K-Rain installer, distributor or

K-RAIN MANUFACTURING CORP., 1640 Australian Avenue, Riviera Beach, Florida 33404

Please allow up to 4 weeks for completion of repairs or replacement and return of the product. If a product is replaced, the replacement product is covered only for the remainder of the original warranty period dating from the purchase of the original product.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. If you have any questions concerning the warranty or its application, please write to K-Rain Manufacturing Corporation, 1640 Australian Avenue, Riviera Beach, FL 33404.
Attn: Product Manager.