

ALTRONIC RESEARCH, INC.

P.O. BOX 249

YELLVILLE, ARKANSAS 72687-0249

U.S.A.

**MODEL CB1-A
CONTROL BOX**



**MODEL CB1-A
CONTROL BOX**

LIMITED WARRANTY

We take pride in manufacturing products of the highest quality and we warrant them to the original purchaser to be free from defects in material and workmanship for the period of one year from date of invoice. Additionally, products of our manufacture repaired by us are warranted against defects in material and workmanship for a period of 90 days from date of invoice, with the provisions described herein.

Should a product, or a portion of a product of our manufacture prove faulty, in material or workmanship, during the life of this warranty, we hereby obligate ourselves, at our own discretion, to repair or replace such portions of the product as required to remedy such defect. If, in our judgment, such repair or replacement fails to be a satisfactory solution, our limit of obligation shall be no more than full refund of the purchase price.

This warranty is limited to products of our own manufacture. Equipment and components originating from other manufacturers are warranted only to the limits of that manufacturer's warranty to us. Furthermore, we shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use, or misuse (by operation above rated capacities, repairs not made by us, or any misapplication) of the equipment. Before using, the user shall determine the suitability of the product for the intended use; and the user assumes all risk and liability whatsoever in connection therewith.

The foregoing is the only warranty of Altronic Research Incorporated and is in lieu of all other warranties expressed or implied.

Warranty returns shall first be authorized by the Customer Service Department and shall be shipped prepaid. **Warranty does not cover freight charges.**

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PRECAUTIONS

⚠️WARNING⚠️

Do not attempt any service or parts replacement without first disconnecting all AC power. Failure to do so may result in possibly serious or *fatal electrical shock*. Service must only be performed by qualified personnel.

WARNING

Do not apply any RF power before transmitter interlock has been connected and operational. Failure to do so may result in damage to equipment and/or injury to personnel.

INTRODUCTION

This handbook was prepared for technical personnel as an aid in understanding and performing installation, routine operation and maintenance procedures for the OMEGALINE® Model CB1-A Control Box. We do not recommend the operation of this system by personnel who have not been trained to operate the transmitter to which the system is connected. High voltages and hot water or steam may be present in the event of failure of some components of the system.

SECTION I

DESCRIPTION AND LEADING PARTICULARS

- 1-1. Purpose and Application of Equipment. The OMEGALINE® Model CB1-A Control Box is designed to delay application of electrical energy to water-cooled coaxial load resistors until a sufficient period of pump operation time has elapsed for coolant flow to stabilize.
- 1-2. Equipment Supplied. The Model CB1-A Control Box is normally supplied for operation on a 120/230 volt, 50/60 Hz supply. The standard cord supplied is configured with a NEMA 5-15P plug.
- 1-3. Equipment Required But Not Supplied. The Model CB1-A Control Box is complete as supplied, but the user must furnish cables to interface with the flow switch and with the transmitter interlock circuit.
- 1-4. General Description. The Model CB1-A Control Box is enclosed in a single steel case. Power connection is made through a 60-inch three-conductor cord with a NEMA 5-15P plug. An inner panel contains a 2 terminal barrier terminal strip for flow switch connection and a 3 terminal barrier terminal strip for interlock connection. Cables for these two functions enter the bottom of the box through individual rubber grommets. A cutout in the inner panel allows access to the time-delay relay for adjustment or replacement.
- 1-5. Electrical Description. The Model CB1-A contains a transformer which furnishes 24 volts AC for the control circuit. The circuit contains the flow switch and time delay relay. The time delay relay controls the interlock relay which is a 24-volt AC relay with single-pole, double-throw (SPDT) 3 ampere terminals. Power is supplied to the transformer primary whenever the unit is attached to an appropriate power supply and the 3 ampere circuit breaker is closed. The interlock lamp will light whenever the unit is attached to a power

source and the time delay is not actuated. Whenever the unit is correctly attached to a power source, flow switch and transmitter interlock circuit, the sequence of operation is as follows: (1) Flow switch senses rated flow and closes contacts. (2) Power (24 VAC) is applied to the time delay relay and timing starts. (3) When timing is complete, time delay relay closes and applies 24 VAC to the interlock relay coil. (4) The interlock relay actuates, providing a switch opening or a switch closing signal for the transmitter interlock circuit.

1-6. Mechanical Description. The Model CB1-A is enclosed in a gasketed steel box. It has no mechanical components.

1-7. General Principle of Operation. The Model CB1-A is designed to sense the closure of an external switch (normally a flow switch) which starts a timing operation. When the desired time elapses, it causes a SPDT relay to operate. This provides a signal for a transmitter interlock circuit, allowing high power operation. The delay introduced by the CB1-A is designed to prevent application of power to a liquid-cooled coaxial load resistor prior to the establishment of a smooth, continuous coolant flow.

1-8. Operating and Adjustment Controls. The only operating control is the power switch on the front panel. It provides AC power to the transformer primary. The only adjustment is the time delay relay adjustment. This is made with a screwdriver applied to the slot in the top of the relay. The maximum delay is 60 seconds (fully clockwise) and the minimum delay is 0.3 second (fully counter-clockwise). We recommend 15 seconds.

CAUTION!

Delay adjustment is critical to the proper protection of your coaxial load resistor. Never adjust the relay to operate with less than 7 seconds delay.

SECTION II

TEST EQUIPMENT AND SPECIAL TOOLS

- 2-1. Test Equipment Required. No special test equipment is required to install, adjust or service this unit. The technician should have a volt-ohm meter to verify system operation.
- 2-2. Special Tools Required. No special tools are required to install, adjust or service the Model CB1-A.

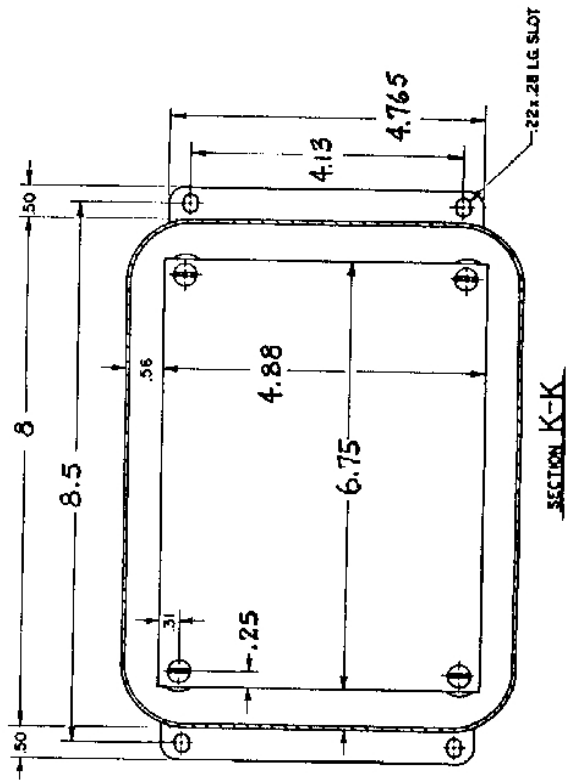
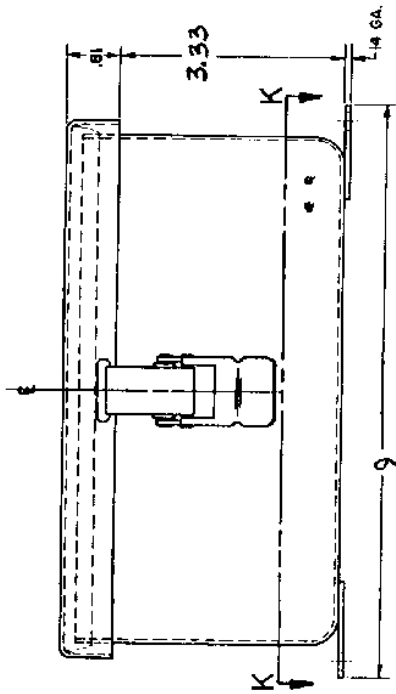
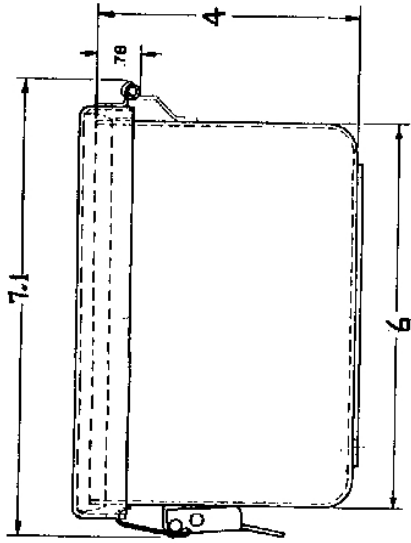
SECTION III

PREPARATION FOR USE AND RESHIPMENT

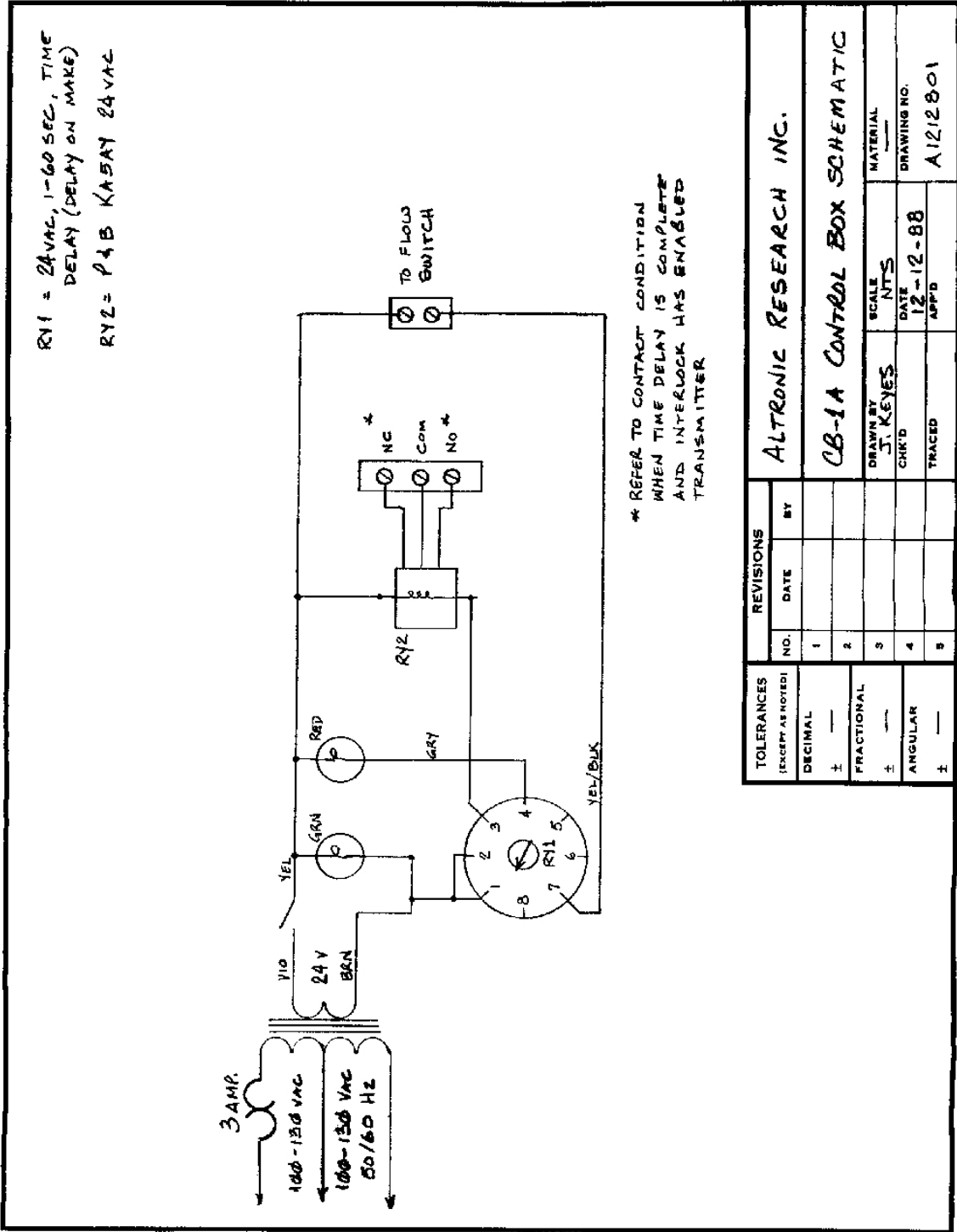
- 3-1. Unpacking and Inspection. The unit should be handled and unpacked with care. Inspect outer cartons for evidence of damage during shipment. *Claims for damage in shipment must be filed promptly with the transportation company involved.* No internal packaging or bracing is used for shipments and the units should not rattle when being unpacked. Conduct a thorough visual inspection of the unit, paying particular attention to the following items:
- a. Outer case clean and free of scratches and dents.
 - b. AC cordset and strain relief in place.
 - c. Open case and check for loose or missing screws in inner panel.
 - d. Time delay relay inserted fully into socket.
- 3-2. Pre-installation Tests. Prior to installation, connect the unit to a suitable source of AC power. The interlock lamp should be lighted. Turn the power switch ON. There should be no change. Disconnect the unit from AC power. Attach a wire jumper between the terminals labeled "flow switch". Attach an ohmmeter or low voltage test light to the terminals labeled N.C. Connect the unit to AC power. Turn time delay relay adjusting screw fully clockwise. (This is a plastic potentiometer - do not use force!) Note the time as you actuate the power switch. You should note a change of state of the ohmmeter or test light in approximately 15 seconds. If a different delay interval is desired, adjust the time delay relay and operate the power switch as before.
- 3-3. Installation. The Model CB1-A is enclosed in a gasketed steel box designed to meet various industry standards for moisture resistance and to protect the circuitry within. It is not intended for use or installation in wet, outdoor or hazardous locations. Installation of this unit consists of mounting it securely and attaching cables to the transmitter interlock circuit and to the coolant system flow switch.
- 3-4. Adjustments. The only operating adjustment is the time delay relay potentiometer setting. This adjustment is described in Section 3-2.
- 3-5. Preparation for Reshipment. No special precautions are needed for reshipment. Pack the unit securely with adequate cushioning material. If unit is being returned to the factory for service, enclose an explanation of the problem encountered.

OUTLINE AND DIMENSIONS

MODEL CB-1A
 ALTRONIC RESEARCH INC.
 YELLVILLE AR 72687
 11-16-1986



SCHEMATIC DIAGRAM



REVISIONS		ALTRONIC RESEARCH INC.	
NO.	DATE	BY	MATERIAL
1			
2			
3			
4			
5			

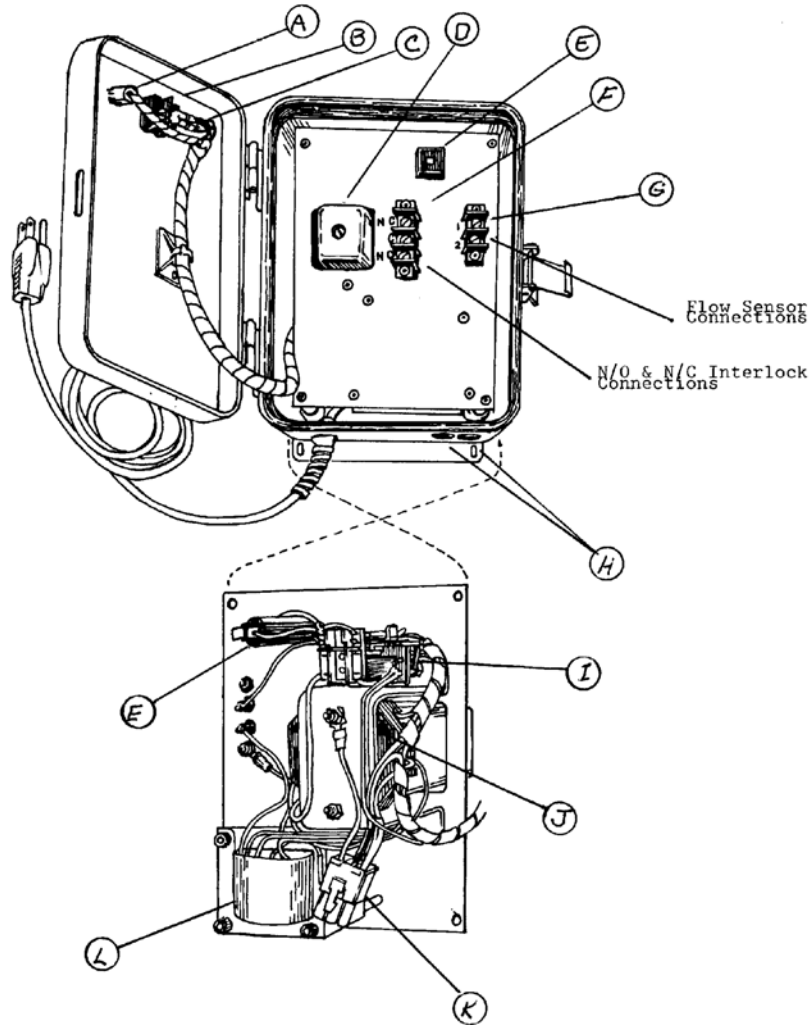
CB-1A CONTROL BOX SCHEMATIC	
DRAWN BY J. KEYES	SCALE NTS
CHK'D	DATE 12-12-88
TRACED	APP'D
	DRAWING NO. A122801

* TELETYPE POST 18AE-01 - 6 1/2 X 11

REPLACEMENT PARTS LIST

(CONSULT FACTORY)

PARTS BREAKDOWN



- | | | | |
|----|-----------------------------|----|-------------------------|
| A. | Interlock | G. | 2 Pin Flow Sensor Conn. |
| B. | On/Off | H. | Gromets |
| C. | Power | I. | Interlock Relay |
| D. | Time Delay Relay | J. | Time Delay Relay Socket |
| E. | 3 amp Breaker | K. | Connector |
| F. | 3 Pin Interlock Connections | L. | Transformer |



9750R3
FS234-10
FS134-10
MB9703

50 KW Unibody Load
Magnetic Flow Switch
Vane Flow Switch
Mounting Brackets

Model CB1-A
Typical Associated Equipment