



ALTRONIC RESEARCH, INC.

P.O. BOX 249, YELLVILLE, ARKANSAS, U.S.A. 72687-0249

PHONE 870-449-4093 FAX 870-449-6000

1-800-482-LOAD (5623) in US

altronic.com

**MODEL 6600 SERIES
COAXIAL LOAD RESISTOR**



6606



**6612 with
FANS**



6620

MODEL 6600 SERIES RF COAXIAL LOADS



**ALTRONIC RESEARCH, INC.
P.O. BOX 249
YELLVILLE, ARKANSAS 72687, U.S.A.**

DECLARATION OF CONFORMITY

The Omegaline RF Coaxial Load Model 6600 Series conforms to the following standards:

Low-Voltage Directive (2014/35/EU)

Electromagnetic Compatibility Directive (2014/30/EU)

Machinery Directive (2009/127/EC)

Restriction of Hazardous Substances Directive (EU)2015/863

**Safety Requirements for Radio Transmitting Equipment
(IEC 215 / EN 60215)**

As of the date of manufacture on the specifications page.

ATTEST:

**John L. Dyess,
President**

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.**

TABLE OF CONTENTS

MODEL 6600 SERIES LOADS

<u>SECTION</u>	<u>PAGE</u>
Declaration of Conformity	3
Warranty	4
Warnings and Precautions	7-8
Introduction.....	9
 I. Description and Leading Particulars	
1-1 Purpose and Application of Equipment.....	9
1-2 Equipment Supplied	9
1-3 Equipment Required But Not Supplied.....	9
1-4 General Description.....	9
1-5 Mechanical Description.....	9
1-6 General Principle of Operation.....	9-10
1-7 Operating and Adjustment Controls	10
1-8 Electrical Description	10
1-9 Operator Training	10
 II. Test Equipment and Special Tools	
2-1 Test Equipment Required	11
2-2 Special Tools Required.....	11
 III. Preparation for Use and Reshipment	
3-1 Unpacking Equipment	11
3-2 Pre-Installation Inspection.....	11
3-3 Adding Fans.....	12
3-4 Pre-installation Test.....	13
3-5 Installation	13
3-6 Location	13
3-7 Mounting	13
3-8 Connections	13
3-9 Adjustments	13
3-10 Preparation for Reshipment.....	13
 IV. Theory of Operation	
4-1 General	14
 V. Maintenance	
5-1 Cleaning.....	14
5-2 RF Circuit	14
5-3 Resistor Replacement	15-17

SECTION**PAGE**

VI. Diagrams	
6-1 Outline and Dimensions	18-21
6-2 Parts List	22
VII. Specifications	23
VIII. Preservation and Corrosion Prevention Techniques	24-28

OPERATING TEMPERATURE WARNING FOR 6600 SERIES UNITS WITH FANS

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

**OPERATION ABOVE RATED AMBIENT
TEMPERATURE CAN CAUSE MOTOR THERMAL
PROTECTION TO SHUT OFF FAN, WHICH WILL
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
BYPASSED OR MALFUNCTIONING.
TO DO SO WILL VOID THE WARRANTY.**

PRECAUTIONS



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

Digital 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 digital transmitter. This will result in excessive reflected power and immediate destruction of the digital 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 6600 Series 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 6600 Series Coaxial Loads are designed to safely dissipate 6,000, 12,000, and 20,000 watts maximum of electrical energy over a frequency range of DC to 110 MHz.

1-2. Equipment Supplied. The Model 6600 Series Coaxial Load is supplied with standard RF connectors. Their designations are:

1-5/8" EIA Swivel flange:	Model # 6600E1
1-5/8" Unflanged flush:	Model # 6600F1
1-5/8" Unflanged recessed:	Model # 6600R1
3-1/8" EIA Swivel flange:	Model # 6600E3

Units purchased with fans have three terminal connections supplied for AC main power.

1-3. Equipment Required But Not Supplied. The Model 6600 Series Coaxial Load is complete as supplied, but the user must furnish RF input, and alarm indicator cable. For units purchased with fans the user must also supply interlock control cable, AC main power and ground cable appropriate for each installation. A user supplied disconnect must be in place before operating this load.

1-4. General Description. The Model 6600 Series 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 6600 Series RF Coaxial Load is a 50 ohm non-reactive resistor assembly which is cooled by ambient air. Units purchased with fans are cooled by air forced through the resistor assembly by two 12-inch fans.

1-6. General Principle of Operation. After ascertaining that the Model 6600 Series Coaxial Load is correctly connected to the RF source and the transmitter alarm, operate transmitter as desired. Units purchased with fans may be operated after ascertaining that the load is connected to the correct power supply with a disconnect, connect the transmitter interlock

circuit, the alarm circuit, and RF source(s). Turn the user supplied main power switch "ON" and enable the transmitter. Operate the transmitter as desired. To stop operation, it is necessary to first turn off the transmitter. The fan may continue to run for some time. This depends upon the power level at which the load was operating and upon the ambient air temperature. This feature is necessary to prevent damage to the load. 6600 Series Coaxial Loads with fans operates in "Standby" or "Reject" mode with the blower off.

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

1-8. Electrical Description. Models sold with fans contains a 50-ohm non-reactive resistor assembly capable of dissipating a total of their rated watts of applied electrical energy at frequencies between DC and 110MHz with a maximum VSWR of 1.10 to 1. No provisions are made for tuning the resistor assembly and all operating controls relate to the operation of the optional fan assembly. The fan control circuit consists of two switches wired in parallel to control the fan motor. Power is supplied to the fan whenever the equipment is attached to the correct power supply and the user supplied main power switch is "ON" and the fan thermal switch senses a temperature equal to or greater than 120°(±7 °)F. When sold with fans the transmitter interlock circuit consists of one normally closed 250°F thermal switch wired to terminals (C,D) on the Amphenol four pin cylindrical twist lock connector located on the front panel of the unit. There is no interlock circuit provided for units sold without fans. The alarm circuit consists of one normally closed 372°F thermal switch wired to terminals (A,B) on the Amphenol four pin cylindrical twist lock connector.

1-9. 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-20 driver
- 1 Tee handle hex key, 3/16" bit
- 1 Power screwdriver with 3/16" hex key & torx T-20 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.

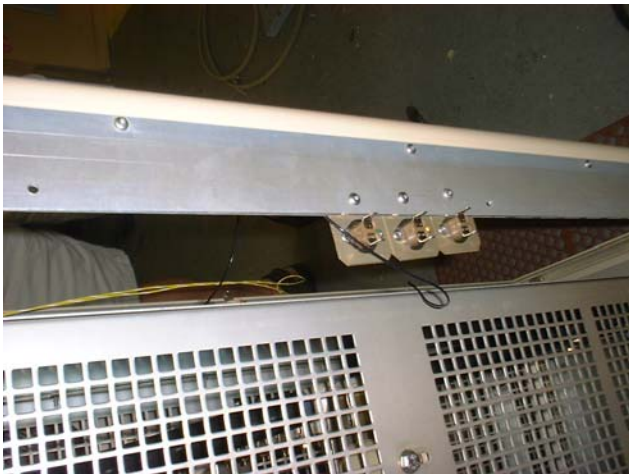
3-2. Pre-installation Inspection. Conduct a thorough inspection of the units, paying particular attention to the following items:

- a. Screws in place and tight.
- b. All panels and grills free of dents and scratches.
- c. RF connector visually OK.
- d. Twistlock Amphenol connector 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. Adding Fans to 6612 Convection Cooled Loads

- Place the 6612 on the end panel away from the RF connection.
- Remove the 8-32 Torx head screws around the outside of the bottom panel and remove the bottom panel assembly.
- Place the new fan assembly on the 6612. Use the screws removed from the old bottom panel assembly to fasten the new fan assembly in place.
- The hole patterns are the same. The electrical components will be installed after the fan assembly is in place.
- Place the 6612 back in the upright position.
- Remove the roof assembly by removing the six 8-32 Torx head screws that hold it in place. There are three screws on either end.
- Fasten the thermal switch brackets in place as shown. The location is important for proper operation of the fans and the interlock circuit.



- The interlock consists of a thermal switch and connecting wires. Solder the wire ends to the open terminals of the four-pin amphenol circular connector.
- Make electrical connections to the load by using the terminals supplied in the 4 X 4 weatherproof box on the front panel of the load.
- Leave the roof off the load until proper fan operation is verified.
- Test for proper fan operation by jumping the terminals of either thermal switch that is wired in the fan circuit. They have a yellow dot on them.
- Place the roof back on the load.



- 3-4. Pre-installation Test.** Prior to installation, connect the unit to a suitable source of AC power. Turn main switch on and check for quiet fan operation. Connect an ohmmeter or a battery operated test lamp across the normally closed terminal pair on the interlock terminal board and check for less than 1 ohm of indicated resistance.
- 3-5. Installation.** 6600 Series Coaxial Loads must be installed in locations 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.
- 3-6. Location.** Locations selected for the 6600 Series Coaxial Loads 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 6606, 6612, and the 6620 is 6,000, 12,000 and 20,000 watts of electrical energy. This is equal to 20,491, 40,982, and 68,304 Btu/hr respectively. 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.
- 3-7. Mounting.** 6600 Series Coaxial Loads are 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.
- 3-8. Connections.** There are two connections on conventional 6600 series convection cooled loads: 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.
- On 6600 Series Coaxial Loads supplied with fans, terminals C and D of the Amphenol cylindrical twist lock connections are supplied for interlock leads. AC main power connections are also supplied on the front panel of the load.
- 3-9. Adjustments.** No field adjustments are necessary or possible.
- 3-10. Preparation for Reshipment.** No special measures are required to prepare the Model 6600 Series Coaxial Load 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.

SECTION IV

THEORY OF OPERATION

- 4-1. General.** Model 6600 Series Coaxial Loads contain a 50-ohm non-reactive resistor assembly which is cooled by static air.

SECTION V

MAINTENANCE

WARNING!!

BEFORE PERFORMING ANY MAINTENANCE:

- 1. DISCONNECT RF CONNECTOR ASSEMBLY.**
- 2. OPEN TRANSMITTER VSWR ALARM CIRCUIT.**
- 3. ON UNITS SUPPLIED WITH FANS DISCONNECT AC MAIN POWER TO THE LOAD.**

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

- 5-1. Cleaning.** The enclosure of the Model 6600 Series Coaxial Load 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.
- 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.

5-3. Resistor Replacement.

Remove the six torx head screws shown in Figure 1 and remove the roof as shown in Figure 2.



Fig. 1



Fig. 2

Remove the Torx screws around the outside edge of the front panel as shown in Figure 3, and with the help of an assistant holding the bottom of the tower, remove the tower from the load.

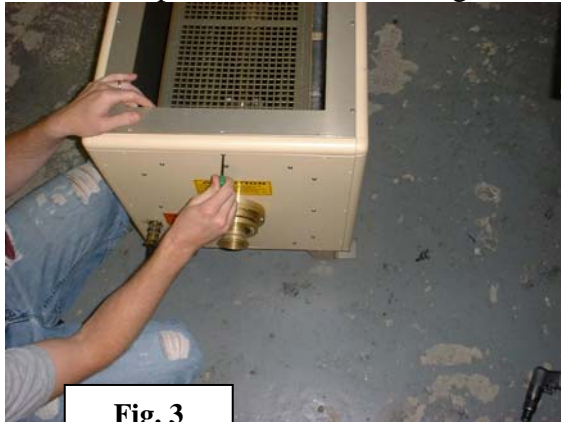


Fig. 3

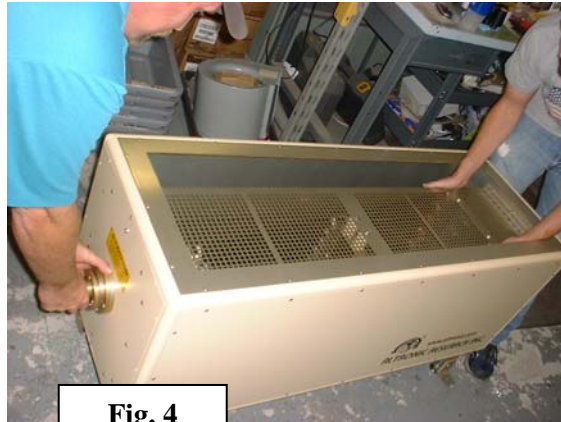


Fig. 4

Remove the 8-32 X 1/2" screws from the tower panel as shown in Figure 5.



Fig. 5

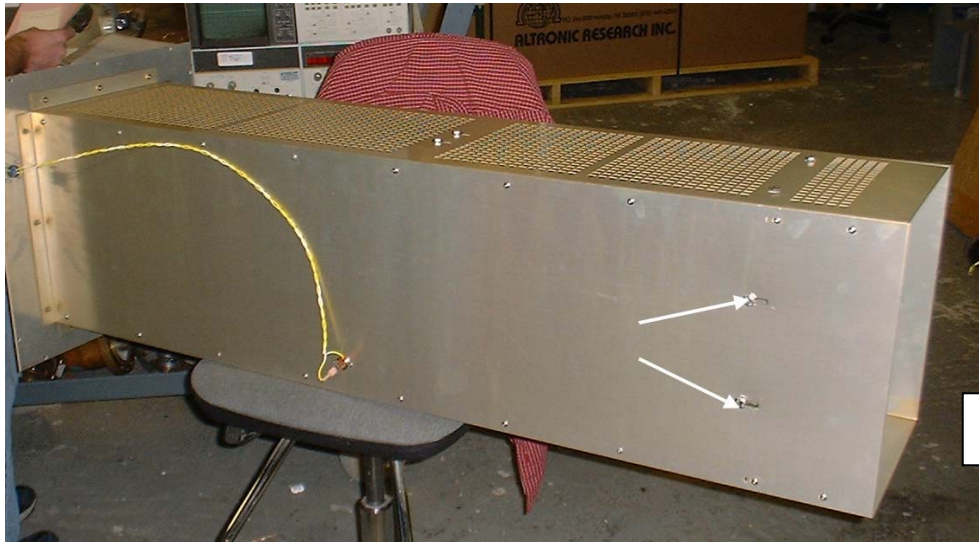


Fig. 6

Remove the 1/2-20 X 2" hex head screws at the bottom of the tower panel as shown in Figure 6.

Remove the three 8-32 Torx head screws that hold the RF panel to the tower panel, and remove the tower panel as shown in Figure 7.

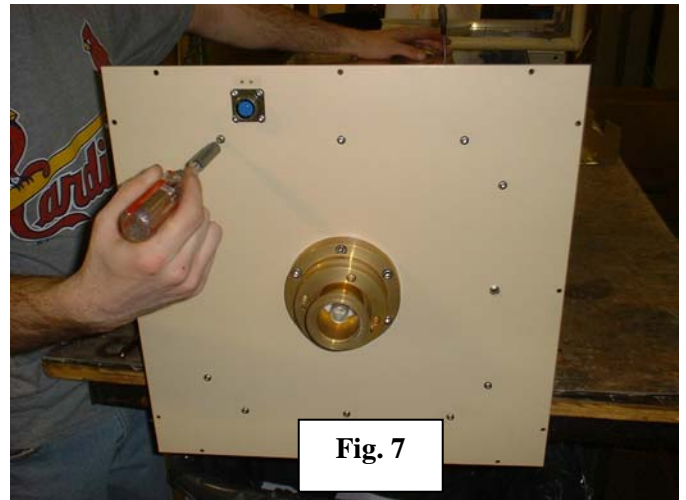


Fig. 7

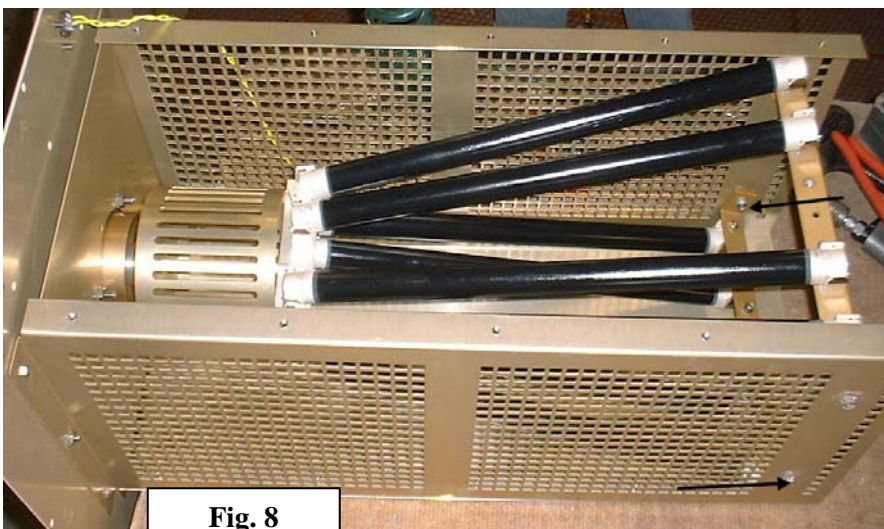


Fig. 8

The bolts shown in Figure 8 hold the resistor clip bracket in place. There are two bolts on each of the two brackets. They must be loosened before removing and replacing resistors. Removing the resistors without first loosening these screws may cause the resistors to break or crack. The resistors are hard, brittle ceramic material. Avoid impact and excessive force when installing or removing them.

After placing resistors back in the resistor clips, apply light pressure between the clip bracket and the ground panel while tightening the side bolts. The resistors must be held firmly against the ground panel for the VSWR of the load to remain at factory presets.

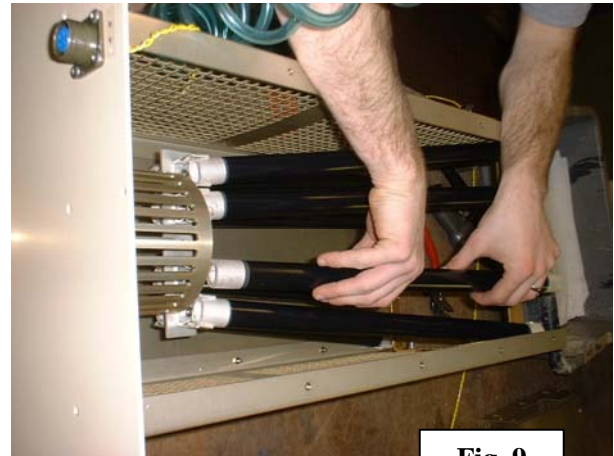


Fig. 9

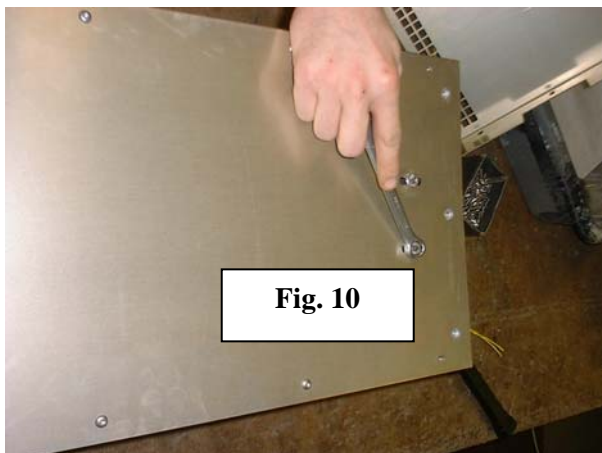


Fig. 10

Resistors can be removed and replaced on the other side of the tower by removing the resistors above them and loosening the two sets of resistor clip bolts on that side of the tower shown in Figures 9 and 10.

After placing resistors back in the clips on the far side of the tower, first tighten the $\frac{1}{4}$ - 20 X 2" hex head bolts shown in Figure 10, then the bolts shown in Figure 11.

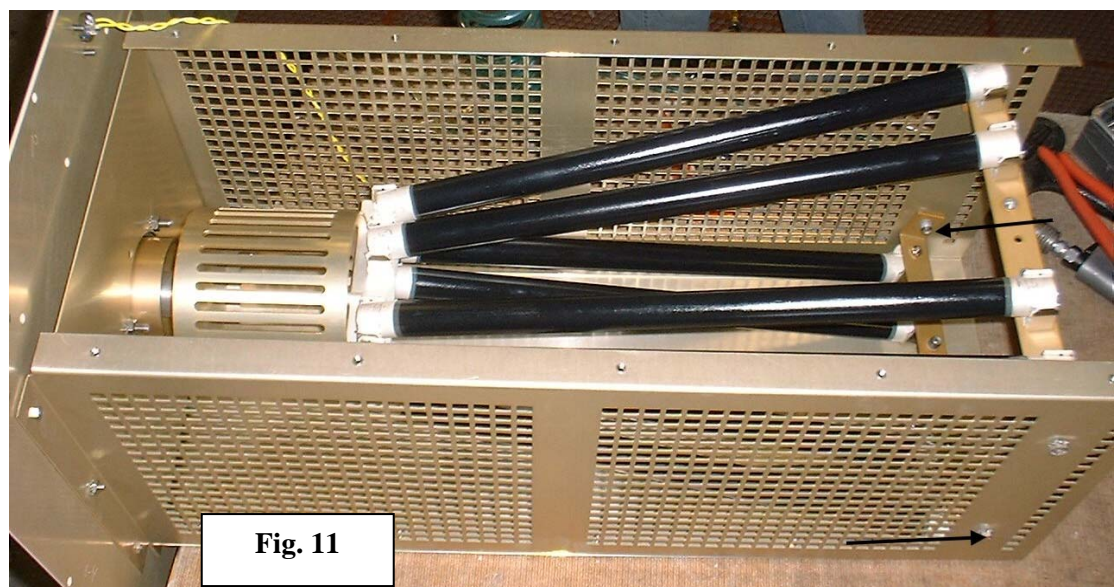
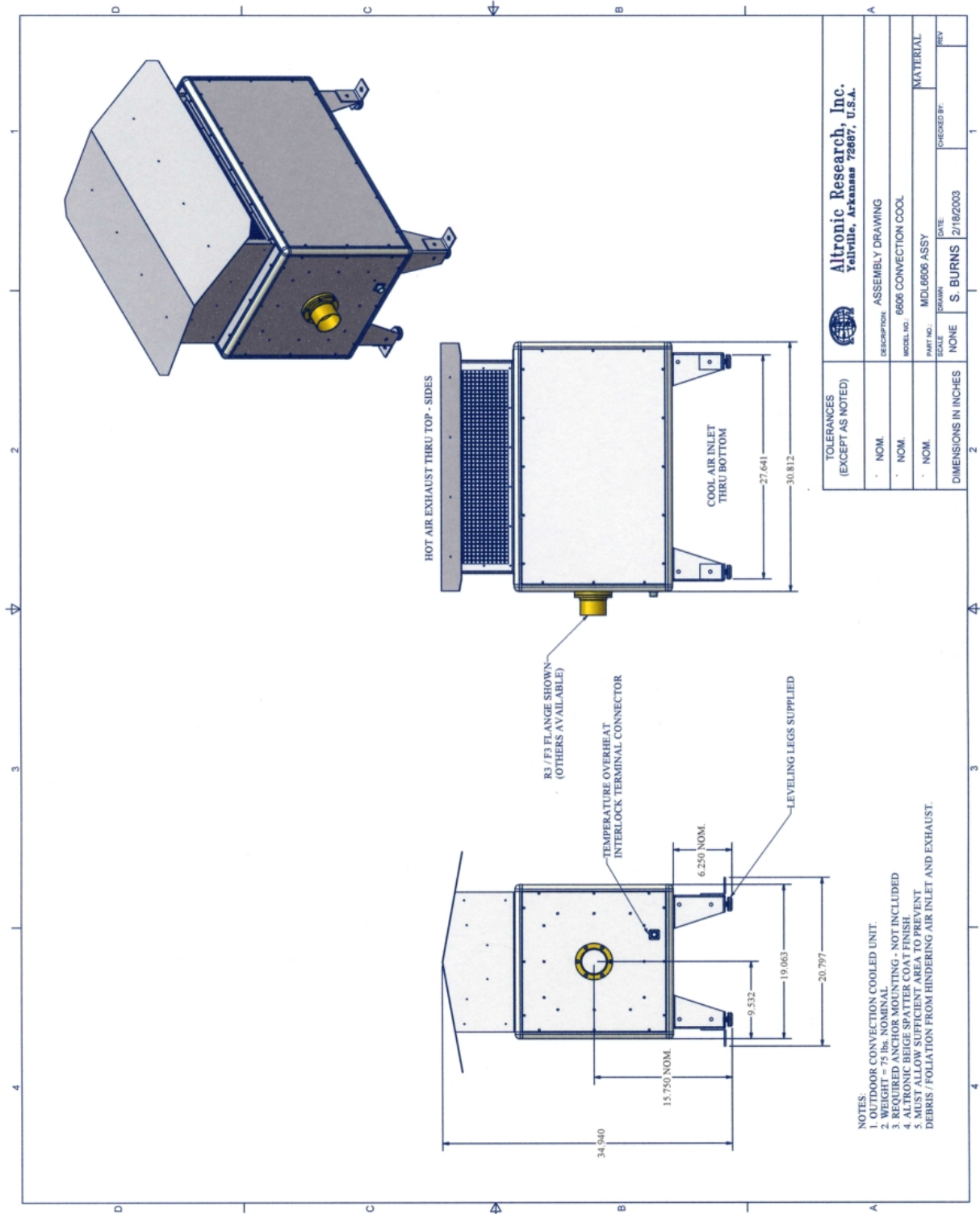


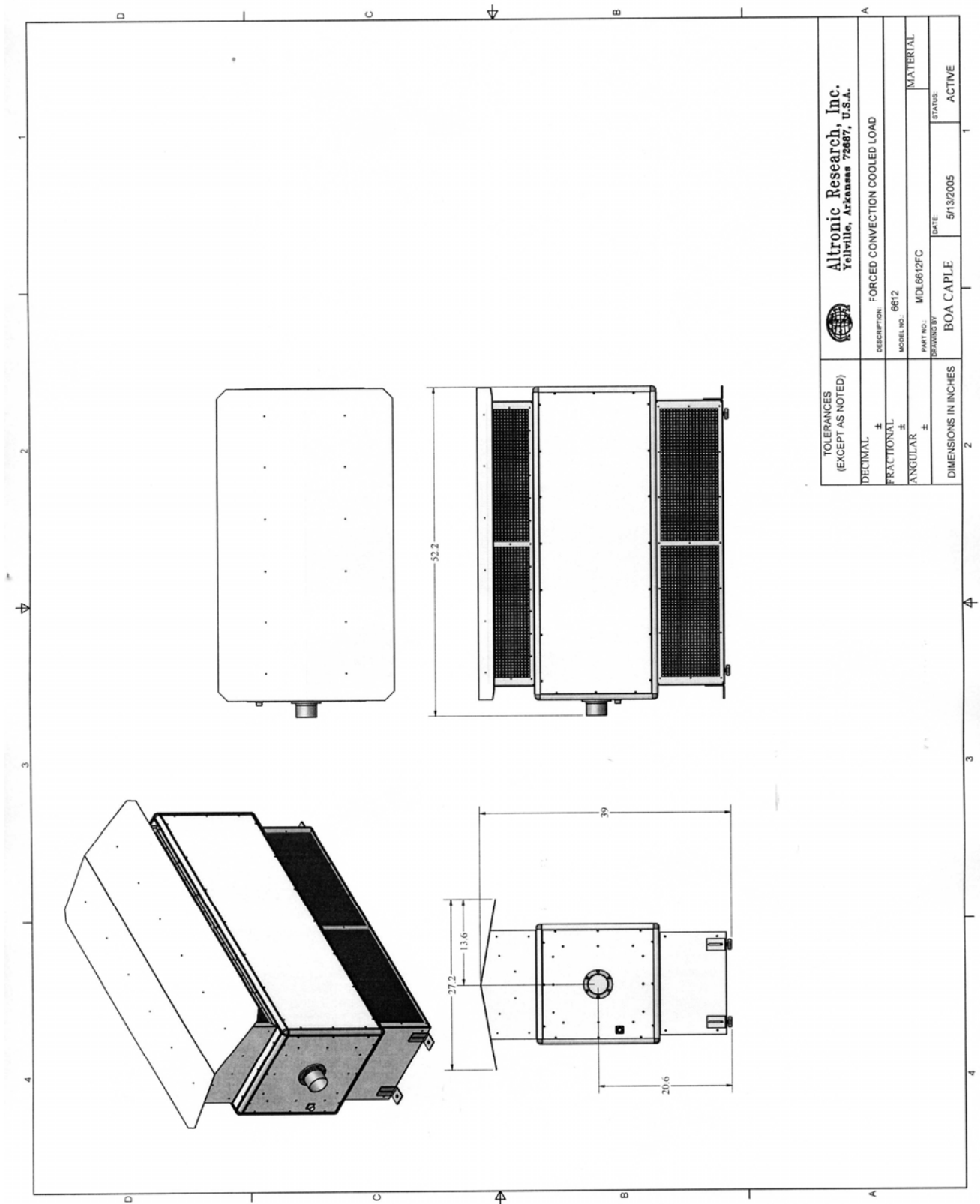
Fig. 11

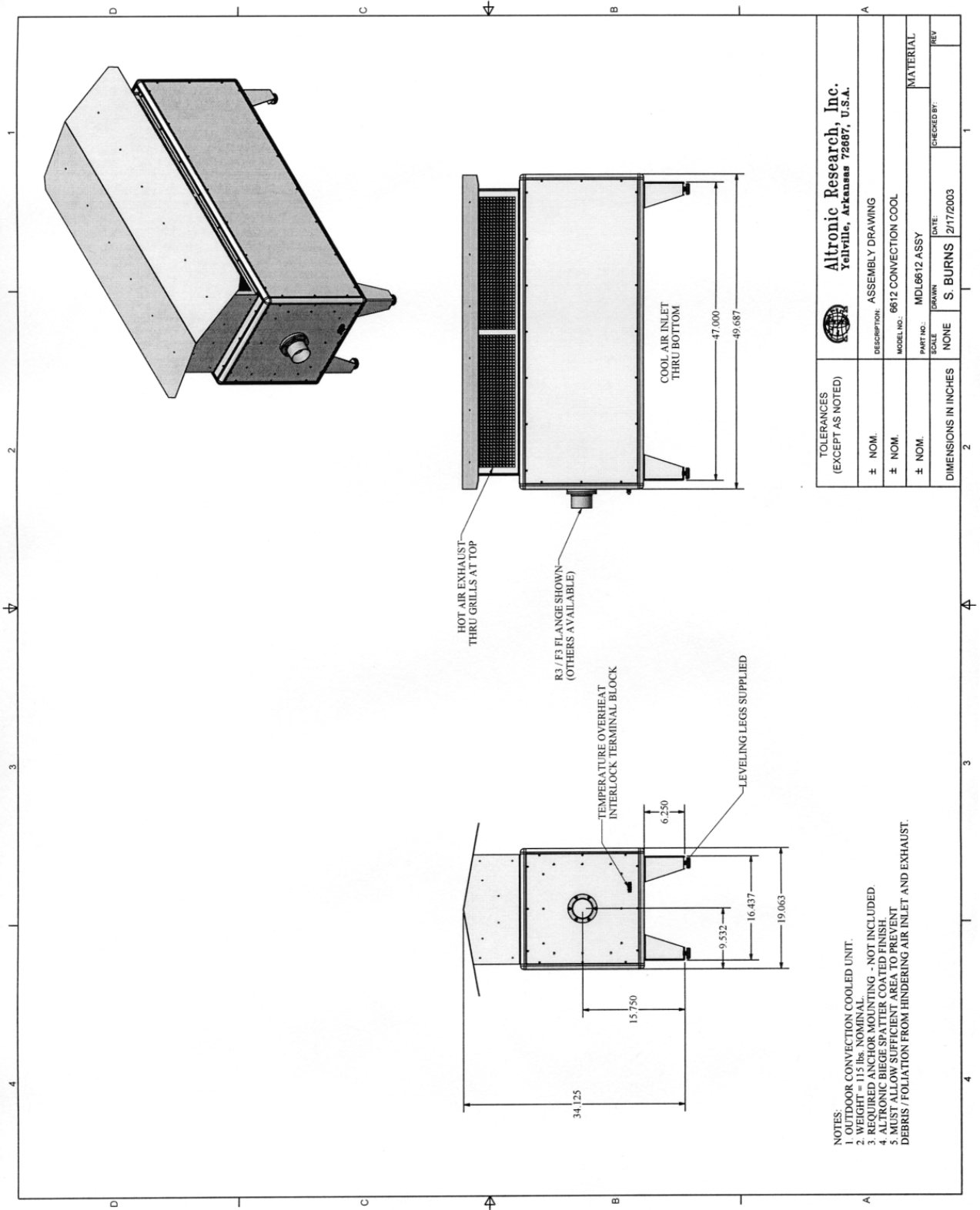
Assembly is done by reversing the process described in this section.

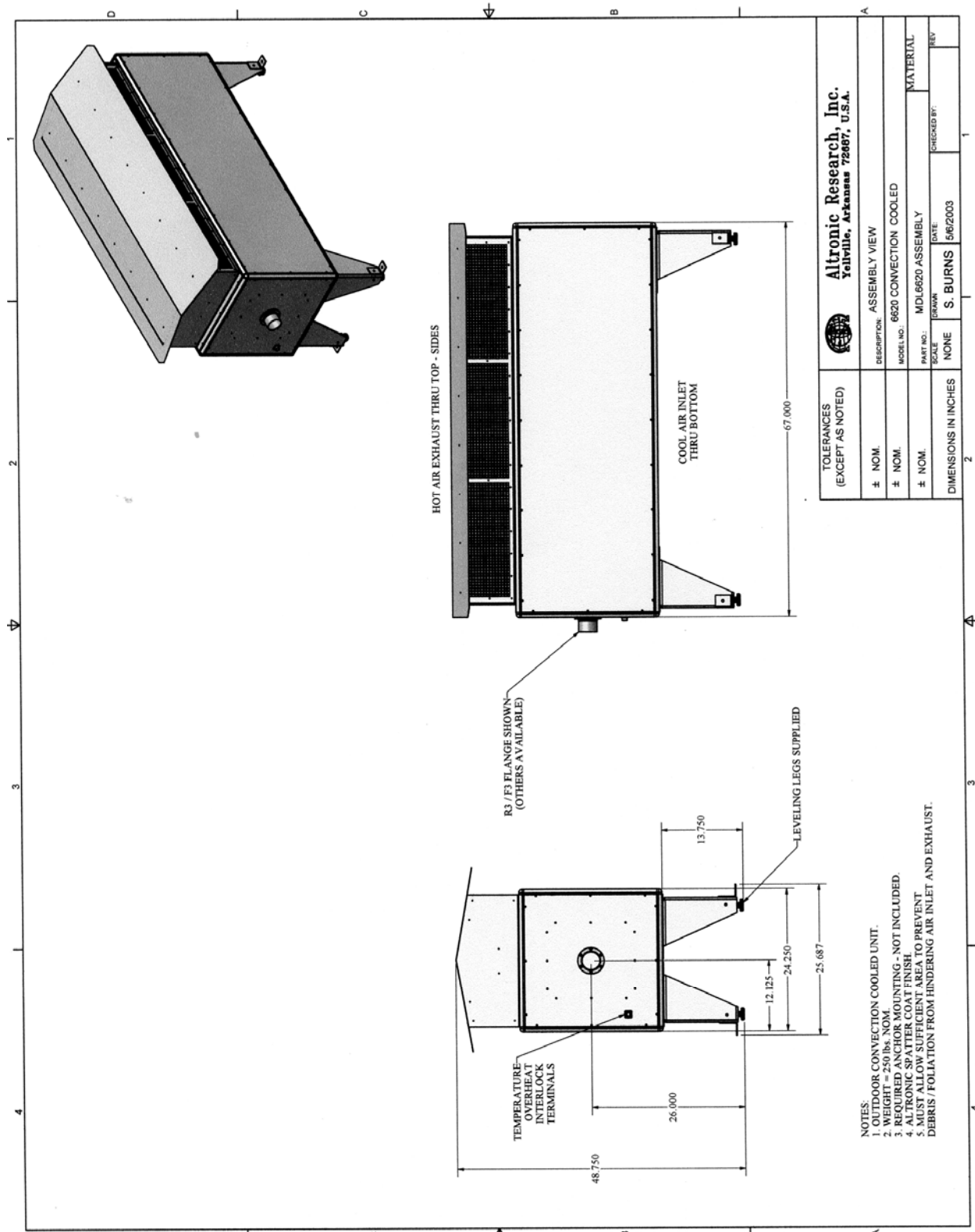
SECTION VI

6-1 OUTLINE AND DIMENSIONS









6-2 REPLACEMENT PARTS LIST

**(CONSULT FACTORY)
CALL 870-449-4093**

When consulting the factory for replacement parts please have the model and the serial number of loads requiring service.

SPECIFICATIONS

Model 6600 Series Coaxial Loads

Impedance ----- 50 ohms nominal

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

Connectors:

Model 6600E1 ----- > 1-5/8" EIA swivel flange

Model 6600F1 ----- > 1-5/8" unflanged flush

Model 6600R1 ----- > 1-5/8" unflanged recessed

Model 6600E3 ----- >3-1/8" EIA swivel flange

Power Rating @ Sea Level----- 6, 12, and 20 KW

Frequency Range ----- DC to 110 MHz

Cooling Method ----- Static air

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

Finish----- durable acrylic finish

Serial No. _____ Frequency _____ Resistance _____ dBA @ 3' 0

Model _____ Inspected by _____ Date _____

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

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

Altronic Research, Inc.

Preservation and Corrosion Prevention Techniques

for

Omegaline 6600 Series RF Loads

Improving product life in hostile environments

1. Purpose

The purpose of this manual is to provide instructions for technical personnel who are required to operate and maintain air-cooled RF loads in hostile environments.

2. Applicability

These instructions are applicable to equipment designed and manufactured by Altronic Research Inc. for use by the broadcast and scientific industries. These instructions do not apply to equipment manufactured by others which may, from time-to-time, be supplied as accessory equipment for use with Altronic Research Inc. loads or systems.

3. General Procedure

The object of any preservation program is to maintain and extend the useful life of the target equipment. The essential elements of the program are:

- A. Preservation of the finish**
- B. Prevention of dissimilar metals corrosion**
- C. Prevention of surface corrosion and pitting**
- D. Resistor maintenance**

The procedures set forth in this manual are the same procedures that one would use to preserve and protect an aircraft exposed to hostile environments. We have consciously copied the basic procedures recommended for aviation because of the similarity of materials and the requirement for active intervention to prevent damage.

In many cases, the remedy prescribed will be the same regardless of the material. The primary emphasis in any corrosion prevention program is cleanliness. When components are clean and dry, they do not corrode.

It is important for the technician to understand that the chemicals and procedures prescribed are the minimum satisfactory measures. It may be necessary to alter the frequency of application in order to obtain satisfactory control. Therefore, frequent inspections of the equipment are recommended until the operator has experience with the equipment and site conditions and can predict with some accuracy the need for preventive measures.

4. Safety Precautions

This equipment presents an extreme hazard to technicians and mechanics if it is not properly prepared for servicing. Prior to any attempt to work on this equipment, take the following safety precautions:

- a. Disconnect or lockout all sources of RF energy**
- b. Prepare a safe area to receive the roof and panels from the load.** [These assemblies are lightweight and subject to being blown about. Lay them flat while they are detached from the load.]

5. Specific procedures

A. Preservation of the finish.

This equipment is finished with a durable semi-gloss enamel paint system applied over a pretreated surface. The finish is very durable and needs only regular washing to maintain its appearance and corrosion protection properties. There is no advantage to using strong detergents on the finish. We recommend that products suitable for washing an automobile be used at the dilution recommended by the manufacturer.

In the event that the finish of the load has been mechanically damaged, it will be necessary to prepare the surface and recoat it. We recommend that this procedure be undertaken by a person who has dealt with corrosion on aircraft surfaces.

- a. Clean the surface to be repaired. Use fresh water and mild detergent to remove all traces of sand, salt or oil.
- b. Lightly sand the damaged area with 360 grit wet or dry silicon carbide paper. Use care to feather all edges of broken paint. Never use steel wool, a steel brush, jeweler's rouge or emery abrasives for this step.
- c. Some areas may have progressed to a stage where pitting is evident. Pits should be treated with a phosphoric acid base corrosion removing compound and thoroughly cleaned prior to conversion coating and painting. Use MIL-C-10578D Compound, Corrosion Removing and Metal Conditioning, Type IV in accordance with the included instructions. Available from Altronic Research, Inc. [Part Nr. 000-77000-CCR].
- d. Clean the surface again.
- e. Use Gardobond EPP pretreatment (formerly called Permatreat EPP) available from the factory or www.ChemetallOakite.com to prepare the surface of the metal for new paint. Ensure that the directions are followed and that excess product solution is properly disposed of.
- f. Allow the conversion coating to air dry, then wipe the surface with a clean cotton towel.
- g. The surface is now ready to be painted, if that is required. For areas less than 12 square inches [about 80 square centimeters], it is best to brush the paint on the surface. Use a single coat and allow it to air dry for ~2 hours before handling. In cold or damp conditions, the paint may require much longer to dry fully. We do not recommend application of paint or conversion coating when the temperature of the surface is less than 50°F [15°C].
- h. Paint which matches the finish and color of the load is available from the factory. Order Paint, Modular Ivory, Touchup [Part Nr. 000-77000-PNT].

B. Prevention of dissimilar metals corrosion

This is a matter that was addressed in the design of the load to the extent possible. There are areas where dissimilar metals are necessarily in close proximity, if not in contact. These areas need more frequent attention, including regular washings and treatment with a moisture-displacing corrosion preventive compound. These areas are: the resistor clip/resistor interface, the resistor clip/mounting strip interface, the RF conductor/load face panel interface and the RF conductor/RF connector center conductor interface.

- a. Make unit safe for servicing in accordance with paragraph 4 above.
- b. Remove the roof and top panel from the load and stow them safely.
- c. Wash entire unit inside with potable water. Pay particular attention to the resistor strips.
- d. Allow the inside of the unit to completely dry.
- e. Spray the resistor ends, the resistor clips and the RF conductor attachments with "Boeshield T-9®".

- f. Allow the T-9® to air dry, then replace louvers.

C. Prevention of surface corrosion and pitting

Generally, this process is devoted to maintaining the integrity of the finish on the load components. Surface corrosion and pitting are the result of electrolytic cells on the surface of the material. These cells are usually composed of mineral or metallic contaminants, moisture and the base metal. There must be a break in the surface finish for a cell to be established. The paint system prevents cell establishment by encapsulating the metal underneath it. A zinc-chromate conversion coating prevents corrosion by reacting with the upper layer of the metal and “passivating” it. The process of passivation is basically one of capturing all of the metal ions which might react with contaminants and moisture to form a cell. The conversion coating is not a sacrificial element, but instead one which forms a very thin layer of non-reactive metal on the surface of exposed material. Any break in the non-reactive layer will quickly allow corrosion attack.

Prevention of corrosion attack on the surface of metals requires cleanliness and denial of access to the metal underneath the finish. It is obvious that this requires cleaning, inspection and prompt treatment of problem areas.

- a. Inspect the exterior of the load, especially seams, crevices and the area around bolt heads. Look for white deposits which may indicate the presence of corrosion. Use a soft brush, similar in stiffness to a toothbrush, to brush away any deposits found. Examine the freshly brushed area for signs of failure of the conversion coating or the paint.
- b. If any failed areas are found, treat them in accordance with paragraph 5A.

D. Resistor Maintenance

During the course of operation of the load, the contact between the ends of the resistors and the clips may deteriorate. This problem has only been reported in situations where corrosive atmospheric conditions prevail. We have applied extra metallization to the ends of the resistors in this load and do not expect this to be a problem. However, the user should be aware of the nature of the problem, the probable indications of the problem and the solution.

- Since this is a contact degradation problem, the usual indication is some degree of arcing in the resistor bank. This is very modest arcing and may go unnoticed for some time. For this reason, it is good practice to periodically observe the operating load, especially if it is possible to do so in low light conditions.
- Look for arcs, and even if intermittent, attempt to identify their location. It will be necessary to investigate further to determine the extent and nature of the problem,
- The solution is to remove the resistors and return them to the factory for reprocessing. If the condition is discovered early in the failure, there is every likelihood that all of the resistors can be reused. If the failure is allowed to progress, resistor replacement becomes necessary.

6. *Materials*

a. Compound, Corrosion Removing and Metal Conditioning, Type IV [P/N 000-77000-CCR]

This is a kit of the materials required to clean pits and larger areas of physical damage. The kit contains 250ml of compound, an assortment of corrosion removal brushes and acid application brushes, 360 grit silicon carbide abrasive paper and a supply of paper towels. Instructions are enclosed in the kit.

b. Gardobond EPP Pretreatment (formerly called Permatreat EPP)

This product is available from the factory or at www.ChemetallOakite.com.

c. Boeshield T-9®

This is a preservative compound which dries to leave a waxy surface film. It is available directly from the manufacturer PMS Products, Holland, Michigan, USA. The Sales Department telephone number is 800-962-1732.

7. *Factory Assistance*

The technicians at the factory are always available for advice and assistance. You may contact them via FAX, e-mail or telephone. Our numbers are:

FAX 001-870-449-6000

E-mail customerservice@altronic.com

Telephone: US WATS = 800-482-5623

Direct dial: 001-870-449-4093