

FM ANTENNA DEICERS

Antenna element heaters are provided in the JSCP, JMPC and JHPC antenna system to prevent a rise in VSWR caused by ice formation on the radiating arms and to eliminate wind loading due to ice build up on the elements. The deicing system does not degrade antenna system VSWR as long as the innerbay SO cord is properly secured to the support structure. NOTE: If high RF levels exist in the antenna array due to multi antennas, the customer may want to provide rigid conduit at his expense to prevent innerbay cord from burning.

The deicing elements are built into the bays during shop fabrication. A complete deicing kit consists of the specially equipped antenna elements (one heater in each arm, plus one heater in the boom), aluminum junction boxes with a short section of flexible conduit at each bay, innerbay 12-2 neoprene jacketed SO cord, wire twist locks and the hardware to install the deicing equipment. A thermostatic switch to control power to the deicers is included if ordered, and should be mounted on the support structure, preferably at the antenna level. Each heating unit operates at 100 watts with 240 volts A.C. applied for a total of 500 watts per bay. For very light icing conditions, the deicing system may be optionally operated at 120 volts A.C.; each bay will then be heated by 125 watts instead of 500 watts. (This mode is not recommended by JAMPRO ANTENNAS, INC.) A center fed antenna system (eight or more bays) should also be center fed for the A.C. supply to the deicing system in order to reduce voltage drops in the innerbay A.C. Cable

A.C. cabling to the antenna system should be chosen to keep voltage losses to a minimum (no more than 15 volts total feed line loss) and to comply with local and national electric codes. Conduit for the A.C. system, which is not included a part of the deicer package, may be required in some localities.

The JI-10 and JI-25 thermostats are designed to turn the deicing system on when the temperature drops through about 32 degrees F (0 degrees C) and off again as the temperature drops through about 20 degree F (-7 degrees C). Thus, power is applied only in the temperature range during which icing normally Occurs. Thermostat wiring details are shown on the page following the deicer junction box hookup drawing (if a thermostat was ordered)

TWO CONDUCTOR COPPER LINE LOSSES FOR DEICERS,
ONE 500 WATT BAY @ 240 V.A.C.

VOLTAGE DROP FOR GIVEN LENGTH/WIRE SIZE												
WIRE SIZE	OHMS/100'	100'	200'	300'	400'	500'	600'	700'	800'	900'	1000'	MAX # BAYS
#4	0.052	0.11	0.22	0.32	0.43	0.54	0.65	0.76	0.863	0.971	1.08	25
#6	0.082	0.17	0.34	0.51	0.68	0.85	1.03	1.20	1.37	1.54	1.71	19
#8	0.128	0.27	0.53	0.80	1.07	1.33	1.60	1.87	2.14	2.40	2.67	14
#10	0.204	0.42	0.85	1.27	1.70	2.12	2.55	2.97	3.39	3.82	4.24	10
#12	0.324	0.68	1.35	2.03	2.70	3.38	4.05	4.73	5.40	6.08	6.75	7
#14	0.514	1.07	2.14	3.21	4.28	5.35	6.43	7.50	8.57	9.64	10.71	5

1. Voltage losses shown are for 240 V.A.C. two wire, per bay.
2. For two or more bays, multiply loss above by number of bays.
3. If total loss exceeds 15 volts, use the next larger size wire.
4. Last column (max. # bays) lists the current carrying capacities (regardless of length) of the various sizes of type TW wires. See National Electric Code for further details, other wire types. Heating use taken into account.

The following information is supplied for troubleshooting most deicing failures of a Jampro antenna system.

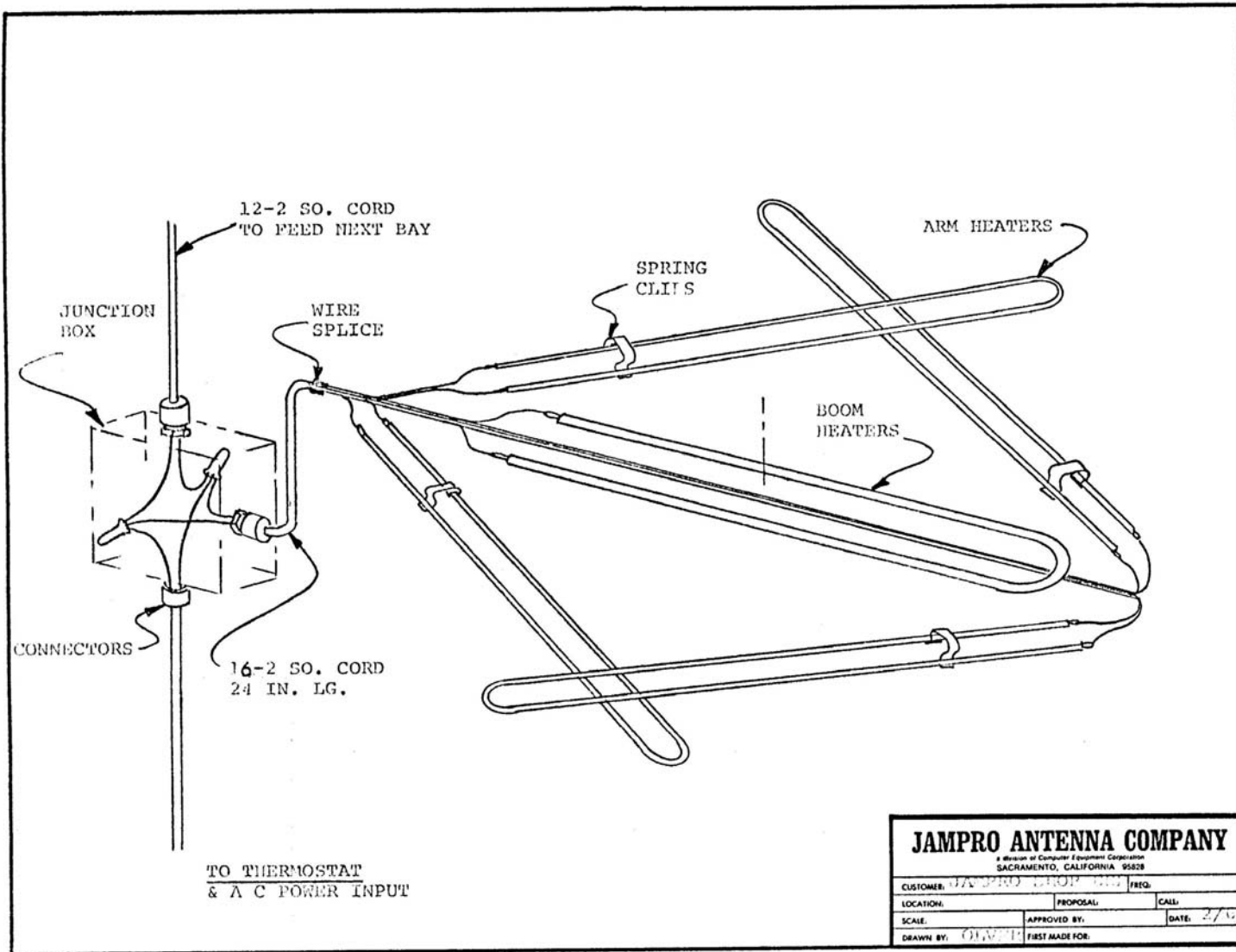
The resistance measured at 24 degrees C of one arm heater is 545 ohms +/- 10 ohms and the resistance of one boom heater is 560 ohms +/- 20 ohms. Once power is applied for several minutes the resistances of the arm and boom elements will rise by approximately 1% of the cold DC resistance. As an example the resistance of an arm heater at 24 degrees C was measured to be 540 ohms. After 240 volts AC was applied for 10 minutes the heater's resistance climbed to 545 ohms at 66 degrees C. This change can be neglected when troubleshooting the heater circuits in the field.

Considering just one bay with the five internal heaters connected in parallel the DC resistance should be approximately 110 ohms. The following table lists approximate DC resistance values measured for one bay.

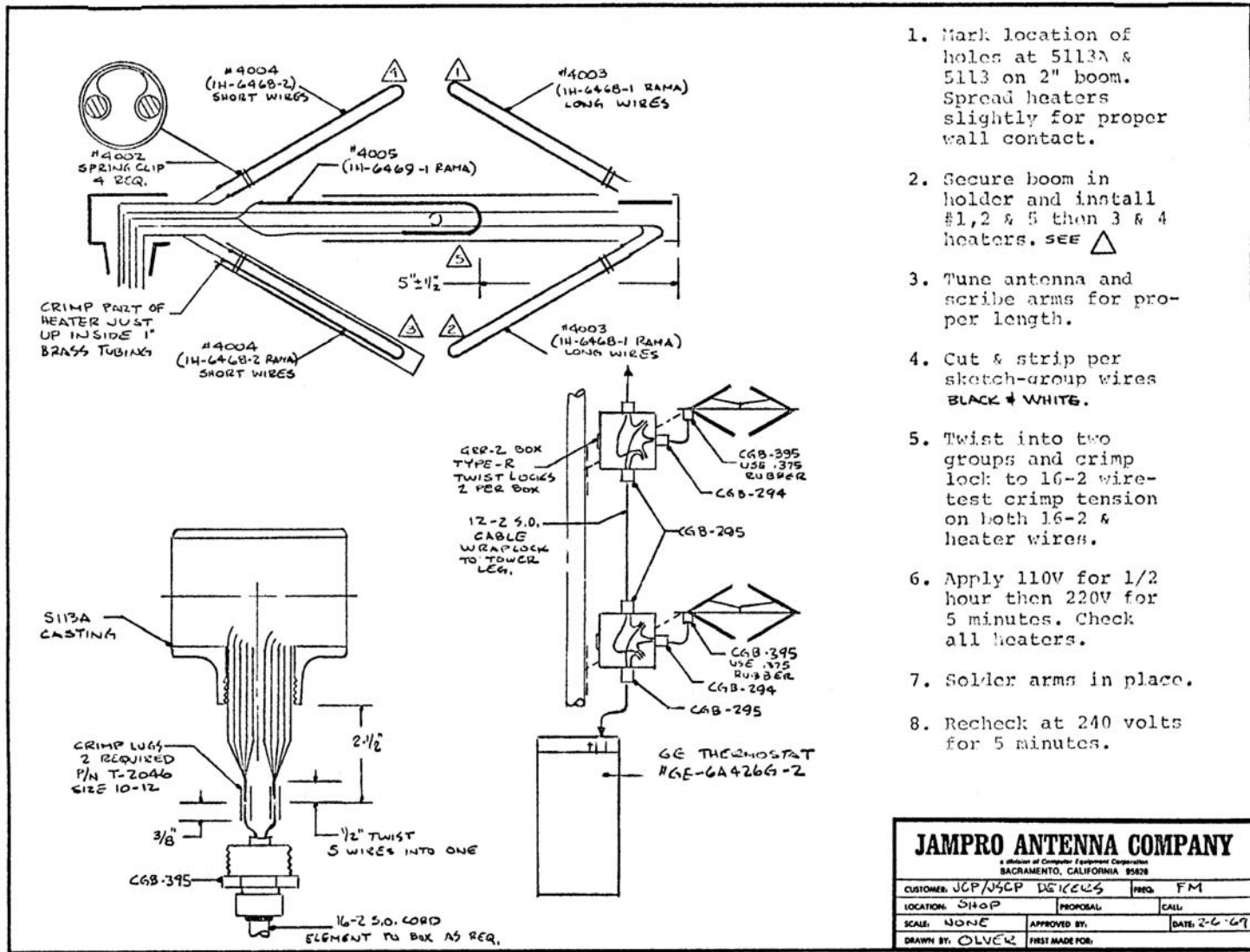
Table-1

<u>Resistance</u>	<u>Condition</u>
110 ohms	All heaters good
135 ohms	One heater open
180 ohms	Two heaters open
270 ohms	Three heaters open
540 ohms	Four heaters open
Infinite	Five heaters open
0 ohms	Short in heaters

SAFETY NOTE! When the AC power lines are not connected to the heating circuits there should be infinite resistance between both the black and white heater wires and metal parts of the antenna elements.



JAMPRO ANTENNA COMPANY			
A Division of General Equipment Corporation SACRAMENTO, CALIFORNIA 95828			
CUSTOMER: JAMPRO DROP 100	REQ.	CALL:	
LOCATION:	PROPOSAL:	DATE: 2/2/70	
SCALE:	APPROVED BY:	FIRST MADE FOR:	
DRAWN BY: O.W.P.			



1. Mark location of holes at 5113A & 5113 on 2" boom. Spread heaters slightly for proper wall contact.
2. Secure boom in holder and install #1, 2 & 5 then 3 & 4 heaters. SEE Δ
3. Tune antenna and scribe arms for proper length.
4. Cut & strip per sketch-group wires BLACK & WHITE.
5. Twist into two groups and crimp lock to 16-2 wire-test crimp tension on both 16-2 & heater wires.
6. Apply 110V for 1/2 hour then 220V for 5 minutes. Check all heaters.
7. Solder arms in place.
8. Recheck at 240 volts for 5 minutes.

JAMPRO ANTENNA COMPANY			
a division of Computer Equipment Corporation SACRAMENTO, CALIFORNIA 95828			
CUSTOMER: JCP/JSCP DEVICES	REQ: FM		
LOCATION: SHOP	PROPOSAL:	CALL:	
SCALE: NONE	APPROVED BY:	DATE: 2-6-69	
DRAWN BY: OLVER	FIRST MADE FOR:		

4000