

ALTRONIC RESEARCH, INC.

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U.S.A.

MODEL 6620

COAXIAL LOAD RESISTOR



MODEL 6620
RF COAXIAL LOAD

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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Appendix:

Preservation and Corrosion Prevention Techniques

PRECAUTIONS

⚡DANGER⚡

Do not attempt any service or parts replacement without first disconnecting all RF power. Failure to do so may result in serious or *fatal electrical shock*.

WARNING

The thermal alarm switch indicates an overtemperature condition of the load and is not to be used for VSWR fault or transmitter protection.

WARNING

IBOC Reject Load Warning: In a condition of load failure or if the load is disconnected while the analog transmitter is operating, all coupled power is directed to the IBOC transmitter. This will result in excessive reflected power and immediate destruction of the IBOC transmitter if automatic VSWR protection is not in effect.

OPERATING TEMPERATURE WARNING

Care should be taken to operate unit below stated maximum ambient operating temperature. **OPERATION ABOVE RATED AMBIENT TEMPERATURE MAY CAUSE DAMAGE TO UNIT.**

CAUTION

Hazardous temperatures within this device may ignite combustible materials. Place device on non-combustible pad and keep grass and other combustibles clear. Maintain free airflow around load at all times. Do not block air grills; blocking air flow can cause unit to fail!

CAUTION

Do not apply more than rated power to unit.
Damage will occur 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 skilled personnel as an aid in understanding and performing installation, service and maintenance procedures for the OMEGALINE[®] Model 6620 Air-Cooled Coaxial Load. Personnel are considered to be skilled if they have the necessary knowledge and practical experience of electrical and radio engineering to appreciate the various hazards that can arise from working on radio transmitters, and to take appropriate precautions to ensure the safety of personnel.

SECTION I

DESCRIPTION AND LEADING PARTICULARS

- 1-1. Purpose and Application of Equipment.** The OMEGALINE[®] Model 6620 Coaxial Load is designed to safely dissipate a maximum of 20,000 watts of electrical energy over a frequency range of DC to 240 MHz.
- 1-2. Equipment Supplied.** The Model 6620 Coaxial Load is supplied with standard RF connectors. Their designations are:
- 1-5/8" EIA Swivel flange: Model # 6620E1
 - 1-5/8" Unflanged flush: Model # 6620F1
 - 1-5/8" Unflanged recessed: Model # 6620R1
 - 3-1/8" EIA Swivel flange: Model # 6620E3
- 1-3. Equipment Required But Not Supplied.** The Model 6620 Coaxial Load is complete as supplied, but the user must furnish RF input, and alarm indicator cable.
- 1-4. General Description.** The Model 6620 Coaxial Load is enclosed in a single aluminum case which is painted with a durable acrylic finish. The RF connector is located on the end panel of the load .
- 1-5. Mechanical Description.** The Model 6620 RF Coaxial Load is a 50 ohm non-reactive resistor assembly which is cooled by ambient air.
- 1-6. General Principle of Operation.** After ascertaining that the Model 6620 is correctly connected to the RF source and the transmitter alarm, operate transmitter as desired.

1-7. Operating and Adjustment Controls. No field adjustments are necessary or possible.

1-8. Operator Training. The operator of this equipment must have the following skills/knowledge:

- An understanding of the purpose of the equipment;
- An understanding of the principles of operation of the equipment;
- An understanding of the normal operating procedures for the equipment;
- An understanding of the normal and abnormal indications which may be presented at the control point;
- The proper procedures for starting, using and stopping the equipment under normal conditions;
- The proper procedure for stopping the equipment under abnormal or emergency conditions;
- The proper procedure to lock out and mark controls prior to allowing or commencing maintenance on the equipment;
- The proper procedure to obtain clearance to remove lockouts and out-of-service marks and return the equipment to normal service.

SECTION II

TEST EQUIPMENT AND SPECIAL TOOLS

2-1. Test Equipment Required. No test equipment is required for routine maintenance. In some circumstances it may be desirable to determine the temperature differential (outlet air minus inlet air) and ambient air temperature which the equipment is experiencing. We recommend the John B. Fluke Mfg. Co. Model 52 or equivalent instrument for this function.

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:

- 1 Torx T-15 driver
- 1 Tee handle hex key, 1/8" bit
- 1 Power screwdriver with 1/8" hex key & torx T-15 bit

SECTION III

PREPARATION FOR USE AND RESHIPMENT

3-1. Unpacking Equipment. The units 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:

- a. Screws in place and tight.
- b. All panels and grills free of dents and scratches.
- c. RF connector visually OK.

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

3-3. Installation. The Model 6620 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.

3-4. Location. The location selected for the Model 6620 should have an ambient temperature below 110°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 20,000 watts. This is equal to 68,304 Btu/hr. When ordered for exterior installation an isolated concrete pad is preferable to eliminate burn/fire hazards. The location must allow sufficient area to prevent debris or foliage from restricting the intake or exhaust air flow. Consideration should also be given to keeping combustible materials away from the load.

3-5. Mounting. The Model 6620 is designed to be floor mounted and should be securely attached to the mounting surface. Adjustable legs are provided for leveling prior to attaching to a secure surface. The enclosure rests on four fixed aluminum feet. These are drilled for 3/8-16 machine screws.

3-6. Connections. There are two connections on the Model 6620: the RF connection and the thermal alarm connection. The RF connection is located on the front panel of the unit. The thermal alarm connection is a four-pin Amphenol cylindrical twist lock connection on the front of the load. The user must solder the alarm leads to the terminals labeled A and B on the male component of this connector for the circuit to be completed.

3-7. Adjustments. No field adjustments are necessary or possible.

3-8. Preparation for Reshipment. No special measures are required to prepare the Model 6620 for reshipment. Care must be taken to protect the RF connector and to immobilize the swivel flange. Packaging should provide protection against abrasion and impact. Special containers are available from the factory. Please inquire.

SECTION IV

THEORY OF OPERATION

4-1. General. The Model 6620 contains a 50 ohm non-reactive resistor assembly (36 @ 200 ohms) which is cooled by static air.

SECTION V

MAINTENANCE

WARNING!!

***PERSONNEL WORKING ON THIS LOAD MUST BE
CONSIDERED SKILLED AS DEFINED BY
EN60215 SECTION 3.1 AND APPENDIX D***

BEFORE PERFORMING ANY MAINTENANCE:

- 1. DISCONNECT RF CONNECTOR ASSEMBLY.**
- 2. OPEN TRANSMITTER VSWR ALARM CIRCUIT.**

**FAILURE TO FOLLOW THESE DIRECTIONS
MAY CAUSE FATAL ELECTRICAL SHOCK!**

5-1. Cleaning. The enclosure of the Model 6620 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.

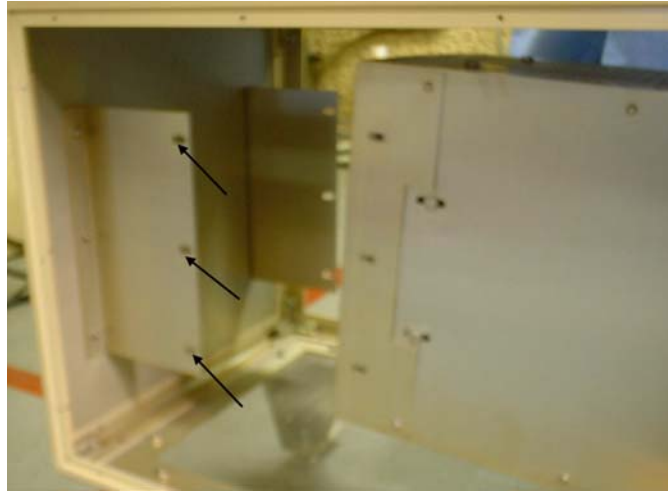
5-2. RF Circuit. The RF Load Resistor does not require any periodic maintenance and the only repairs possible are the replacement of parts in the connector, quickstep or support portions of the resistor assembly or the replacement of resistors.

Resistor Replacement

Remove the 8-32 Torx head screws that secure the side panels to the load. Set the side panels in a rack or safe place to prevent them from falling.



Support the tower before removing the tower/base panel screws. Remove the 6 ¼ - 20 screws that hold the tower to the base panel. Three screws are located on each side.



Disconnect the two electrical connections on the tower. There is a two pin Molex at the base of the top panel and a two pin thermal connection on the side panel.

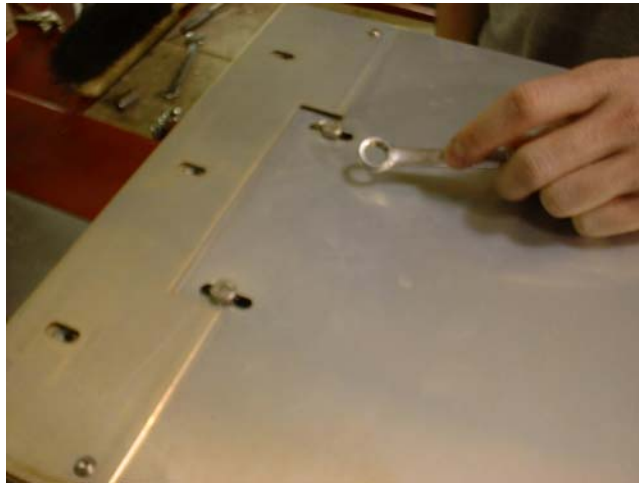


Next slide the tower from the load and set it down being careful not to damage the electrical connections on the thermal switch shown above.

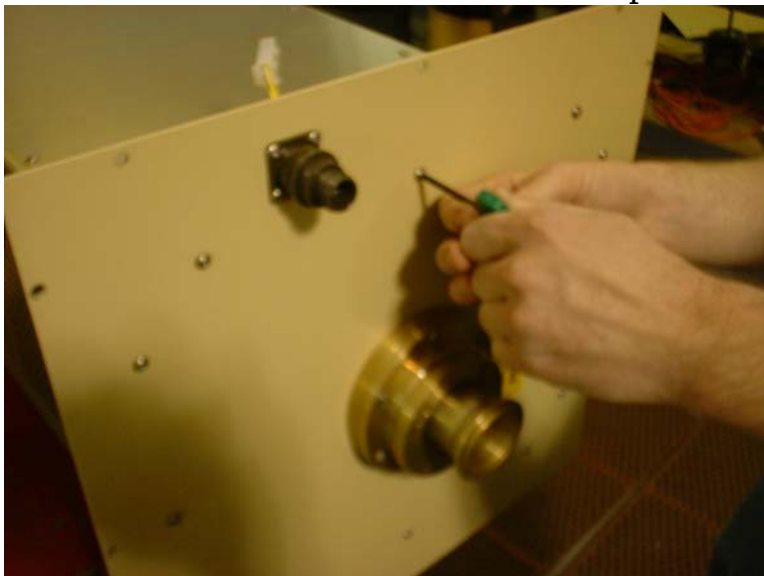
Remove the 8-32 X ½” screws from around the edges of the panel as shown.



Remove the ¼ -20 X 2” hex-head screws shown.



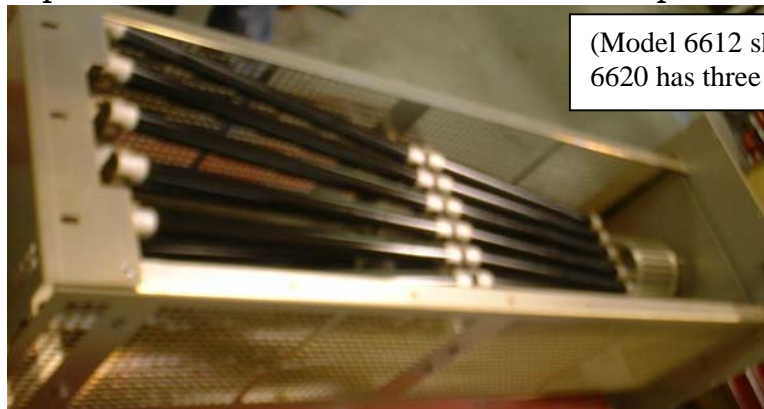
Remove the three 8-32 Torx head screws that hold the RF panel to the tower panel.



The tower panel can be removed by bending the end panel back as shown and lifting the tower panel from the tower.



Resistors on the top side of the tower can be removed and replaced as needed.



(Model 6612 shown – Model 6620 has three sets of resistors)

Resistors can be removed on the other side of the tower by removing the outside resistors on the side shown and reaching through the tower.



The bolts shown below holds the resistor clip bracket in place. It must be loosened before removing and replacing resistors on the ground end of the load. The resistors must be held firmly against the ground panel for the VSWR of the load to remain at the factory presets. Removing the resistors without first loosening these screws may cause the resistors to break or crack. After placing resistors back in the resistor clips, apply light pressure between the clip bracket and the ground panel while tightening the bolts.



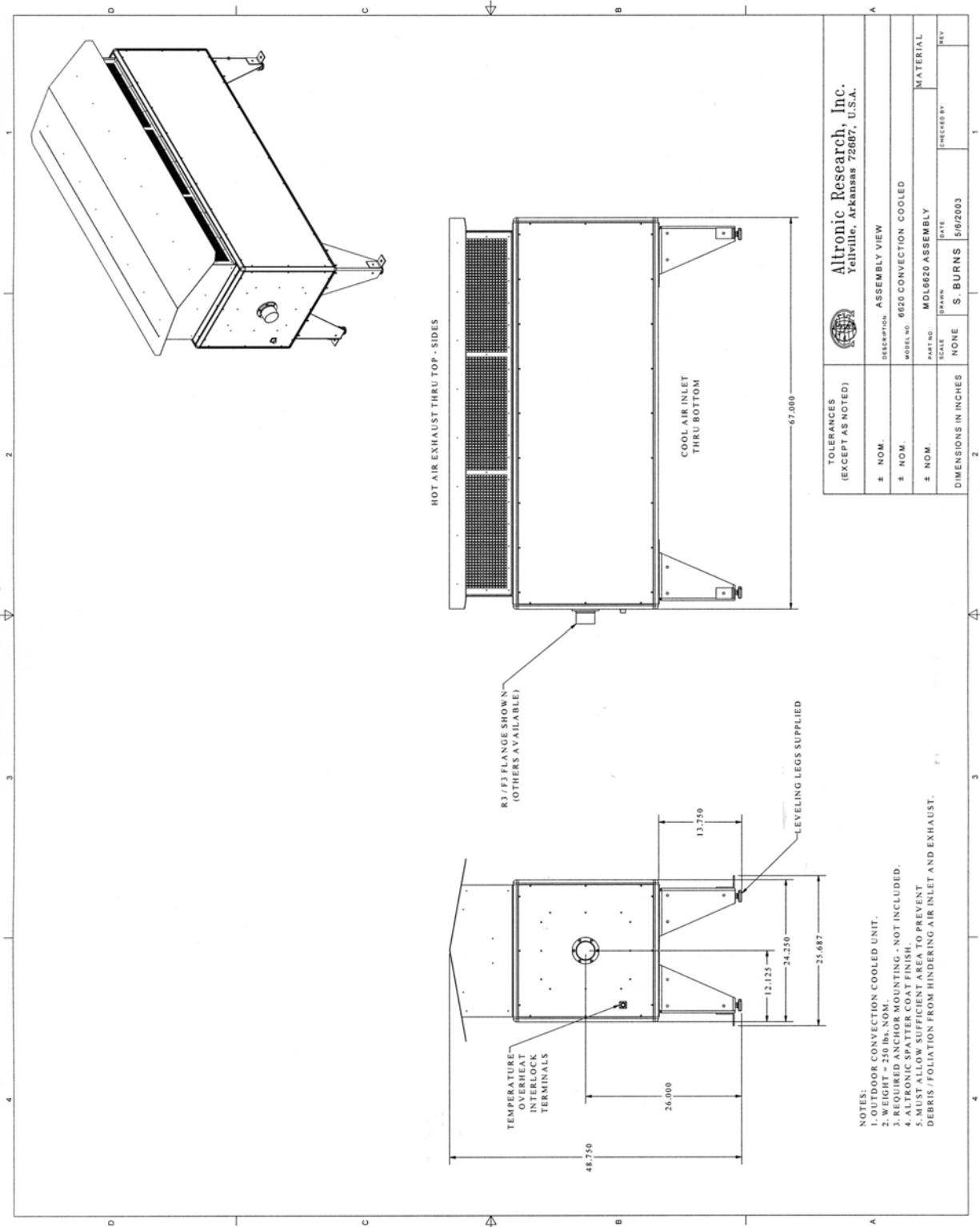
Assembly is done by reversing the process described in this section.

CAUTION!

Take care when tightening the 1/4-20 x 2" screws securing the lower resistor bracket to the flex panel. Overtightening can fracture the resistors. The resistors are hard, brittle ceramic material. Avoid impact and excessive force when installing or removing them.

SECTION VI

6-1 OUTLINE AND DIMENSIONS



TOLERANCES (EXCEPT AS NOTED)		Altronic Research, Inc. Yellville, Arkansas 72687, U.S.A.	
# NOM.	ASSEMBLY VIEW	DESCRIPTION	ASSEMBLY VIEW
# NOM.	MODEL NO.	MODEL NO.	8620 CONVECTION-COOLED
# NOM.	PART NO.	PART NO.	MD16620 ASSEMBLY
DIMENSIONS IN INCHES		SCALE	NONE
		DRAWN	S. BURNS
		DATE	5/6/2003
		CHECKED BY	
		REV	

6-2 REPLACEMENT PARTS LIST

(CONSULT FACTORY)

SPECIFICATIONS

Model 6620

Impedance ----- > 50 ohms nominal

VSWR @ DC to 110MHz ----- > 1.10:1 max.

VSWR @ 110 to 240MHz----- > 1.15:1 max.

Connectors:

Model 6620E1 ----- > 1-5/8" EIA swivel flange

Model 6620F1 ----- > 1-5/8" unflanged flush

Model 6620R1 ----- > 1-5/8" unflanged recessed

Model 6620E3 ----- >3-1/8" EIA swivel flange

Power Rating @ Sea Level ----- > 20 KW

Frequency Range ----- > DC to 240 MHz

Cooling Method ----- > Static air

Ambient Temperature ----- > -30°C to 43°C

Finish----- > durable acrylic finish

Serial No. _____ **Frequency** _____ **Resistance** _____ **dBa @ 3'** 0

Model _____ **Inspected by** _____ **Date** _____



CRAFTED WITH PRIDE IN ARKANSAS, U.S.A.