

ALTRONIC RESEARCH, INC.

P.O. BOX 249

YELLEVILLE, ARKANSAS 72687-0249

U.S.A.

MODEL 6775V

COAXIAL LOAD RESISTOR

MODEL 6775V



**75KW AIR COOLED
COAXIAL RESISTOR**



RESISTOR ASSEMBLY

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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OPERATING TEMPERATURE WARNING

**CARE SHOULD BE TAKEN TO OPERATE UNIT BELOW
STATED MAXIMUM AMBIENT OPERATING TEMPERATURE.**

**OPERATION ABOVE RATED AMBIENT
TEMPERATURE MAY CAUSE MOTOR THERMAL
PROTECTION TO SHUT OFF FAN, WHICH MAY
CAUSE DAMAGE TO UNIT.**

**PROVISIONS ARE MADE TO TRIP THE INTERLOCK
IN THE EVENT OF OVERHEAT, BUT THE INTERLOCK
MUST BE PROPERLY CONNECTED TO THE RF SOURCE
FOR THIS FUNCTION TO OPERATE.**

**NEVER OPERATE WITH INTERLOCK
DISCONNECTED OR MALFUNCTIONING.
TO DO SO WILL VOID THE WARRANTY.**

PRECAUTIONS

WARNING

This equipment can start automatically. Do not attempt any service or parts replacement without first disconnecting all AC power and RF power. Failure to do so may result in possibly serious or *fatal electrical shock*.

CAUTION

Do not block air grills or restrict airflow when ducting inlet and discharge air. Restrictions in airflow limit the load's ability to dissipate RF power and could damage and/or cause the unit to fail.

CAUTION

Do not apply more than rated power to unit. Damage will occur before thermal protectors can activate interlock circuit if large overloads are applied.

CAUTION

When using any cleaning solvents or solutions, assure that there is adequate ventilation to protect personnel from breathing any irritable or possibly toxic fumes.

INTRODUCTION

This handbook was prepared for technical personnel as an aid in understanding and performing installation, service and maintenance procedures for the OMEGALINE® Model 6775V Air-Cooled Coaxial Load.

SECTION I

DESCRIPTION AND LEADING PARTICULARS

1-1. Purpose and Application of Equipment. The OMEGALINE® Model 6775V Coaxial Load is designed to safely dissipate a maximum of 75,000 watts of electrical energy over a frequency range of DC to 4 MHz.

1-2. Equipment Supplied. The Model 6775V Coaxial Load is supplied with standard RF connectors. Their designations are:

3 1/8" Fixed flange:	Model 6775VE3
4 1/16" Fixed flange:	Model 6775VE4
6 1/8" Fixed flange:	Model 6775VE6

The standard power supply voltages and their designators after the Model # are:

-230:	208-230VAC, three-phase, 50/60 Hz
-460:	380-460VAC, three-phase, 50/60 Hz

1-3. Equipment Required But Not Supplied. The Model 6775V Coaxial Load is complete as supplied, but the user must furnish AC Mains input, RF input, interlock control cable and ground cable appropriate to each installation. Where ordered with an RF Ammeter assembly, it is necessary for the installer to furnish conduit space for the RF Ammeter instrumentation cable (if remote operation and reading of the ammeter is desired.)

CAUTION: THIS DEVICE IS NOT EQUIPPED WITH A SAFETY SWITCH. MOST JURISDICTIONS REQUIRE THAT A SAFETY SWITCH WHICH REMOVES ALL AC POWER TO THIS DEVICE BE PLACED WITHIN SIGHT OF THE OPERATING POSITION.

1-4. General Description. The Model 6775V Coaxial Load is enclosed in a single aluminum case which is painted with a durable acrylic finish. The enclosure contains one belt-driven 1.5 HP 24" diameter fan assembly and one resistor assembly, plus necessary sensors and controls.

1-5. Electrical Description. The Model 6775V contains a 50 ohm non-reactive resistor assembly capable of dissipating 75,000 watts of applied electrical energy at sea level at frequencies between DC and 4 MHz. No provisions are made for tuning the resistor assembly and all operating controls relate to the operation of the blower assembly. The blower control circuit consists of one switch wired in series with the blower motor contactor. Power is supplied to this contactor whenever the equipment is attached to the correct power supply and the Fan Switch is "ON" or, when the autostart thermal switch senses a temperature of 120°F. The transmitter interlock circuit consists of 2 thermal switches wired in series with the differential pressure switch to control the interlock relay. Power is supplied to this relay whenever the equipment is attached to the correct power supply, the differential pressure switch is closed and the over-temperature thermal switches sense a temperature equal to or less than their specified temperature of 250°F(±7°F) and 160°F(±7°F). Power is also supplied to this relay whenever the equipment is attached to the correct power supply, the differential pressure switch is open, the over-temperature thermal switches sense a temperature equal to or less than their specified temperature of 250°F(±7°F) and 160°F(±7°F) and the differential pressure switch shunt thermal switch is closed. This switch disables the differential pressure switch when the temperature inside the load is less than 140°F(±7°F). This action permits the load to be used in standby mode, ready for application of power. When operated in this mode, the fan starts automatically upon sensing heat.

1-6. Mechanical Description. The Model 6775V RF Coaxial Load is a 50-ohm non-reactive resistor assembly which is cooled by forced ambient air. The fan assembly is a 1.5 HP belt-driven, 24-inch diameter device. Air is drawn in through grill assemblies near the floor, flows through the fan, enters the resistor assembly, flows vertically through it and then out of the enclosure via the top perforated panel.

1-7. General Principle of Operation. After ascertaining that the Model 6775V is connected to the correct power supply, connect the transmitter interlock circuit and RF source. Turn the FAN switch "ON" to start the fans and enable transmitter. Operate as desired. To stop operation, turn off the transmitter, then turn the FAN switch "OFF" after the discharge air temperature has cooled to ambient.

1-8. Operating and Adjustment Controls. The only operating control is the main power switch. No electronic or electrical field adjustments are necessary or possible.

The motors and fans require periodic maintenance and the drive belts must be adjusted to maintain proper tension. See para.3-9.

During initial installation, it is necessary to set the differential pressure switch. This switch should actuate and cause an interlock fault if the fan fails or airflow is obstructed. To set the switch, start the fan. Adjust the switch so that the LOW FLOW light illuminates when the air intake grills on the rear and sides are blocked. When the obstructions are removed, the switch should open and turn the LOW FLOW lamp off. See switch manufacturer's literature in Appendix A for procedures.

No other mechanical adjustments are necessary.

SECTION II

TEST EQUIPMENT AND SPECIAL TOOLS

2-1. Test Equipment Required. No test equipment is required for routine maintenance.

2-2. Special Tools Required. Although no non-standard tools are required for routine maintenance, we recommend the technician have the following specialized tools available:

Torx T-15 driver

Tee handle hex key, 7/32" bit

Power screwdriver with 7/32" hex key & Torx T-15 bit

2-3. Materials Required. One type of grease is required for routine servicing of fans. Use any quality lithium-based grease.

SECTION III

PREPARATION FOR USE AND RESHIPMENT

3-1. Unpacking. 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.

3-2. Pre-installation Inspection. Conduct a thorough inspection of the units, paying particular attention to the following items:

- All screws in place and tight.
- All panels and grills free of dents and scratches.
- Base assembly and legs visually OK.
- RF connector visually OK.

While inspecting RF connector, measure D.C. resistance of the unit by reading from the center conductor to the outer conductor. Compare this reading with that listed in the specification sheet at the end of this manual. Reading should be ± 1 ohm. If not, consult factory.

3-3. Pre-installation Tests. No tests are necessary or possible prior to installation, except resistance test specified in 3-2.

3-4. Installation. The Model 6775V must be installed in a location convenient for servicing. Consideration should be given to adequate accessibility for maintenance and unit replacement. No attempt is made in this handbook to present complete installation instructions, since physical differences in plant will determine the installation procedure. General guidelines are outlined in subsequent paragraphs.

3-5. Location. The location selected for the Model 6775V should have an ambient temperature below 104°F(40°C). The room should be well ventilated to prevent excessive temperature rise and consequent derating of the unit. The maximum dissipation of the unit is 75,000 watts. This is equal to 255,975 Btu/hr, which ordinarily will be ducted out of the building envelope. The unit should be oriented to provide a short, direct duct run in order to avoid high static pressure and loss of cooling efficiency. Exterior installation is not recommended.

3-6. Mounting. The Model 6775V is designed to be mounted on concrete and should be securely attached to the floor.

CAUTION

The unit should be attached to the proper AC power supply with interlock connected whenever the RF connector is attached to the source. Inadvertent application of RF power to the unit without AC power may damage or destroy the resistor assembly.

3-7. Connections. There are four connections on the Model 6775V: the RF connector, the AC power supply, the remote control terminal strip and the transmitter interlock terminal strip.

- a. The RF connector is on the top panel of the unit. Connect to the appropriate RF line from the transmitter.
- b. The AC power supply connector is a 4 terminal pressure-style female receptacle located in the wiring channel accessed through the removable panel on the front of the enclosure.
- c. It is possible to control the fan operation remotely. Connect a SPST switch to the one pair of terminals on the remote control terminal strip.
- d. The transmitter interlock is attached to both pair of the normally closed terminals of the 4-position terminal strip located on the inner panel of the wiring channel which is on the RF connector side of the enclosure.
The terminals are isolated, dry contacts which are closed whenever AC power is supplied to the unit and no overheat condition exists. There are 2 independent pair of contacts to accommodate multi-transmitter installations.

3-8. Ducting. It will be necessary to duct the discharge air from the Model 6775V to the exterior of the building. In some installations it will also be necessary to supply inlet air from outside of the climate-controlled portion of the building. The discharge airflow is approximately 9,600 SCFM at a maximum temperature of 250° F.

3-9. Adjustments. No field adjustments of the electronics or electrical controls are necessary or possible. The drive belts for the fans must be periodically adjusted to maintain proper tension. It is important not to over-tension the belts. See para. 1-8.

Tension belt to require a force of 6.1 pounds (~ 3 kg)
to deflect center of belt 13/64 inch (0.503 cm).

SECTION IV

THEORY OF OPERATION

4-1. General. The Model 6775V contains a 50 ohm non-reactive resistor assembly (77 @ 3720 ohms in parallel) which is cooled by forced air supplied by a belt-driven fan assembly. Control of the fan and of the transmitter interlock circuit is accomplished with a single-pole switch, a differential pressure switch and four thermal switches.

4-2. Control Circuits. There are 2 control circuits in the Model 6775V. One circuit controls the fans and the other controls the interlock relay circuit. The fan control circuit derives its power from the 24VAC control transformer. The FAN switch is connected to transformer secondary X1. The other terminal of the FAN switch connects to the thermal switches. The thermal switches are wired in parallel and connect to contactor terminal A2. Contactor terminal A1 connects to transformer secondary X2. The transmitter interlock circuit also derives its power from the control transformer. Two SPNC thermal switches are connected in series from interlock relay terminal IR13 to differential pressure switch NO. The overheat lamp is connected in parallel with the thermal switches from differential pressure switch NO to interlock relay terminal IR13. Differential pressure switch COM is connected to contactor A2 and to transformer secondary X1. Interlock relay terminal IR13 is connected to transformer secondary X1. There are two pair of interlock relay terminals connected to the interlock terminal board. These terminal pairs are normally closed when AC power is supplied to the unit.

The logic of operation is:

1. If AC power is applied to the load, the overtemperature switches are closed (cool), the differential pressure switch is closed [or its shunting thermal switch is closed], the interlock relay will close and enable the transmitter.
2. If AC power is not applied to the load, the differential pressure switch is open or any overtemperature thermal switch senses excessive temperatures, the interlock relay will open, disabling the transmitter.

SECTION V

MAINTENANCE

- 5-1. Cleaning.** The enclosure of the Model 6775V is finished with an acrylic finish or other durable coating system. It should be cleaned with a neutral plastic and glass cleaner such as Windex or Glass Plus. The RF connector should be cleaned with a non-residue contact cleaner such as Miller-Stephenson MS-171/CO2. Remove dirt accumulations from the fans, enclosure and motors by vacuuming. Do not use solvents to clean the motors or fan pillow block assemblies. Remove dirt and dust accumulations from the grills and resistor assembly with an air jet and a soft brush.
- 5-2. Lubrication.** The fan pillow blocks are lubricated at the factory with a quality lithium-based high temperature grease. They should be lubricated once each year in the field.
- 5-3. RF Circuit.** The RF circuit does not require any periodic maintenance and the only repairs possible are the replacement of parts in the connector, quick-step or support portions of the resistor assembly or the replacement of resistors.

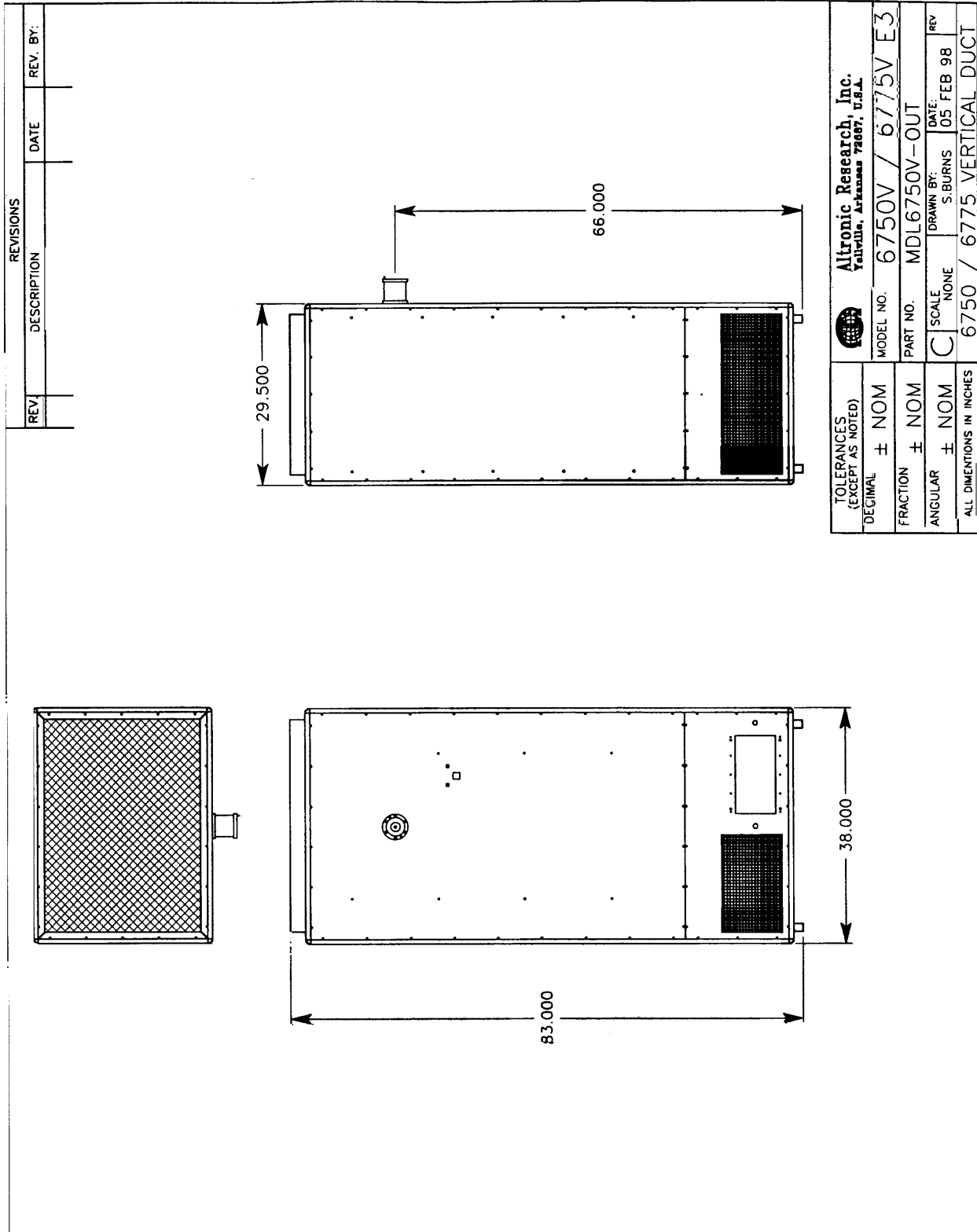
Resistor Replacement

Prior to attempting resistor replacement, you must make the load safe for servicing. Begin by placing the user-supplied Safety Switch in the OFF position and locking the handle with a padlock. Next, remove all power from the transmitter and exciter and lock them out.

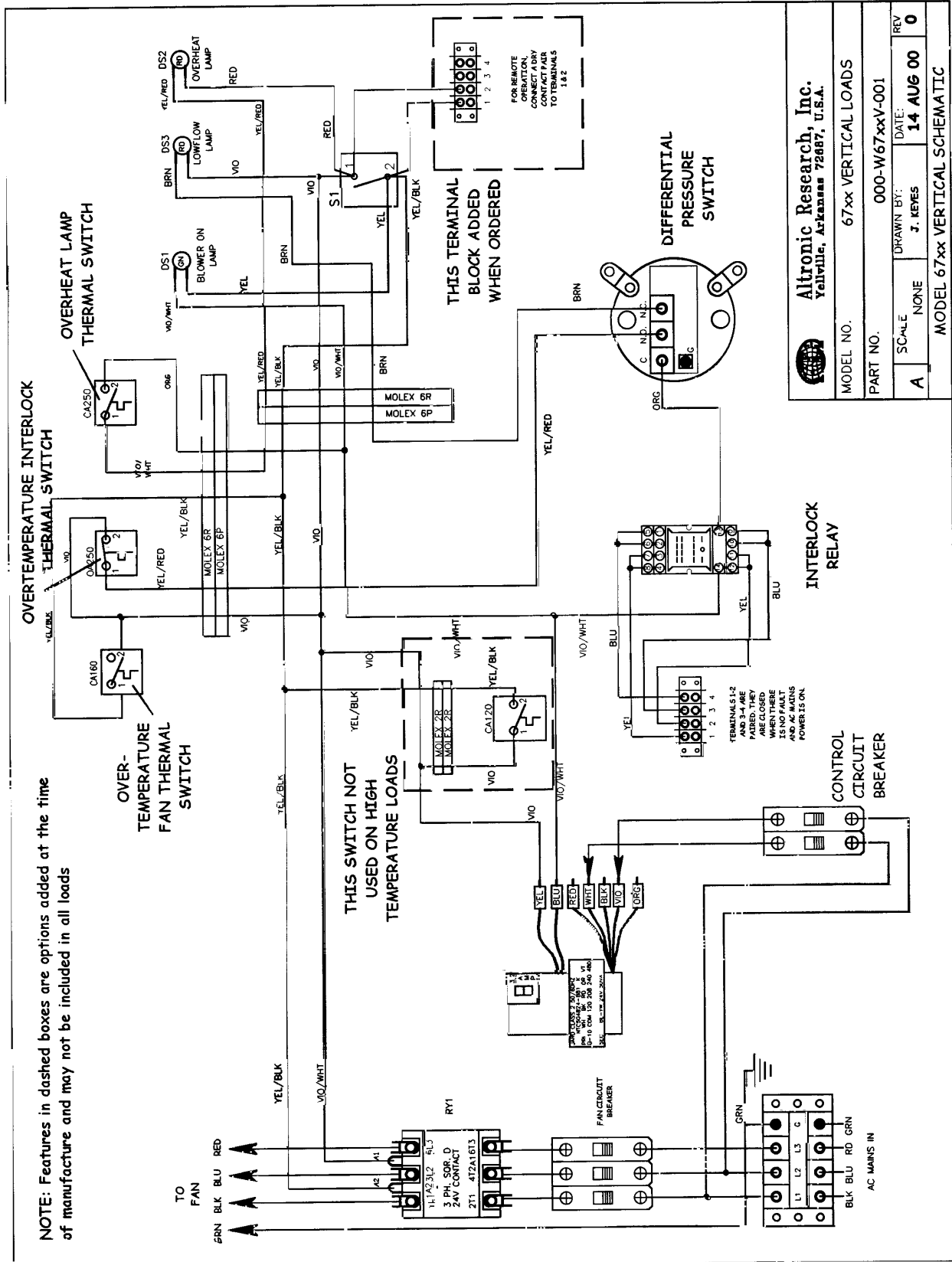
To replace resistors it is necessary to remove the side panels from the load and set them aside.

Resistor replacement is tedious, but not difficult. It will probably be necessary to remove many resistors in order to replace a few. Therefore, allow at least eight hours to accomplish this task. The resistors are made of a durable ceramic and will withstand normal handling, but they must not be struck with any tool.

6-1. OUTLINE AND DIMENSIONS



6-2. SCHEMATIC DIAGRAM



Altronic Research, Inc. Yellville, Arkansas 72887, U.S.A.	
MODEL NO.	67xx VERTICAL LOADS
PART NO.	000-W67xxV-001
SCALE	NONE
DRAWN BY:	J. KEYES
DATE:	14 AUG 00
REV	0
MODEL 67xx VERTICAL SCHEMATIC	

6-3. REPLACEMENT PARTS LIST
MODEL 6775V

(CONSULT FACTORY)

SPECIFICATIONS

MODEL 6775V

Impedance..... >50 ohms nominal

VSWR @ DC to 2 Khz.....>1.15:1 max.

Connectors:

Model 6775V.....>CUSTOMER SPECIFIED

Power Rating @ Sea Level..... >75 KW

Frequency Range >DC to 4 Mhz

Cooling Method.....>Forced Air

Ambient Temperature..... > -30° C to 40° C

Fan Assembly >1.5 hp belt-drive six-bladed

AC Power Requirements:

230 VAC @ 14 Amp., 3 phase, 60/50 Hz

460 VAC @ 7 Amp., 3 phase, 60/50 Hz

Finish >Beige Splatter

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Serial No. _____ Frequency _____ Resistance _____

Model _____ Inspected by _____ Date _____

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