

# S6161-MX-FSE-010

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## TECHNICAL MANUAL OPERATION AND SERVICE MANUAL MODEL NUMBER 56319

# WELL, HOT FOOD STORAGE, ELECTRIC



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**CHANGE RECORD**

<b>CHANGE NO.</b>	<b>DESCRIPTION OF CHANGE</b>	<b>CHANGE DATE</b>



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## SAFETY SUMMARY

**GENERAL SAFETY NOTICES** The following general safety notices supplement the specific warnings and cautions appearing elsewhere in this manual. They are recommended precautions that must be understood and applied during operation and maintenance of the equipment covered herein. Should situations arise that are not covered in the general or specific safety precautions, the commanding officer or other authority will issue orders as deemed necessary to cover the situation.

**DO NOT REPAIR OR ADJUST ALONE** Under no circumstances should repairs or adjustment of energized equipment be attempted alone. The immediate presence of someone capable of rendering aid is required. Before making adjustments, be sure to be protected against grounding. If possible, adjustments should be made with one hand, with the other hand free and clear of equipment.

**TEST EQUIPMENT** Make certain test equipment is in good condition. If a test meter must be held, ground the case of the meter before starting measurement; do not touch live equipment or personnel working on live equipment while holding a test meter. Some types of measuring devices should not be grounded; these devices should not be held when taking measurements.

**POWER SOURCE** Always disconnect power at power distribution source before servicing or replacing parts.



BEFORE USING, BE SURE UNIT IS PROPERLY INSTALLED: SEALED FOR WET USE. (Page 1-1)



BEFORE USING, BE SURE UNIT IS PROPERLY INSTALLED: SEALED FOR "WET" USE. (Page 1-2)



BE SURE LINE SWITCH IS CLOSED BEFORE TURNING THERMOSTAT CONTROL(S) ON WHEN EQUIPMENT IS TO BE USED. (Page 1-2)



ALTHOUGH YOUR FOOD WARMING RECEPTACLE IS MADE OF 302 STAINLESS STEEL, USE CARE DURING THE CLEANING OPERATION. HEAVY OBJECTS MUST NOT BE DROPPED INTO THE RECEPTACLE. (Page 1-3)





DISCONNECT ALL POWER TO HOT FOOD WELL PRIOR TO MAINTENANCE. (Page 1-3)



DISCONNECT ALL POWER TO HOT FOOD WELLS PRIOR TO ANY REPAIRS OR REPLACEMENT OF PARTS. (Page 1-3, page 1-5, page 1-5, page 1-6)



DISCONNECT ALL POWER TO THE TABLE BEFORE PERFORMING ELECTRICAL MEASUREMENTS WITH AN OHMMETER. (Page 1-4)



Service personnel authorized to evaluate an individual unit not performing properly should first check voltage levels at the power source, using a voltmeter in accordance with accepted practices. (Page 1-4)



DISCONNECT ALL POWER TO THE WELL BEFORE PERFORMING ELECTRICAL MEASUREMENTS WITH AN OHMMETER. (Page 1-4)



DEVICE MUST BE GROUNDED IN ACCORDANCE WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE OR APPLICABLE LOCAL CODES. (Page 1-7)

**OPERATION AND SERVICE MANUAL WELL, HOT FOOD STORAGE, ELECTRIC**

PER: MIL-W-43896-A

27 DECEMBER 1983

CONTRACT NO: DLA400-07-C-2744

NSN: 7310-01-206-1081

WELL, HOT FOOD STORAGE, ELECTRIC

VOLTAGE: 115 VOLTS, 60 CYCLES, SINGLE PHASE

WATTS: 1500

AMPS: 13

MODEL NO: 56319

APPROVED: 16 NOV 88

## CHAPTER 1

### OWNERS INFORMATION:

Steam table odor and wasted heat are reduced in your new food warming receptacle. Used either wet (if receptacle has been sealed) or dry, the stainless steel receptacle is insulated on all sides to keep the top of your hot food table cool and save power. A single thermostat control and signal light can be mounted in any convenient location or grouped into a control panel with other receptacle controls. The thermostat dial provides a complete range of settings for holding foods at the most desirable serving temperatures. For fast and convenient replacement, a single heating unit is clamped to the bottom of the receptacle.

### OPERATION:

Since your food warming receptacle is designed for warming or holding pre-cooked food, it will not over-cook food when properly used. There are three ways of maintaining hot food in the receptacle: dry heating, steam heating, or hot water heating.

### DRY HEATING:

1. With the control at Number 10 position, allow the receptacle to preheat, covered for 60 minutes.
2. Place food in inserts or pans; place inserts or pans in receptacle. Set control at the position that keeps the food at your desired temperature. Keep the food covered when not serving.

### STEAM HEATING:

1. Place a few quarts of cold water or hot water (for faster preheat) into the receptacle.
2. To preheat set the thermostat to Position 10 and cover the receptacle with a food pan or other cover until water boils.
3. Place food in inserts or pans and place inserts or pans in receptacle. Keep the food covered when not serving. Adjust the thermostat to any desired degrees after boiling is achieved.



BEFORE USING, BE SURE UNIT IS PROPERLY INSTALLED: SEALED FOR WET USE.

### HOT WATER HEATING:

1. Fill the receptacle with hot water to a depth so that the food container is in contact with the water.
2. Set the thermostat to Position 10 and cover the receptacle with a food pan until the water boils.
3. Place food in inserts or pans and place inserts or pans in receptacle. Keep the food covered when not serving. Adjust the thermostat to any desired degrees after boiling is achieved.



**NOTE**

WITH STEAM AND HOT WATER HEATING, THE DRYING OF FOOD IS MINIMIZED BECAUSE THE ESCAPING WATER VAPOR FROM THE RECEPTACLE CREATES HUMID AIR OVER THE FOOD.



**WARNING**

BEFORE USING, BE SURE UNIT IS PROPERLY INSTALLED: SEALED FOR "WET" USE.

**THERMOSTAT:**

The steel, zinc-trim plated thermostat bulb is clamped to the underside base of the receptacle. A capillary tube extends to the thermostat control. Whenever the heating unit is energized, the pilot light glows and goes off when the preset temperature is reached. The cycling of the thermostat is therefore indicated by the signal light.

**SHUTDOWN:**

At the end of the day or food serving period, turn the thermostat control(s) to the OFF position. This removes all power to the unit(s). To shut off the equipment for long periods of time or prevent unauthorized use, open the line switch that controls the power to the hot food well(s).



**WARNING**

BE SURE LINE SWITCH IS CLOSED BEFORE TURNING THERMOSTAT CONTROL(S) ON WHEN EQUIPMENT IS TO BE USED.

**MAINTENANCE INSTRUCTIONS:**

When the food warming receptacle is used dry, food spillage on the hot surfaces will burn and stick. The same commercial cleaners used on your stainless steel kitchen utensils may be used to clean the receptacle. Wash the interior surfaces with water and a detergent to remove mild discolorations. Rinse with plain water and dry with an absorbent cloth.

The bottom of the receptacle may take on a straw-colored appearance when used dry. This is due to the heat, which causes the stainless steel to discolor. This discoloration will not come off with normal cleaning procedures, but it poses no problem.



ALTHOUGH YOUR FOOD WARMING RECEPTACLE IS MADE OF 302 STAINLESS STEEL, USE CARE DURING THE CLEANING OPERATION. HEAVY OBJECTS MUST NOT BE DROPPED INTO THE RECEPTACLE.

If your food warming receptacle is used wet, all surfaces are covered with a film of water. Food spillage into the receptacle will not stick or carbonize, but will drop into the water and float or settle to the bottom. To clean the receptacle, remove the water with a suitable container and sponge out the rest. Wash the receptacle with a detergent and hot water, rinse, and dry.

To clean the thermostat knob, pull it outward to remove it from the shaft. Wash the knob with a mild soap and water, rinse, and dry with a soft cloth. Do not use abrasive cleaners on the plastic surface.



DISCONNECT ALL POWER TO HOT FOOD WELL PRIOR TO MAINTENANCE.

#### **TROUBLESHOOTING:**

Permanently installed in the hot food serving table, the food warming receptacle(s) consists of a rectangular stainless steel hot food well. A single heating unit is clamped to the underside of the receptacle, which is controlled by a separately mounted thermostat. When the thermostat is turned from the OFF position, the signal light comes on and the heating unit is energized. Upon reaching the desired temperature, the thermostat opens the circuit, the signal light goes off, and the heating unit is de-energized. This cycle is repeated automatically whenever the thermostat is turned ON.

Electrically, your food warming receptacle is a relatively simple device designed for many years of trouble free service. If the unit does not heat when the thermostat is turned from the OFF position, check for an open power switch or burned out fuse. Continued in-operation would indicate possible troubles in the thermostat or heating unit. If the unit heats properly but the pilot light does not come on, this indicates a burned out lamp, which should be replaced.



DISCONNECT ALL POWER TO HOT FOOD WELLS PRIOR TO ANY REPAIRS OR REPLACEMENT OF PARTS.

#### **TROUBLE SHOOTING GUIDE**

<b>SYMPTOM</b>	<b>LIKELY CAUSE</b>	<b>SUGGESTION ACTION</b>
No heat	1. Thermostat defective	1. Measure voltage across thermostat connections
	2. Heater open	2. Measure heater lead resistance
	3. Heater grounded	3. Measure heater lead resistance

SYMPTOM	LIKELY CAUSE	SUGGESTION ACTION
	4. No power	4. Measure source voltage
Not enough heat	1. Thermostat calibration	1. Recalibrate
No pilot light	1. Bulb burned out	2. Check for continuity with ohmmeter



DISCONNECT ALL POWER TO THE TABLE BEFORE PERFORMING ELECTRICAL MEASUREMENTS WITH AN OHMMETER.

### HEATING UNIT DIAGNOSTICS:

TOOLS REQUIRED: Voltmeter, thermometer, small blade (.125 inch, .32 cm) long shaft slotted screwdriver, and acceptable instrument grade, non-toxic residue solvent and glue for shaft adjustments.



Service personnel authorized to evaluate an individual unit not performing properly should first check voltage levels at the power source, using a voltmeter in accordance with accepted practices.

If a well fails to reach the final temperatures, the likely causes are a malfunctioning heater or thermostat, assuming all connections are secure within the table.

1. Unit circuit resistance should be 9.6 ohms measured with an ohmmeter at the heater wires labelled H1 and H2. An infinite reading indicates a break in the heater's resistance wire. A low or short reading between either H1 or H2 and any part of the unit chassis indicates failed circuit integrity. If the unit circuit resistance fails to be 9.6 ohms, replace the Heater and heater lead wiring. Directions are provided below.
2. Unit circuit resistance readings taken with an ohmmeter across the line terminals for a good reading at "off" should be infinite. When the thermostat shaft is turned to an "on" position, a ohms reading should result, assuming step 1 indicated a normal heater resistance. If the thermostat, acting as a switch, fails to yield a normal reading past the number "5" position, the thermostat should be replaced.



DISCONNECT ALL POWER TO THE WELL BEFORE PERFORMING ELECTRICAL MEASUREMENTS WITH AN OHMMETER.

**DISASSEMBLY/REASSEMBLY OF HOT FOOD WELL:****HEATER REPAIR/REPLACEMENT INSTRUCTIONS:**

STEP 1: Separate the thermostat control housing (which is tied by its capillary tube into the heated zone) from the cabinet by removing and retaining the pilot light and hardware.

STEP 2: Disconnect and label the input power leads coming from the contactor output. Disconnect the drain line's two uppermost unions from the well drain lines to separate the well from the manifold plumbing.

STEP 3:

- A. Using a slotted screwdriver or 1/4 inch socket wrench, remove and retain the 8 screws and bottom inspection plate.
- B. Remove and retain the six 3/8 inch sheet metal nuts securing the reflector pan to the well receptacle bottom. Remove the reflector pan with heater, heater leads and ground plus capillary bulb away from the well. Unscrew the two heater lugs and retain the screws. Using pliers, bend tabs holding the heater to the reflector to free the heater.
- C. Clamp new heating element to the reflector pan using pliers to reform the tabs holding the element and reverse parts (c) through (a) of step 3 as well as steps 2 and 1 described above.



DISCONNECT ALL POWER TO HOT FOOD WELLS PRIOR TO ANY REPAIRS OR REPLACEMENT OF PARTS.

**THERMOSTAT REPAIR/REPLACEMENT INSTRUCTIONS:**

1. Repeat step 1 and step 3 (a) described above for HEATER REPLACEMENT to expose the capillary bulb and the rejecter pan. Using pliers, deflect the two crimp tabs clamping the bulb to the reflector pan to loosen the bulb
2. Pull the capillary and thermostat housing out of the heated well assembly. Route a replacement thermostat housing into the well assembly along the path followed by the original thermostat and using pliers, secure the capillary bulb to the reflector pan.
3. Reverse step 3 and step 1 for HEATER REPLACEMENT.



DISCONNECT ALL POWER TO HOT FOOD WELLS PRIOR TO ANY REPAIRS OR REPLACEMENT OF PARTS.

## **PILOT LIGHT REPAIR/REPLACEMENT INSTRUCTIONS:**

1. Remove front control panel held in by four screws. Separate panel from front of counter. Squeeze the barrel tabs of the snap-in-place pilot light from behind panel to separate the lamp from the bezel and disconnect the lamp lens.
2. Install new pilot light and reverse the steps of 1 above.



**DISCONNECT ALL POWER TO HOT FOOD WELLS PRIOR TO ANY REPAIRS OR REPLACEMENT OF PARTS.**

## **PACKAGING:**

Each food warming receptacle is shipped completely assembled with insulation, heating unit, and thermostat control box. Two wires and thermostat capillary tube are provided so that the control can be mounted in any convenient location. Inspect the unit for possible damage during shipment.

## **RECEPTACLE MOUNTING - GENERAL:**

The deep drawn, single piece stainless steel pan is recessed in an opening 13 1/2" by 21-3/8" in the table top. It is held in position by machine screws around the upper edge of the receptacle. For multiple installations, the receptacles are separated by at least 4 1/4" of space and are mounted at least 4" from the front wall of the table.

The receptacle is mounted on the underside of metal table top, using hardware supplied. When cutting openings in the table top for multiple receptacles, leave at least 4 1/4" separation between openings and at least 4" between each opening and the front wall of the table.

The receptacle is insulated on all four sides and the bottom. A cover is held in place by (8) hex sheet metal screws on the bottom of the receptacle. It can be quickly removed to provide access to the heating unit and thermostat control bulb. This cover also supports the insulation around the sides and bottom of the receptacle.

The customer or cabinet fabricator must furnish the metal cabinet, metal field wiring compartment for each receptacle, the wire raceway, the cabinet disconnect switch and/or overcurrent protection device, cabinet supply conductors and other small electrical hardware. Factors which influence the sizing of the cabinet supply conductors are the maximum current draw per wire, the wire material, the wire temperature rating and the applicable electrical codes both national and local. Since the maximum value of the overcurrent protection device is limited to 50 amperes per cabinet (branch) line wire, the maximum useful current draw is limited to 37.5 to 40 amperes which limits the quantity of receptacles that can be connected to the same cabinet line wire.

## **THERMOSTAT CONTROL PANEL:**

The thermostat control panel can be mounted in any convenient location withing 24" from the receptacle. Drilling and hole dimensions are shown in Illustration #2. To prevent damage to the capillary tube, coil the excess length around a 2" diameter object in the form of a coil. Store it behind the thermostat in a convenient location away from the electrical connections on the control. Avoid sharp bends.



**OPERATION AFTER INSTALLATION:**

Turn the thermostat to any position other than OFF. The heating unit should energize and the pilot light should now glow. After the preheat period, the thermostat contacts open and the power is removed from the heating unit. The pilot light then goes off. Check several heat cycles with the thermostat in different positions to make sure the equipment is operating properly.

**ELECTRICAL CONNECTIONS:**

Each receptacle is furnished with high temperature, nickel stranded conductors between the heating unit and thermostat and/or the cabinet supply lines. The size of the stranded nickel for a 115 volt receptacle is 12 AWG and for a 208 or 230 volt receptacle is 14 AWG. There is a 6" long pigtail of 14 AWG copper wire on one terminal of the thermostat for making connection to one of the cabinet hot supply lines (normally the line conductor has a black covering) and never the grounded neutral end (normally the line conductor has a white or gray covering). Since the nickel-stranded wire is sized for the load of a single receptacle, it must not be used for the wiring of the cabinet supply lines. **THE QUANTITY OF RECEPTACLE CONNECTED TO ANY ONE LINE FOR SINGLE PHASE OR ANY TWO LINES FOR THREE PHASE MUST NOT REQUIRE THE OVERCURRENT PROTECTIVE DEVICE IN THOSE LINES TO EXCEED 50 AMPS.**



DEVICE MUST BE GROUNDED IN ACCORDANCE WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE OR APPLICABLE LOCAL CODES.

## SPARE PARTS LIST - MODEL 56319

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY EACH ASSY.
1	56321	Stainless steel storage well	1
2	56322	Heater coil	1
3	56527	Thermostat	1
4	56528	Thermostat knob	1
5	56530	Pilot light	1
6	56370	Control panel	1

## ADDRESSES OF VENDORS FOR PARTS

American Permanent Ware Co.  
729 Third Avenue  
Dallas, Texas 75226

WELL, HOT FOOD, STORAGE, ELECTRIC  
MODEL 56319

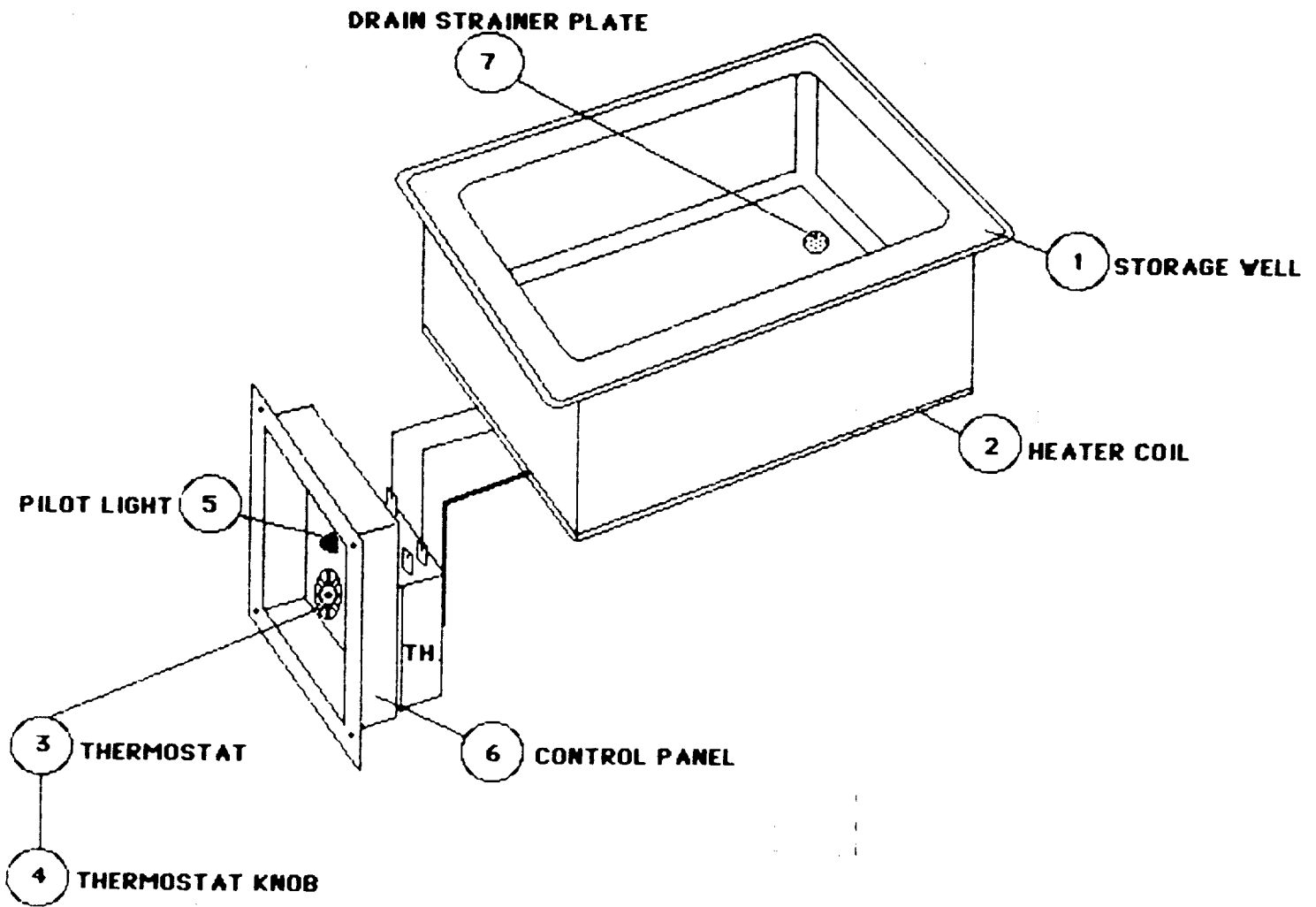
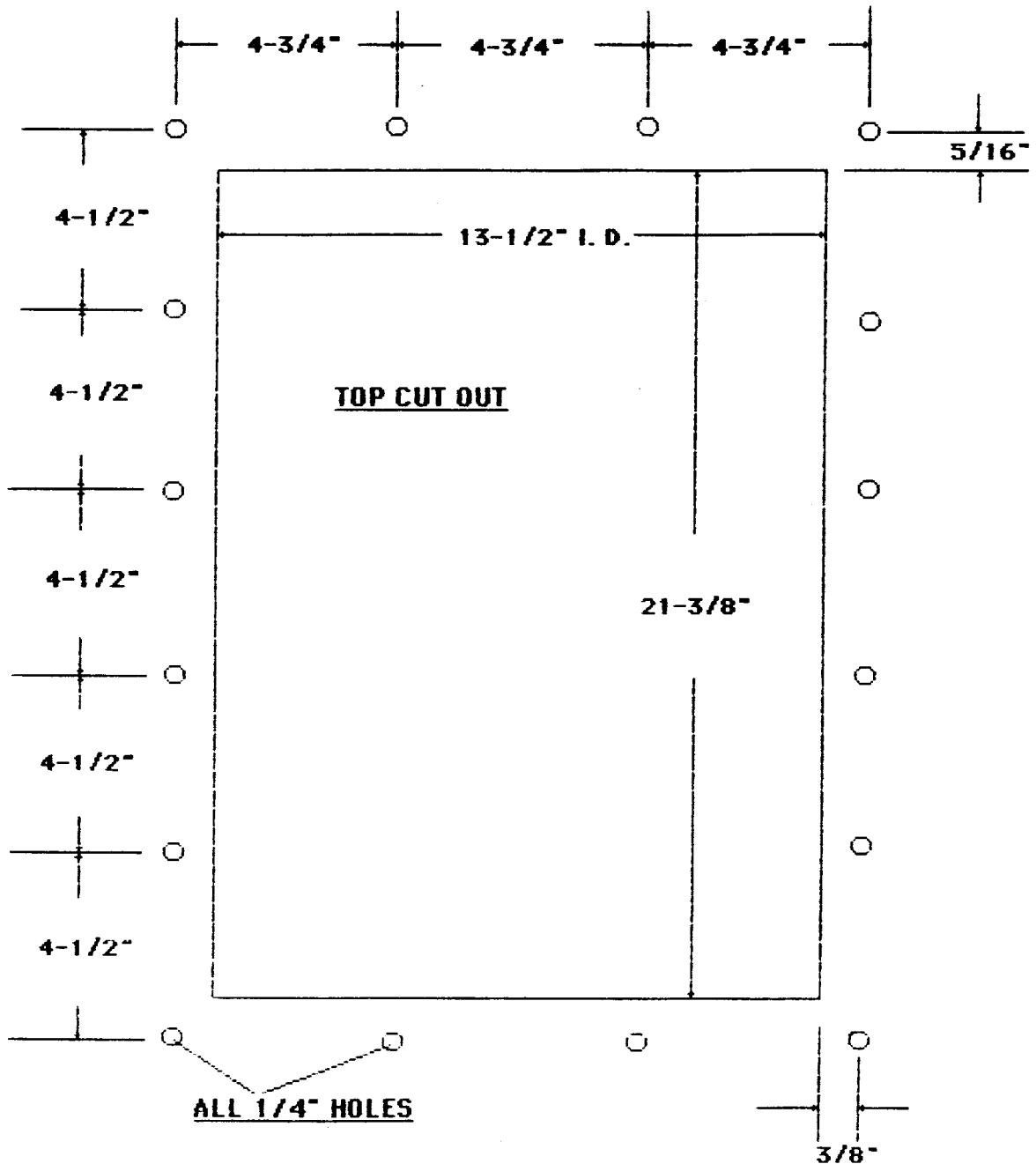


FIGURE 1

Figure 1 WELL, HOT FOOD, STORAGE, ELECTRIC MODEL 56319

**COUNTER HOLE LAYOUT**  
**FOR MODEL 56319**



**ALL WELLS SUPPLIED WITH 16-(10/24) NUTS**  
**AND GASKET FOR MOUNTING TO TOP**

**FIGURE 2**

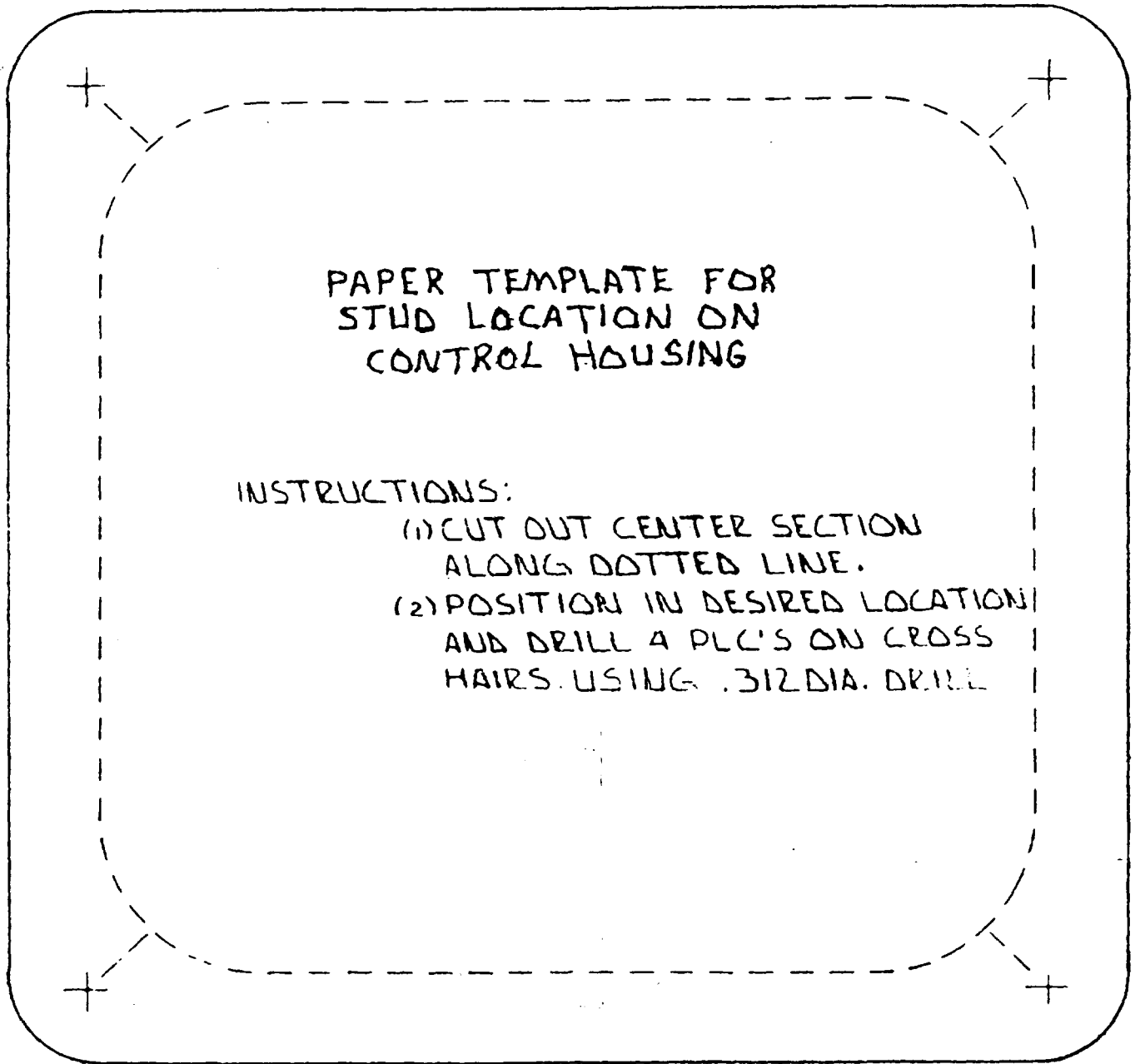


FIGURE 3.

Figure 3 TEMPLATE FOR STUD LOCATION ON CONTROL HOUSING

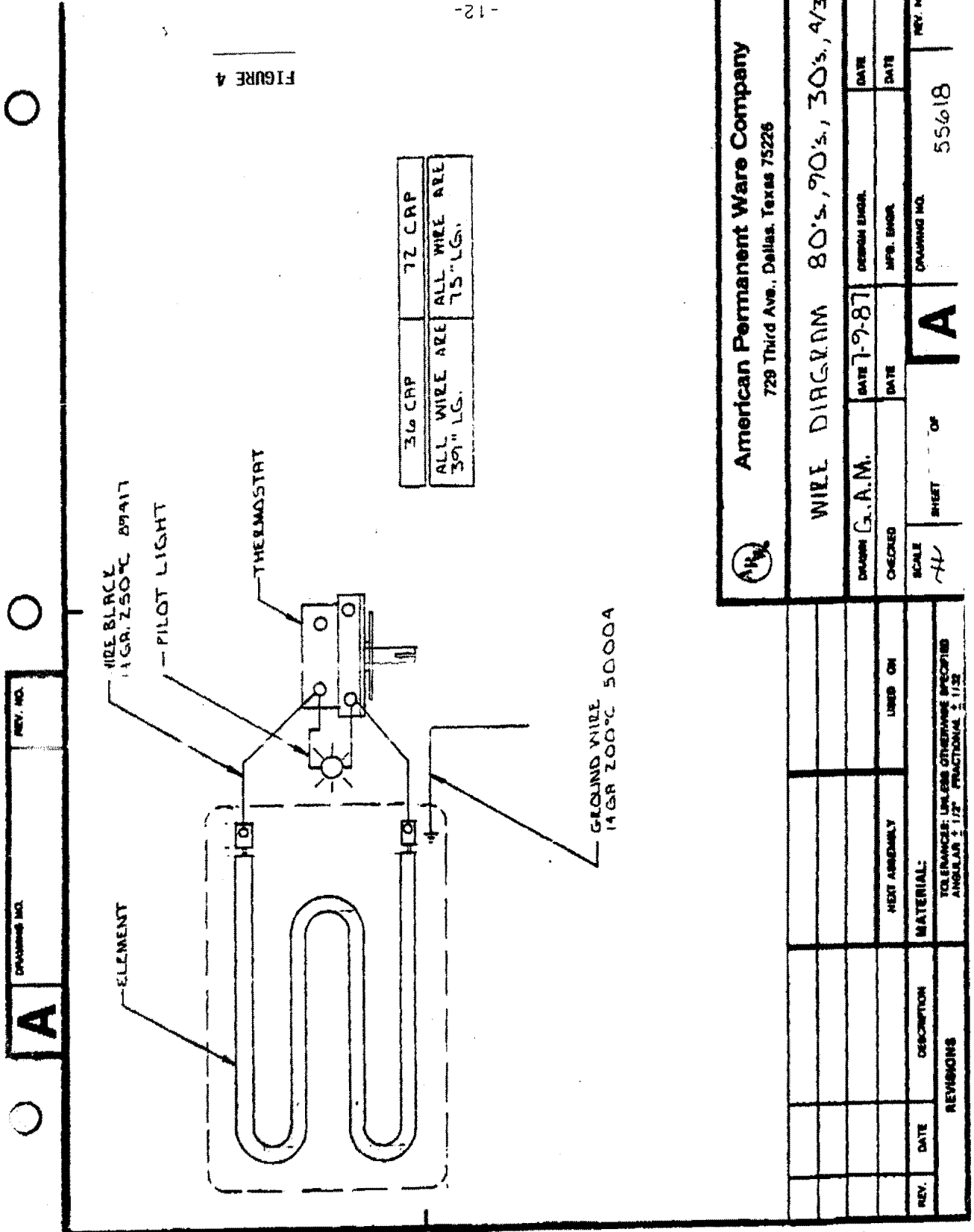


FIGURE 4

FEB 29 '88 14:53 AMERICAN PERMANENT WARE CALLS

Figure 4 WIRING DIAGRAM

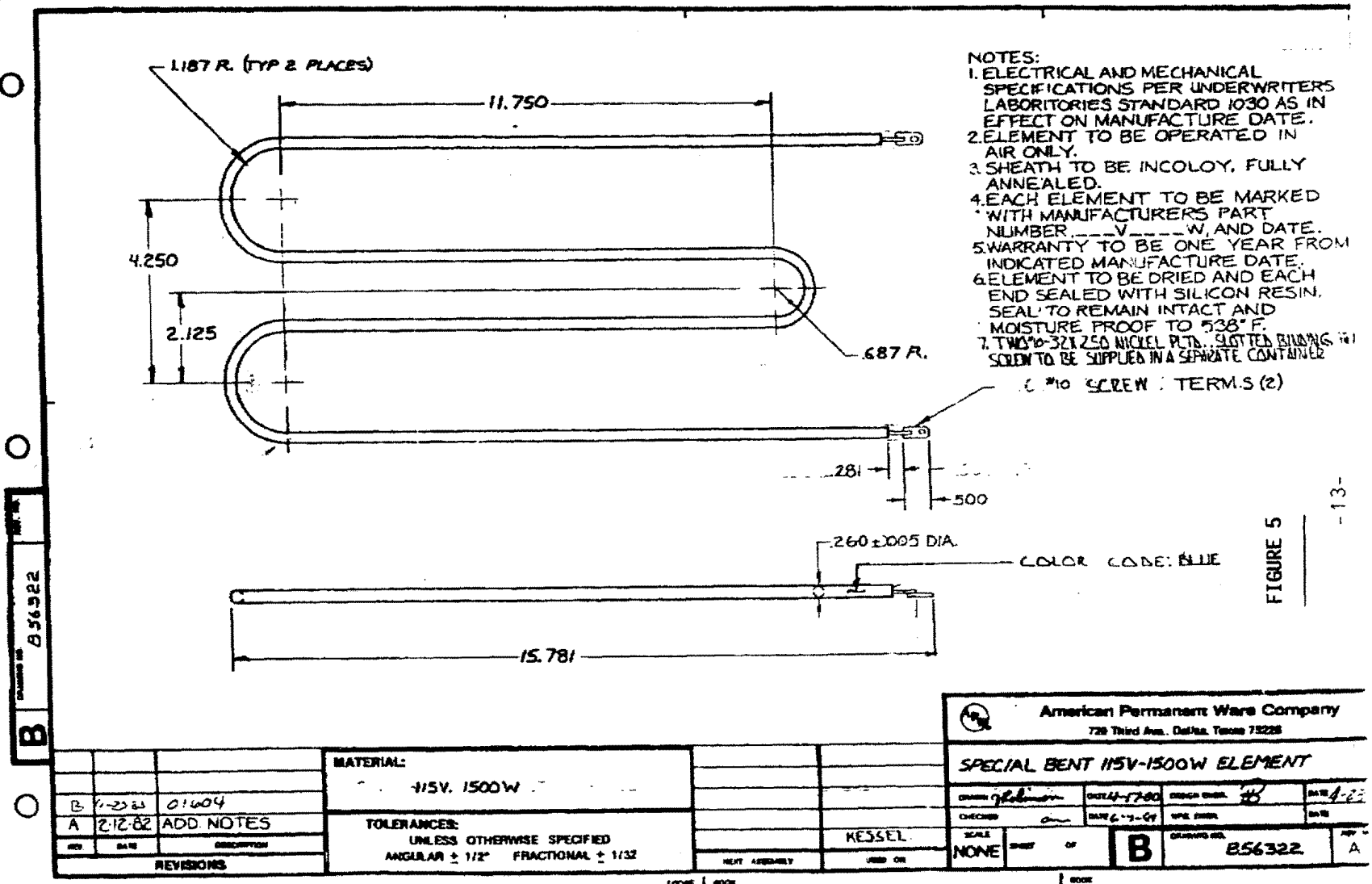


Figure 5 HEATING ELEMENT

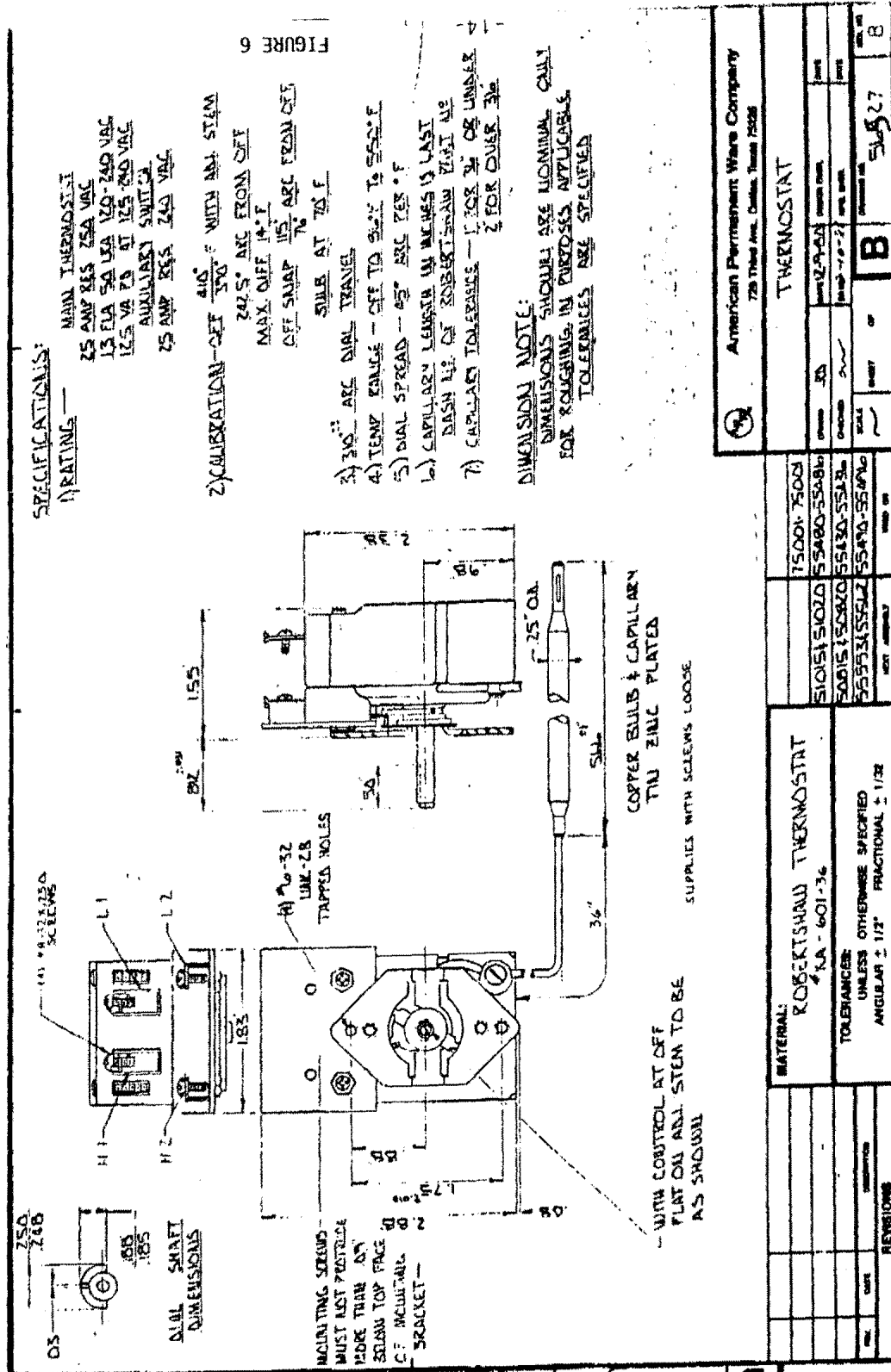


Figure 6 THERMOSTAT

FEB 09 '88 14:52 REPERICAL PERMINT WARE CALLS

## **WARRANTY**

We warrant to the purchaser of each new Food Warmer that any part thereof which proves to be defective in material or workmanship within one year from the date of original purchase, will be repaired or replaced free of charge.

Any defect in such an appliance should be brought to the attention of the company from whom it was purchased, who will be authorized to furnish or arrange for repairs or replacement within the terms of this warranty.

This warranty is expressly in lieu of all other warranties, express or implied, and we neither assume nor authorize any person to assume for us any other obligation or liability in connection with said appliance. This warranty does not apply, and no warranty either express or implied shall be applicable to:

- 1: Damage resulting from accident, alteration, misuse or abuse.
- 2: If the serial number affixed to the appliance by the manufacturer shall be removed, obliterated or defaced.



## NAVSEA/SPAWAR TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)

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