Heathkit® Manual for the

HUMIDITY SENSOR ACCESSORY

Model IDA-5001-1

595-3737-01

Please perform the following steps and assemble your 3-ring binder before you build your kit. Do not unpack your kit until you are instructed to do so.

( ) Locate the envelope marked "Binder Hardware," and remove the hardware from it.

( ) Refer to Figure 1 and position the binder cover with the large hole as shown.

( ) Locate the 3-ring assembly.

( ) Determine which side of the rings unhook. Then position the ring assembly as shown and mount it to the cover with the binder hardware: two 6-32 × 3/8" nylon screws, two flat washers, and two 6-32 nuts. Do not overtighten the hardware.

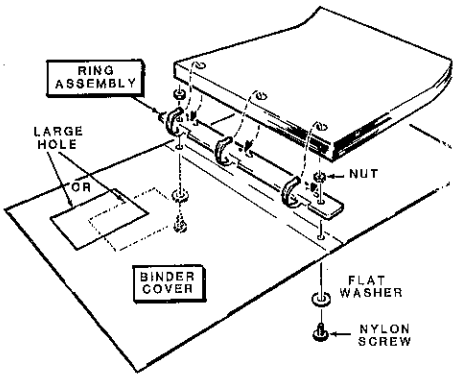
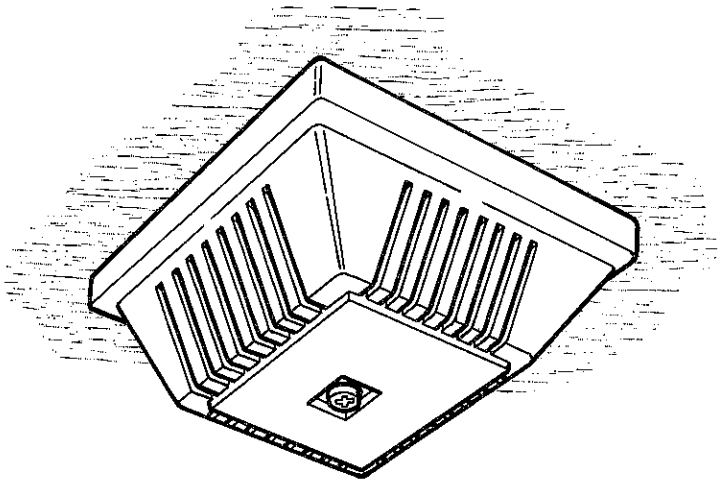


Figure 1

HUMIDITY SENSOR ACCESSORY

Model IDA-5001-1

595-3737-01



HEATH COMPANY
BENTON HARBOR,
MICHIGAN 49022

Table of Contents

INTRODUCTION

Your Heathkit Model IDA-5001-1 Humidity Sensor Accessory consists of two sensor units, which are used to sense indoor and outdoor relative humidity. The units then send DC voltages back to the Advanced Weather Computer, where the data is translated and displayed on the Computer's digital readout.

PARTS LIST

Unpack your kit and check each part against the following list. The key numbers correspond to the numbers on the "Parts Pictorial." Do not remove components that are supplied on a tape from the tape until you use them in a step. If a part is packed in an individual envelope with the part number on it, identify the part; then return it to the envelope until that part is called for in a step. Do not throw away any packing material until you account for all the parts.

To order a replacement part, always include the PART NUMBER. Use the Parts Order Form furnished with this kit. If a Parts Order Form is not available, refer to "Replacement Parts" inside the rear cover of this Manual.

A replacement part may look slightly different than the original part, or may have different printing on it. In any case, the performance of the replacement part will meet or exceed the requirements of the original part. For example: A 15-volt capacitor (10 μF, 15 V) may be replaced with a 25-volt capacitor (10 μF, 25 V).

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.

CAPACITORS

A1	20-174	1	42 pF (420) mica	Calibration
A1	20-124	2	115 pF mica	C701
A1	20-736	1	118 pF mica	Calibration
A2	25-880	2	10 μF electrolytic	C704

INTEGRATED CIRCUITS (ICs)

NOTE: The following integrated circuits may be marked for identification in any one of the following four ways:

1. Part number.
2. Type number. (This refers only to the numbers and letters shown in **BOLD** print. Disregard any other numbers or letters shown on the IC.)
3. Part number and type number.
4. Part number with a type number other than the one shown.

Integrated Circuits (Cont'd.)

KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.

CAUTION: The integrated circuits can be easily damaged by static electricity. Therefore, do not remove the ICs from their conductive foam pads until you are instructed to do so.

B1	443-695	4	CD**4001**	U701, U702

HARDWARE

NOTE: Hardware is shown full size in the Parts Pictorial so you can place any screw, nut, etc., that you have difficulty identifying over the illustration. The hardware may be packed in more than one envelope. Open all of the hardware envelopes before you check the screws, nuts, lockwashers, etc. against the Parts List.

#4 Hardware

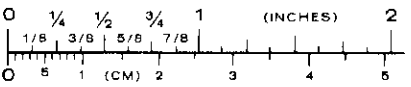
C1	250-213	10	4-40 × 5/16" screw
C2	252-2	4	4-40 hex nut
C3	252-746	6	4-40 press-in nut
C4	254-9	10	#4 lockwasher

#6 Hardware

D1	250-1280	4	6-32 × 3/8" screw
D2	250-347	4	#6 × 1" screw
D3	252-725	4	6-32 press-in nut
D4	253-89	2	#6 D-washer
D5	259-11	6	#6 spade lug

MISCELLANEOUS

E1	10-1185	2	200 kΩ control	R704
	85-3244-1	2	Sensor circuit board	
	305-111	2	Sensor cabinet, consisting of:	
E2	*92-770*	*1*	*Top*	
E3	*92-771*	*1*	*Base*	
E4	207-03	2	Cable clamp	
	344-54	6"	Yellow wire	
	346-1	6"	Sleeving	
	347-35	100'	Shielded cable	



KEY No.	HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.

Miscellaneous (Cont'd.)

E5	349-12	6"	Wicking	
E6	406-680	2	Thermometer	
E7	432-134	8	Wire socket	
E8	434-298	4	14-pin IC socket	
E9	473-32	2	Sensor	A701
E10		1	Blue and white label	
	597-260	1	Parts Order Form	
		1	Assembly Manual (see Page 1 for part number)	
			Solder	

BINDER PARTS

250-357	2	6-32 × 3/8" nylon screw
252-3	2	6-32 nut
253-14	2	Flat washer
597-4462	1	Binder cover
701-235	1	3-ring assembly

TAPED COMPONENTS

The remaining parts are supplied on taped strips. It is not necessary to check them against the following list.

HEATH Part No.	QTY.	DESCRIPTION	CIRCUIT Comp. No.

RESISTORS

All 1% resistors have five color bands (last band brown). The brown band, which is a tolerance band that is set apart from the other bands, will not be called out.

All resistors have a 1/4-watt rating unless specified otherwise.

6-7501-12	4	7500 Ω, 1% (viol-grn-blk-brn)	R706, R708
6-2373-12	2	237 kΩ, 1% (red-org-viol-org)	R703
6-3013-12	8	301 kΩ, 1% (org-blk-brn-org)	R701, R702, R705, R710

AXIAL-LEAD CERAMIC CAPACITORS

21-786	2	.1 μF (104)	C703
21-811	2	.33 μF (334)	C702

DIODES

56-56	2	1N4149	D701

STEP-BY-STEP ASSEMBLY

CIRCUIT BOARDS

Refer to Pictorial 1-1 for the following steps.

NOTE: Two sets of parentheses precede each step in this section, one set for each of the two identical sensor circuit boards. Make a check mark (√) in one of the parentheses as you finish each step. Complete all of the steps on one circuit board; then return to the beginning of this section and repeat the procedures for the other circuit board.

( ) ( ) Position the circuit board as shown in the Pictorial with the component side up. NOTE: Always install components on the component side of the circuit board and solder the leads to the foil on the other side, unless a step directs you otherwise.

( ) Remove the "Taped Components Chart" from the last two pages of the Illustration Booklet. Make sure you read the instructions at the top of the chart on Page 12 before you use it. Note that it is divided into numbered sections which correspond to the numbered sections on the circuit board pictorial.

IMPORTANT: The components are in assembly sequence. Make sure you do not install a component out-of-sequence or the remaining components will also be out-of-sequence.

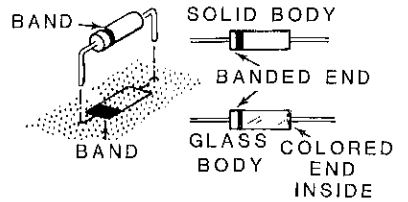
Section 1

( ) ( ) C703: .1 µF (104) axial-lead ceramic capacitor.

( ) ( ) R707: Do not install a component at this location.

NOTE: When you install a diode, always match the band on the diode with the band mark on the circuit board. The circuit will not work properly if a diode is installed backwards.

If your diode has a solid body, the band is clearly defined. If your diode has a glass body, do not mistake the colored end inside the diode for the banded end. Look for a band painted on the outside of the glass.



CAUTION: ALWAYS POSITION THE BANDED END OF A DIODE AS SHOWN ON THE CIRCUIT BOARD.

( ) ( ) D701: 1N4149 (#56-56) diode.

( ) ( ) R709: Do not install a component at this location.

( ) ( ) R708: 7500 Ω, 1% (viol-grn-blk-brn) resistor.

( ) ( ) R706: 7500 Ω, 1% (viol-grn-blk-brn) resistor.

( ) ( ) C702: .33 μF (334) axial-lead ceramic capacitor.

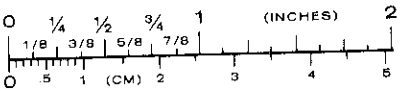
( ) ( ) Solder the leads to the foil and cut off the excess lead lengths.

Section 2

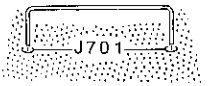
( ) ( ) R705: 301 kΩ, 1% (org-blk-brn-org) resistor.

( ) ( ) R702: 301 kΩ, 1% (org-blk-brn-org) resistor.

( ) ( ) Remove 1-1/2" of insulation from the yellow wire. Then cut off the wire where the insulation ends. NOTE: Use this uninsulated wire whenever a step calls for bare wire.



( ) ( ) J701: 3/4" length of bare wire. Form a "U" in the wire to fit the hole spacing for J701 as shown.



( ) ( ) R701: 301 kΩ, 1% (org-blk-brn-org) resistor.

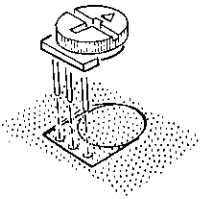
( ) ( ) R703: 237 kΩ, 1% (red-org-viol-org) resistor.

( ) ( ) J702: 3/4" length of bare wire.

( ) ( ) R710: 301 kΩ, 1% (org-blk-brn-org) resistor.

( ) ( ) Solder the leads to the foil and cut off the excess lead lengths.

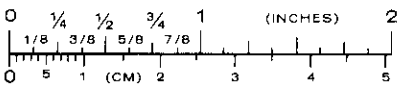
NOTE: When you install the following control, insert the pins into the holes and press the control body flat against the circuit board. Then solder the pins to the foil and cut off the excess pin lengths.

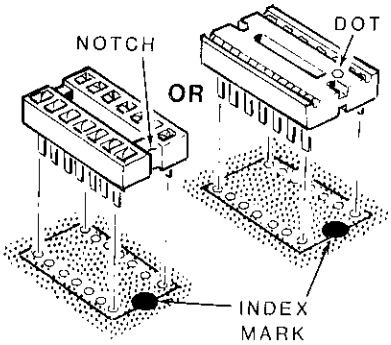


( ) ( ) R704: 200 kΩ control (#10-1185).

Refer to Pictorial 1-2 for the following steps.

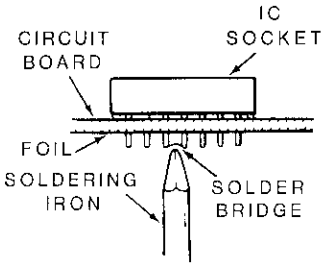
NOTE: Before you install an IC socket, make sure the pins are straight. If there is any kind of identification mark (notch, dot, arrowhead, etc.) at or near one end of the socket, place this marked end toward the index mark on the circuit board (this index mark should still be visible after you install the socket). Then start the pins into the circuit board holes.





Hold the socket in place while you turn the board over and lay it on top of the socket on your work surface. The board will hold the socket in place. At first, solder only two pins at diagonally opposite corners of the socket. After the solder cools, check to make sure that the socket is tight against the circuit board. If not, reheat the pins while you push against the socket to reseat it. Then solder the remaining pins to the foil.

NOTE: A solder bridge may form when you make solder connections at closely spaced foils. Therefore, after each solder step, carefully inspect the foil for solder bridges and remove any that may have formed. To remove a solder bridge, hold the circuit board foil-side-down as shown, and hold the soldering iron tip between the two points that are bridged. The solder will flow down the soldering iron tip to clear the bridge.



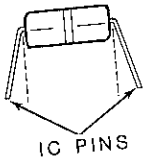
( ) ( ) U702: 14-pin IC socket.

( ) ( ) U701: 14-pin IC socket.

CAUTION: Integrated circuits (ICs) are complex electrical devices that perform many complicated operations in a circuit. Read all of the following information before you install the ICs.

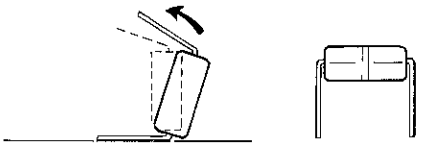
The ICs used in this kit are MOS (Metal-Oxide Semiconductor) devices; these ICs are shipped in a foam pad to protect them. These are rugged and reliable devices. However, if you do not handle them properly when you remove them from the protective foam pad and install them, they can be damaged by static electricity.

The pins on the ICs may be bent out at an angle and thus will not line up with the holes in the IC socket. Do not try to install the IC without first bending the pins as described below. Otherwise, you may damage the IC pins or the socket, causing intermittent contact.

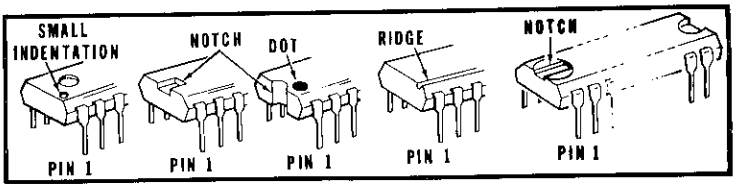


Remove the IC from its protective foam pad, but do not let go of it until it is installed in its socket. Hold the IC in one hand and place your other hand on your work surface before you touch the IC to your work surface. This will equalize the static electricity between the work surface and the IC.

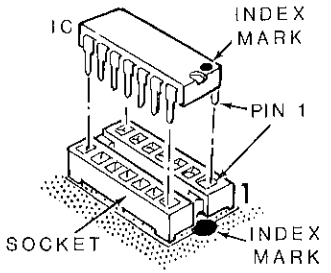
Very carefully roll the IC toward the pins to bend the lower pins into line. Then turn the IC over and bend the pins on the other side in the same manner.



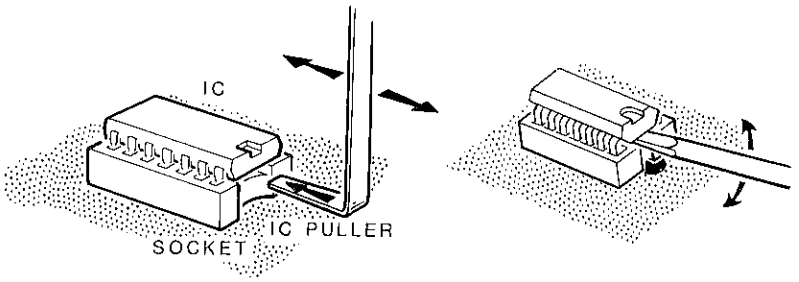
Compare the IC to the drawing shown below. Then determine which end of the IC is the pin 1 end.



Hold the IC in one hand and the circuit board in the other. Then position the pin 1 end of the IC over the index mark on the circuit board and start the pins into the socket. Make sure that all of the pins are started; then push the IC down firmly. NOTE: An IC pin can become bent under the IC and it will look as though it is correctly installed in the socket.



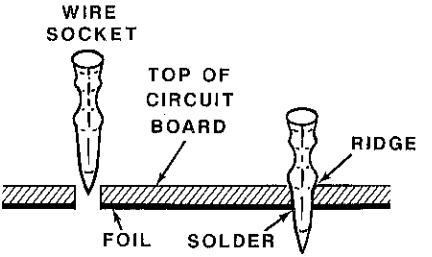
If it is ever necessary to remove an IC from its socket, use an IC lifter (if one was suppled with your kit) or a small-bladed screwdriver as shown. Push it between the IC and the socket and carefully lift the IC free. If any IC pins become bent, carefully straighten them.



( ) ( ) U702: CD**4001** (#443-695) IC.

( ) ( ) U701: CD**4001** (#443-695) IC.

NOTE: When you install a wire socket, push it as far as possible into the circuit board hole from the component side. Then solder the socket to the foil. Use solder sparingly to avoid filling the socket.



( ) ( ) E: Connector pin.

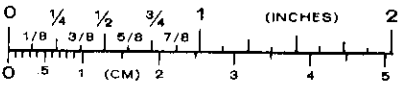
( ) ( ) F: Connector pin.

( ) ( ) G: Connector pin.

( ) ( ) H: Connector pin.

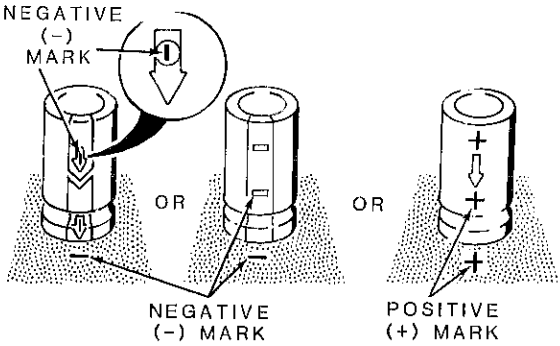
( ) ( ) Cut a 1-1/2" length of yellow wire and remove 1/4" of insulation from each end.

( ) ( ) Insert one end of the 1-1/2" yellow wire into hole D. Then solder the wire to the foil and cut off the excess wire length. NOTE: You will connect the other wire end later.



Refer to Pictorial 1-3 for the following steps.

NOTE: Before you install an electrolytic capacitor, look at it and identify the leads. One lead will have either a negative (−) mark or a positive (+) mark near it on the side of the capacitor. (The marking for a negative lead may look like an oblong bar, sometimes with a circle around it, inside an arrow.) Be sure to install the negative lead in the negative-marked hole, and the positive lead in the positive-marked hole.

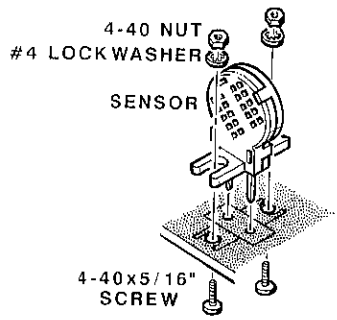


( ) ( ) C704: 10 μF electrolytic capacitor.

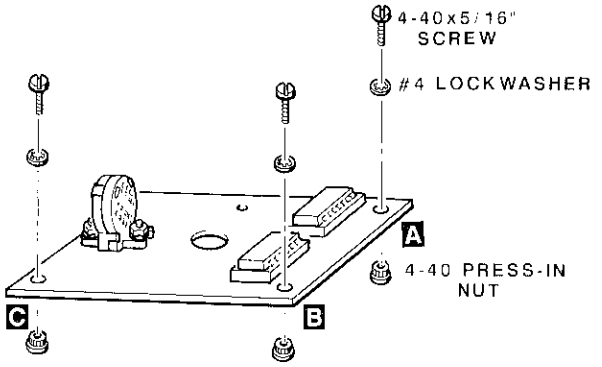
( ) ( ) C701: 115 pF mica capacitor.

( ) ( ) Solder the leads to the foil and cut off the excess lead lengths.

( ) ( ) A701: Mount the sensor to the circuit board with two 4-40 × 5/16" screws, two #4 lockwashers, and two 4-40 nuts. Then solder the pins to the foil and cut off the excess pin lengths.

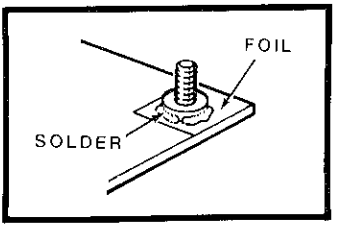


( ) ( ) Refer to Detail 1-3A and mount 4-40 × 5/16" screws, #4 lockwashers, and 4-40 press-in nuts at A, B, and C on the circuit board. Tighten the screws to draw the press-in nuts into the circuit board holes.



Detail 1-3A

( ) ( ) Turn the circuit board over and solder the 4-40 nuts to the foil pads as shown in Detail 1-3B.



Detail 1-3B

Circuit Board Checkout

Carefully inspect the circuit board for the following most-commonly-made errors:

( ) ( ) Unsoldered connections.

( ) ( ) Poor solder connections.

( ) ( ) Solder bridges between foil patterns. NOTE: Refer to the "Circuit Board X-Ray View" on Page 29 if you do not know if a solder bridge exists, and you want to see the correct foil patterns.

( ) ( ) Protruding leads which could touch together.

Refer to the illustrations where the parts were installed as you make the following visual checks.

( ) ( ) Diode for the correct position of the banded end.

( ) ( ) ICs for the proper installation.

( ) ( ) Electrolytic capacitor for the correct position of the positive (+) or negative (−) markings.

( ) Set both circuit boards aside until they are called for later.

NOTE: You will have a 42 pF and a 118 pF mica capacitor left over. You will use these two capacitors during the calibration procedure.

CABLE PREPARATION

Refer to Pictorial 1-4 and Detail 1-4A for the following steps.

NOTE: Before you prepare the sensor cables, you will have to determine the lengths of cable that you intend to use between your Weather Computer and the sensor units. First, determine where you wish to place the Weather Computer and the indoor sensor. Read "Sensor Placement" on Page 27. Then route the length of shielded cable along that route and cut the cable to length, adding an extra few inches for tolerance. Mark this cable "Indoor Sensor." Repeat the procedure for the outdoor sensor cable. After you cut the cable to length, mark it "Outdoor Cable."

In the following steps, you will assemble the two sensor units. Assemble the indoor sensor unit first using the first row of check-off spaces. Then repeat the steps a second time for the outdoor sensor unit, using the remaining row of check-off spaces.

( ) ( ) Remove 1 1/2" of the outer insulation from end A of the indoor (outdoor) sensor cable. Be careful not to cut too deeply into the outer cable insulation; otherwise, you will cut into the insulation on the inner wires.

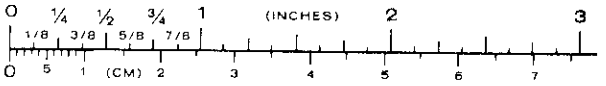
( ) ( ) Remove and discard the foil shield from around the black and white (clear) wires at end A. Then strip 1/4" of insulation from the end of each wire and twist the small strands of wire together. Melt a **small** amount of solder on the end of all three wires to hold these small strands together.

( ) ( ) Cut a 1" length of sleeving.

( ) ( ) Slide the 1" length of sleeving over the bare cable wire at end A; then bend the bare wire over the sleeving to temporarily hold it in place.

( ) ( ) Remove 4" of the outer insulation from end B of the sensor cable.

( ) ( ) Remove and discard the foil shield from around the black and white (clear) wires at end B.



( ) ( ) Cut the black and bare cable wires at end B to the specified lengths and prepare the black and white (clear) wire ends.

( ) ( ) Mount end B of the indoor (outdoor) sensor cable to the sensor circuit board screws as follows. Form a hook in the ends of the three cable wires before you install them between each lockwasher and screw head.

( ) ( ) Bare wire at screw A.

( ) ( ) Black wire at screw C.

( ) ( ) White (clear) wire at screw B.

SENSOR CABINET BASE

( ) ( ) Refer to Detail 1-4B and install 6-32 press-in nuts into the short and long sensor cabinet base posts as shown.

( ) ( ) Mount the indoor (outdoor) sensor circuit board and the indoor (outdoor) sensor cable to the short sensor cabinet base post with a 6-32 × 3/8" screw, a #6 D-washer, and a cable clamp. Position the cable around the outer edge of the circuit board as shown before you tighten the cable clamp hardware securely.

( ) Set the indoor sensor assembly aside and repeat the second row of check-off spaces for the outdoor sensor assembly. If you have just completed the outdoor sensor, proceed to the next step.

TEMPORARY SENSOR HOOKUP

Refer to Pictorial 1-5 for the following steps.

Temporarily connect the wires at the free end of the outdoor sensor cable to the screw-type terminal strip labeled "Outdoor Humidity" on the Weather Computer as follows. Position the lugs as shown. NOTE: The spade lugs will be installed on this cable after you install the sensors.

( ) Silver wire to GND.

( ) White (clear) wire to WHT.

( ) Black wire to BLK.

Temporarily connect the wires at the free end of the indoor sensor cable to the screw-type terminal strip labeled "Indoor Humidity" as follows. Position the lugs as shown. NOTE: The spade lugs will be installed on this cable after you install the sensors.

( ) Silver wire to GND.

( ) White (clear) wire to WHT.

( ) Black wire to BLK.

This completes the "Step-by-Step Assembly" of your Humidity Sensor Accessory. Proceed to "Calibration."

CALIBRATION

SLOPE ADJUSTMENTS

Refer to Pictorial 2-1 and Pictorial 2-2 for the following steps.

( ) Remove the cover from the Weather Computer, if this has not already been done.

( ) Preset main circuit board controls R458 (HUMIDITY INDOOR SLOPE) and R435 (HUMIDITY OUTDOOR SLOPE) to their center positions.

( ) Preset controls R704 on the indoor and outdoor sensor circuit boards to their fully counterclockwise positions.

( ) Locate the 42 pF and 118 pF mica capacitors that were left over after you built the sensor circuit boards. Then cut their leads to 1/2". You will use these capacitors in the following steps.

Refer to Pictorial 2-2 for the following steps.

NOTES:

1. In the following steps, there are two rows of check-off spaces. One row is for the indoor sensor, and the other is for the outdoor sensor calibration. You will calibrate the indoor sensor first.

2. Make sure you do not touch any of the circuit components inside the Weather Computer unless you are instructed to do so in a step.

( ) ( ) Install the 118 pF mica capacitor into the wire sockets at E and F.

NOTES:

1. With indoor (outdoor) sensor circuit board control R704 turned fully counterclockwise, the digital display may indicate a value that is higher than 100. Since numbers over 99 cannot be displayed, numbers such as 101 will be displayed as: 01.

2. If both the indoor and outdoor humidity readings are zero (0) in the following step, the humidity display will disappear. However, when you continue to turn control R704 clockwise, the display will reappear.

( ) ( ) Turn indoor (outdoor) sensor circuit board control R704 slowly clockwise until the digital display drops to its lowest value; then continue to turn the control clockwise until the display increases by 1 count. Note this reading.

( ) ( ) Install the 42 pF mica capacitor into the wire sockets at G and H.

( ) ( ) Turn the main circuit board control (R458-indoor, and R435-outdoor) until the digital display indicates a reading that is 93 ±1 counts higher than the reading with the 118 pF capacitor only.

( ) ( ) Remove the 42 pF and 118 pF mica capacitors and install the free end of the yellow wire into wire socket F.

Return to the beginning of the "Slope Adjustments" and repeat the second row of check-off spaces for the outdoor sensor calibration. After you complete the steps for the second time, install the Weather Computer's cabinet; then proceed to "Relative Humidity Adjustments."

RELATIVE HUMIDITY ADJUSTMENTS

NOTE: The room that you use when you calibrate the sensor units should have a fairly constant humidity level. You can obtain the best result when you adjust the units at a relative humidity of approximately 50% at a room temperature of 70°F.

There are two ways to calibrate the relative humidity readings. If you use "Method #1," you will need to have another accurate humidity indicator that you can use as a reference standard. If you use "Method #2," you will use the two thermometers supplied with your kit as a reference standard in a "wet and dry bulb" calibration procedure. Decide now which method you will use; then proceed with the following steps.

( ) Place the indoor and outdoor humidity sensors close to your reference standard (the other accurate humidity indicator, or the two thermometers) and allow them to stabilize.

( ) Place your Advanced Weather Computer's indoor and outdoor temperature sensors at this same location and then proceed to "Method #1" or "Method #2." If you cannot place them at the same location, you will have to calculate a "compensation number" and add it to your relative humidity reading as described in the numbered steps below:

1. Mark down the temperature reading where the humidity sensor is located _____ _____. (indoor) (outdoor)

2. Mark down the temperature reading at the temperature sensor _____ _____. (indoor) (outdoor)

3. Subtract the reading in step 2 from the reading in step 1. This may be either a positive or negative number _____ _____. (indoor) (outdoor)

4. Multiply the number you obtained in step 3 by .22. This will give you the compensation number _____ _____. (indoor) (outdoor)

5. You will add the compensation number you obtain in step 4 to the humidity reading you obtain from your reference standard (in the Method #1 or Method #2 steps). This will give you a corrected humidity reading.

EXAMPLE #1: Humidity at reference standard is 50%.

1. Temperature at outdoor humidity sensor (measured by the indoor temperature sensor): 70°F

2. Temperature at outdoor temperature sensor: 40°F

3. 70°F − 40°F = 30°F

4. 30°F × .22%/°F = 6.6%

5. 50% + 6.6% = 56.6%

In this case, you would set the outdoor humidity sensor to 57%.

EXAMPLE #2: Humidity at reference standard is 50%.

1. Temperature at outdoor humidity sensor (measured by the indoor temperature sensor): 70°F

2. Temperature at outdoor temperature sensor: 90°F

3. 70°F − 90°F = −20°F

4. −20°F × .22%/°F = −4.4%

5. 50% + (−4.4%) = 45.6%

In this case, you would set the outdoor humidity sensor to 46%.

Now proceed to the steps under "Method #1" or "Method #2."

Method #1

Refer to Pictorial 2-2 for the following steps.

( ) Adjust control R704 on the indoor sensor circuit board until the digital display indicates the same reading as the humidity indicator that you are using as a reference — plus the "compensation number" if you had to calculate one (to compensate for the temperature difference between corresponding humidity and temperature sensors).

( ) Adjust control R704 on the outdoor sensor circuit board until the digital display indicates the same reading as your reference humidity indicator — plus the "compensation number" if you had to calculate one (to compensate for the temperature difference between corresponding humidity and temperature sensors).

( ) Temporarily install the sensor cabinet tops for two hours to allow the temperature inside them to stabilize; then repeat the two previous steps.

This completes the "Calibration." Proceed to "Final Assembly" on Page 27.

Method #2

Refer to Pictorial 2-3 for the following steps.

You will have to perform this calibration twice, once with the sensor cabinet tops off, and again two hours later after the sensors have stabilized with their cabinet tops installed. Two sets of check-off spaces have been provided for this purpose.

( ) Tape both thermometers to a wall or other solid object approximately 4 to 5 inches above your work area and about 8" apart.

( ) Fill a cup approximately 1/4 full of water and place the cup under one of the thermometers. This thermometer will be called the "wet bulb." The other thermometer will be called the "dry bulb."

( ) ( ) After the thermometer readings have stabilized, make a note of these first readings in degrees Fahrenheit (°F).

( ) ( ) Wet the entire wicking. Then place one end of it over the bottom of the wet bulb and let the other end hang in the cup of water.

( ) ( ) Place a portable fan in a location where a fair amount of air movement can be directed onto both thermometers for about eight minutes.

( ) ( ) Read both thermometers again, and then write down this second set of wet bulb and dry bulb readings.

( ) ( ) Turn off the fan.

( ) ( ) Subtract the second wet bulb reading from the first wet bulb reading. This difference number is called the "evaporation effect."

( ) ( ) Compare the two dry bulb readings. If the second reading is higher than the first, add the difference between the two to the evaporation effect. If the second reading is lower than the first, subtract the difference from the evaporation effect reading. If there is no temperature difference, do not change the evaporation effect reading. Round all readings off to the nearest degree.

( ) ( ) Use the chart in Figure 2 to determine the relative humidity in the following manner:

1. Find your second dry bulb temperature in the left column and draw a straight line below that row of numbers to the right.

2. Find your evaporation effect number by reading across the top of the chart. Then follow that column down until it intersects the first line you drew. The number at this intersection is the relative humidity.

( ) ( ) Adjust control R704 on the indoor sensor circuit board until the digital display matches the relative humidity number, that you just located on the chart — plus the "compensation number" if you had to calculate one (to compensate for the temperature difference between corresponding humidity and temperature sensors).

( ) ( ) Adjust control R704 on the outdoor sensor circuit board until the digital display matches the relative humidity number, that you just located on the chart — plus the "compensation number" if you had to calculate one (to compensate for the temperature difference between corresponding humidity and temperature sensors).

( ) Place the sensor cabinet top over each of the sensor bases but do not fasten them at this time. See Pictorial 3-1.

( ) Remove the wicking from the wet bulb thermometer.

Allow the two sensors to stabilize for two hours; then return to the beginning of "Method #2" and repeat the steps with the double check-off spaces once more. Leave the sensor cabinet tops loosely installed and remove them only to adjust the controls. After you complete these steps for the second time, proceed to "Final Assembly and Installation."

FINAL ASSEMBLY AND INSTALLATION

CABINET TOP MOUNTING

Refer to Pictorial 3-1 for the following steps.

( ) Mount the sensor cabinet top onto the indoor sensor unit with a 6-32 × 3/8" screw.

( ) Similarly, mount the sensor cabinet top onto the outdoor sensor unit.

SENSOR PLACEMENT

Indoor Sensor

Place the indoor sensor wherever you want to monitor relative humidity, provided it is not above a source of dry or moist air. Placing the sensor over such a source would provide a false reading. Do not put the sensor in the kitchen, or in a room where the door will be shut and the room closed for long periods of time. The ideal location for the sensor would be a hallway off the living room.

Outdoor Sensor

Refer to Pictorial 3-2 as you read the following information.

NOTES:

1. You will need to remove the sensor cover to mount the base to the overhang. Be sure to use the correct screws and replace the cover after you complete the mounting.

2. If the sensor becomes moist, the unit will read erratically until the sensor element dries.

( ) Mount the outdoor sensor on the overhang, about 3" away from the edge of the house as shown in the Pictorial. This will prevent the sensor from direct sunlight and rain. Use the two #6 × 1" screws supplied.

( ) Refer to the inset drawing in Pictorial 5 and crimp and solder #6 spade lugs onto the three wires at end A of each cable as shown.

( ) Remove the backing paper from the blue and white label. Then press the label into place next to the existing label(s) on the bottom of the Weather Computer chassis.

Refer to the ID-5001 Operation Manual for the Specifications, Circuit Description, and Schematic for this Humidity Sensor Accessory.

IN CASE OF DIFFICULTY

NOTE: Refer to the "Circuit Board X-Ray View" for the physical location of parts on each circuit board.

GENERAL

1. About 90% of the kits that are returned to the Heath Company for repair do not function properly due to poor connections and soldering. Therefore, you can eliminate many troubles by reheating all connections to make sure that they are properly soldered. Reheat any doubtful connections and be sure that all the wires are soldered at places where several wires are connected.

2. Make sure that the banded end of diode D701 is positioned as indicated by the band marking on the circuit board.

3. Check electrolytic capacitor C704 to be sure its positive (+) marked or negative (−) marked lead is positioned according to the markings on the circuit board.

4. Check to be sure that ICs U701 and U702 are installed correctly in their sockets. Also be sure that none of the IC pins are bent under the IC.

5. Check the value of each part. Be sure that the proper part has been wired into the circuit at each location, as shown in the Pictorial diagrams and as called out in the wiring instructions.

6. Check all component leads connected to the circuit board. Make sure the leads do not extend through the circuit board and make contact with other connections or parts.

7. Check all of the wires connected to the circuit board. Make sure the wires do not touch other components and all wire colors are correct. Also make sure all wire sockets are properly soldered.

8. Check all wires that are connected to your Weather Computer. Make sure the wires do not touch the chassis or other lugs. Also make sure that the correct color wire is connected to each terminal screw.

NOTE: In an extreme case where you are unable to resolve a difficulty, refer to the "Customer Service" information inside the rear cover of this Manual. Your Warranty is located inside the front cover.

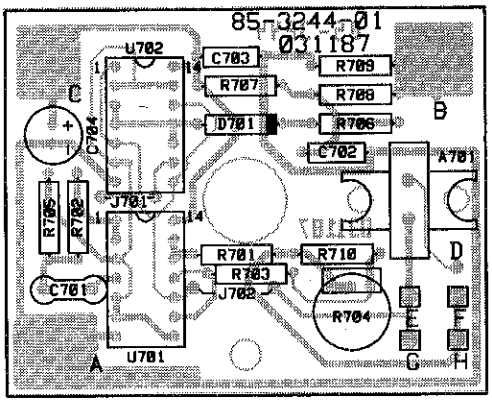
CIRCUIT BOARD X-RAY VIEW

NOTE: To find the PART NUMBER of a component for the purpose of ordering a replacement part:

A. Find the circuit component number (C703, R705, etc.) on the X-Ray View.

B. Locate this same number in the "Circuit Component Number" column of the "Parts List."

C. Adjacent to the circuit component number, you will find the PART NUMBER and DESCRIPTION, which must be supplied when you order a replacement part.

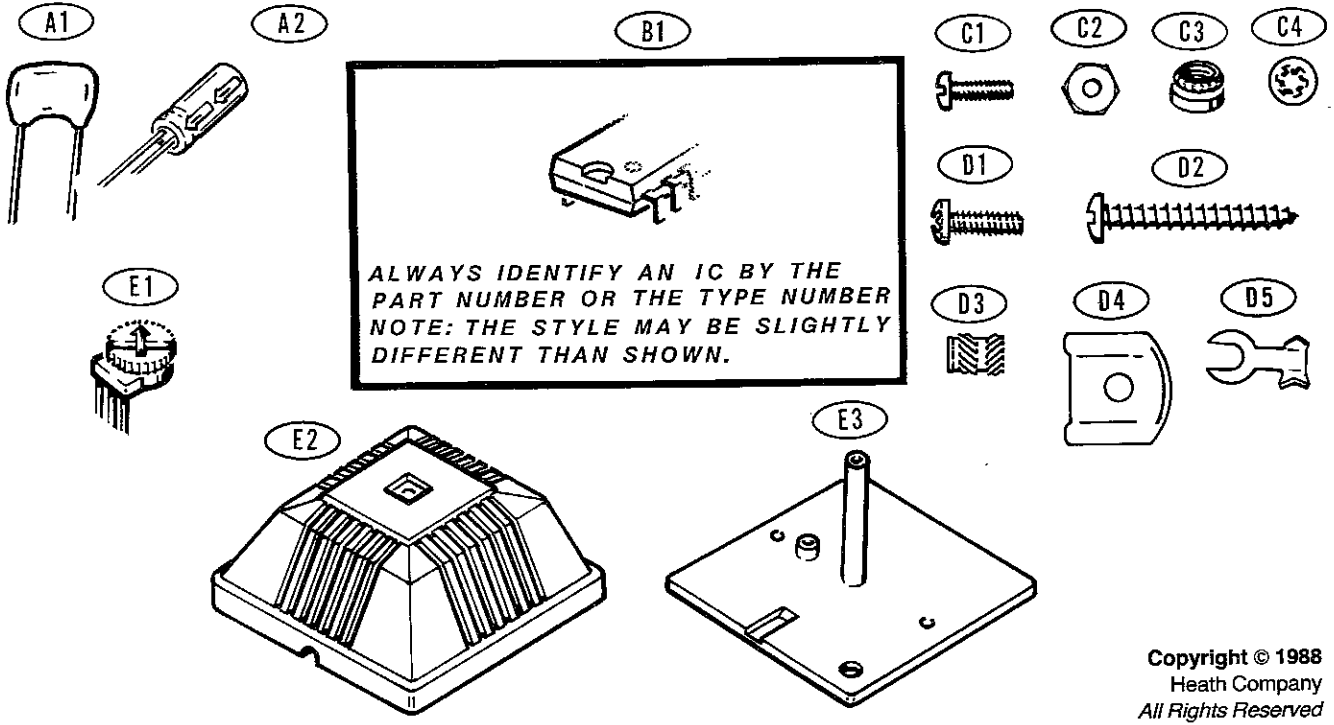


(Shown from the component side.)

ILLUSTRATION BOOKLET

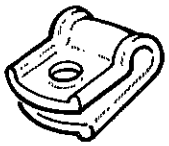
Part of 595-3737-01

PARTS PICTORIAL



Model IDA-5001-1

E4



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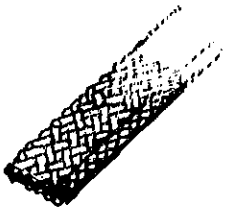
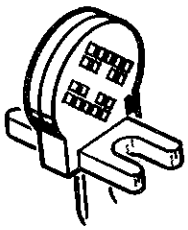


E6

E7

E9



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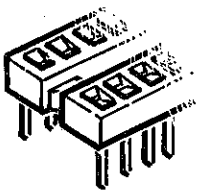


ALWAYS IDENTIFY AN IC SOCKET BY COUNTING ITS PINS.
NOTE: THE STYLE MAY BE SLIGHTLY DIFFERENT THAN SHOWN.

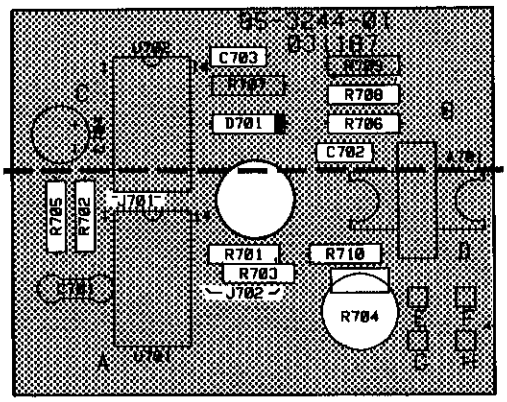
E10

Heathkit

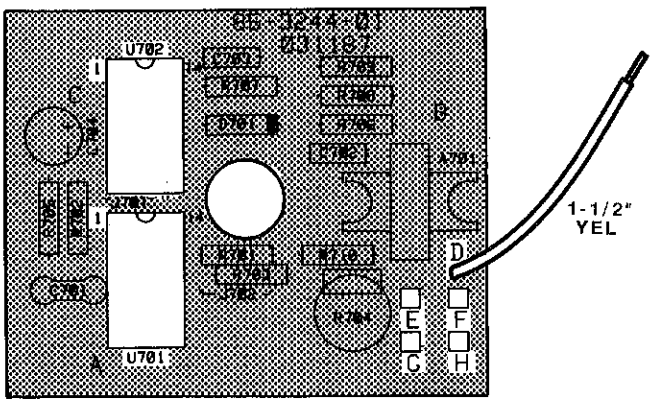
MODEL	SERIES NO.

SECTION 1

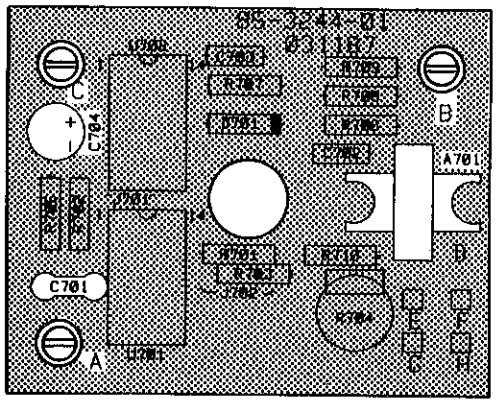
SECTION 2



PICTORIAL 1-1



PICTORIAL 1-2



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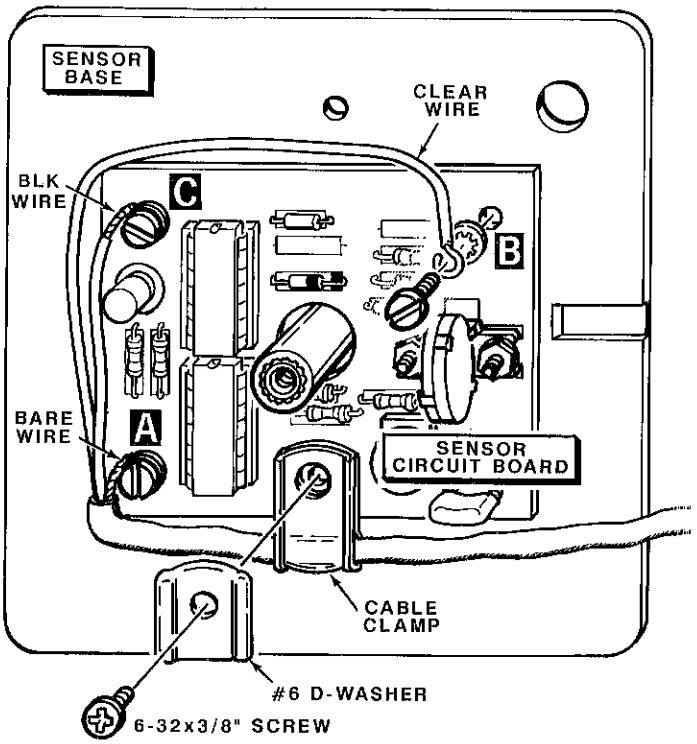
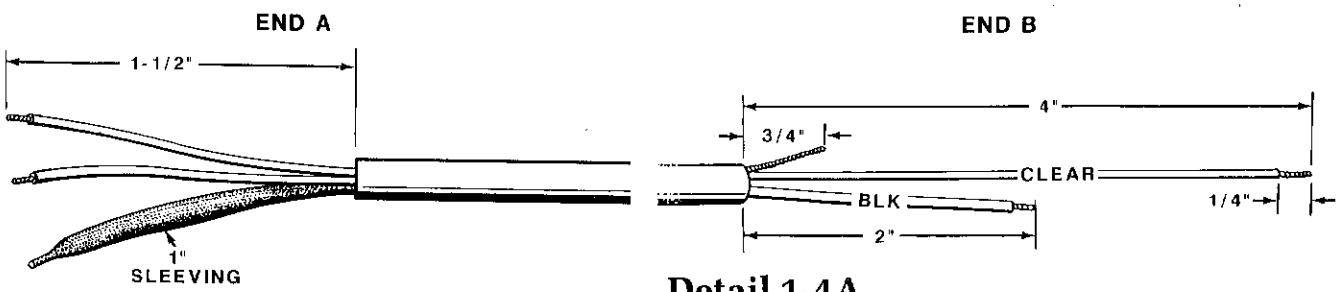
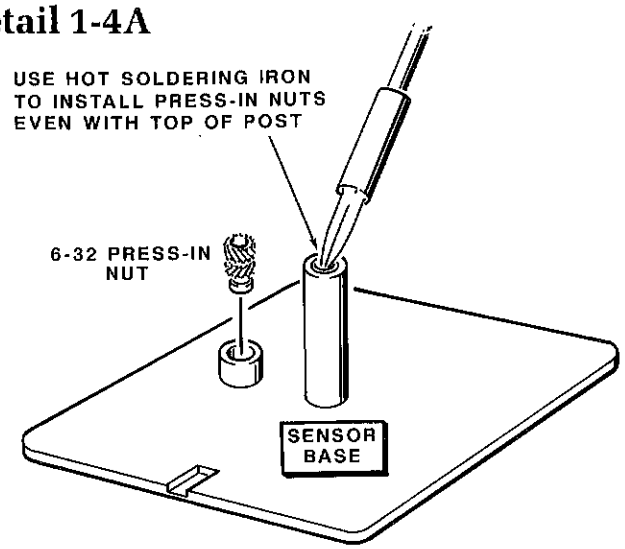


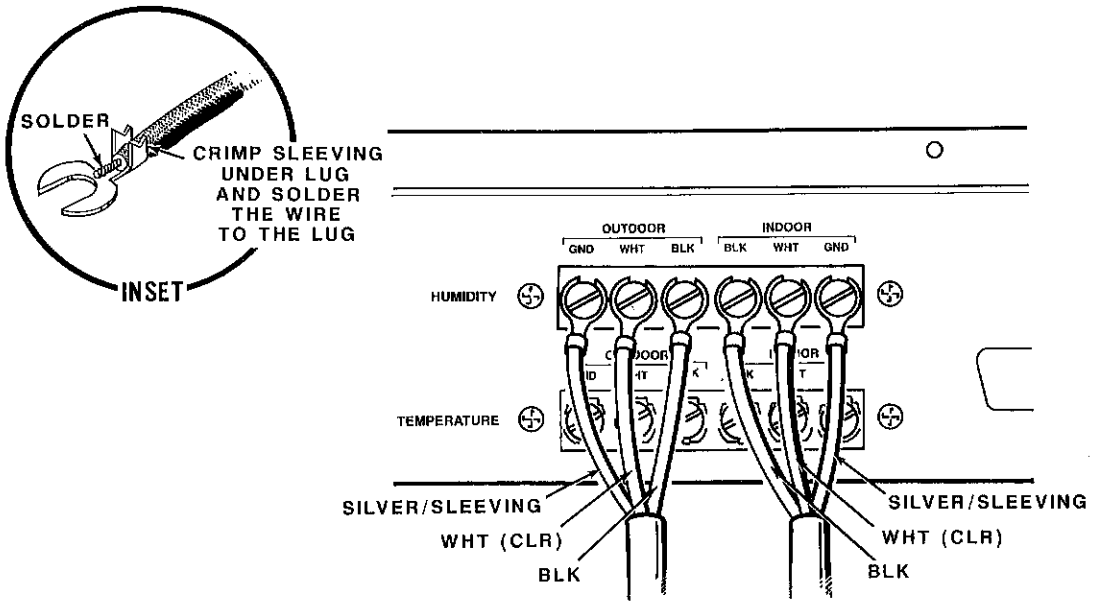
PICTORIAL 1-4



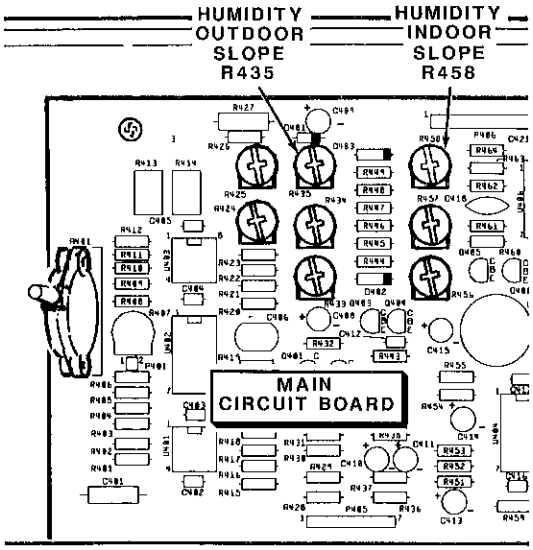
Detail 1-4A



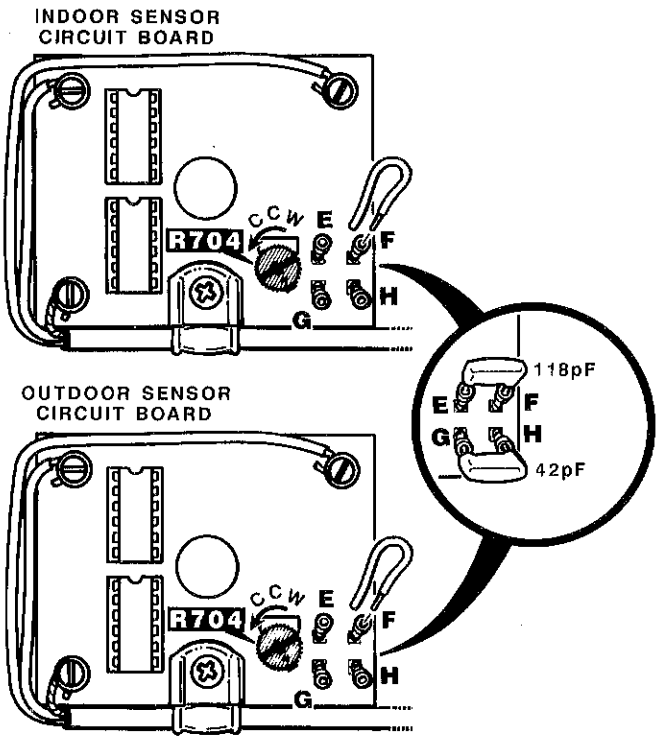
Detail 1-4B



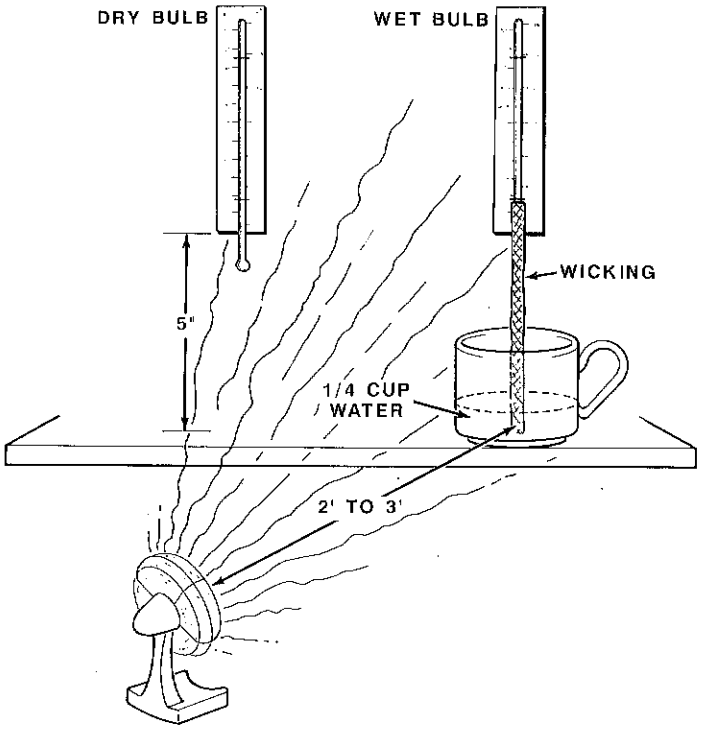
PICTORIAL 1-5



PICTORIAL 2-1



PICTORIAL 2-2

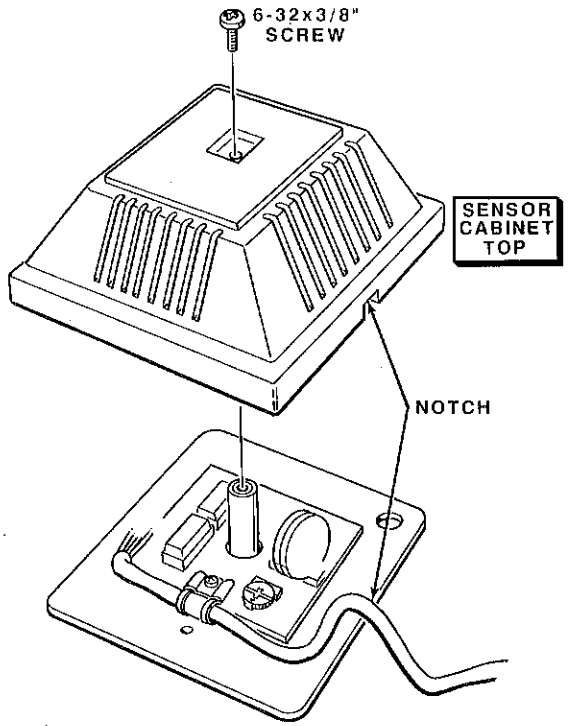


PICTORIAL 2-3

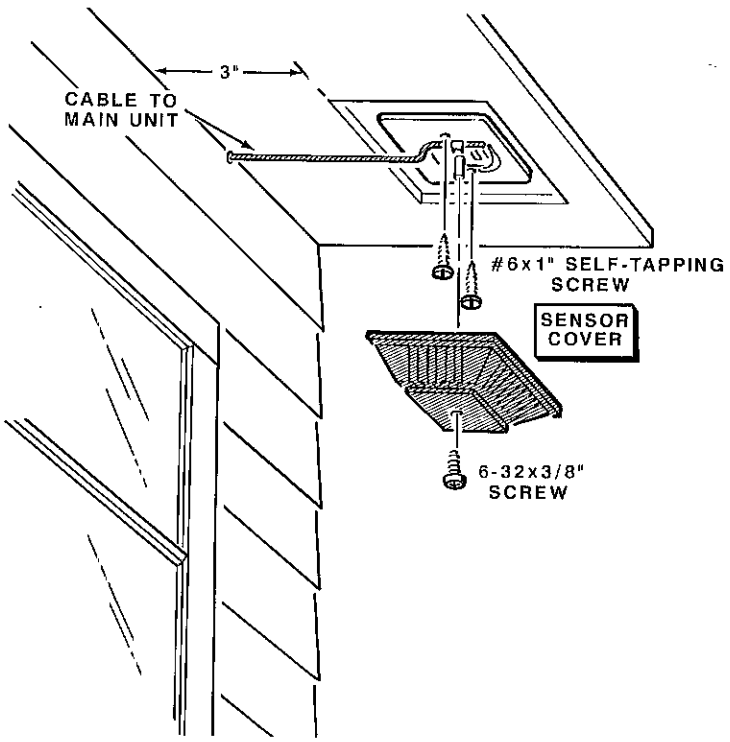
Evaporation Effect Readings (°F)

Dry Bulb Readings (°F)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
65	95	90	85	80	75	70	66	61	56	52	48	44	39	35	31	27	24	20	16	12	9	5	2									
66	95	90	85	80	75	71	66	61	57	53	48	44	40	36	32	29	25	21	17	14	10	7	3									
67	95	90	85	80	75	71	66	62	58	53	49	45	41	37	33	30	26	22	19	15	12	8	5	2								
68	95	90	85	80	76	71	67	63	58	54	50	46	42	38	34	31	27	23	20	16	13	10	6	3								
69	95	90	85	81	76	72	67	63	59	55	51	74	43	39	35	32	28	24	21	18	14	11	8	5	1							
70	95	90	85	81	77	72	68	64	59	55	51	48	44	40	36	33	29	25	22	19	15	12	9	6	3							
71	95	90	86	81	77	72	68	64	60	56	52	48	45	41	37	33	30	27	23	20	17	13	10	7	4	1						
72	95	91	86	82	77	73	69	65	61	57	53	49	45	42	38	34	31	28	24	21	18	15	12	9	6	3						
73	95	91	86	82	78	73	69	65	61	57	53	50	46	42	39	35	32	29	25	22	19	16	13	10	7	4	1					
74	95	91	86	82	78	74	69	65	61	58	54	50	47	43	39	36	33	29	26	23	20	17	14	11	8	5	3					
75	96	91	86	82	78	74	70	66	62	58	54	51	47	44	40	37	34	30	27	24	21	18	15	12	9	7	4	1				
76	96	91	87	82	78	74	70	66	62	59	55	51	48	44	41	38	34	31	28	25	22	19	16	13	11	8	5	3				
77	96	91	87	83	79	74	71	67	63	59	56	52	48	45	42	39	35	32	29	26	23	20	17	14	12	9	6	4				
78	96	91	87	83	79	75	71	67	63	60	56	53	49	46	43	39	36	33	30	27	24	21	18	16	13	10	8	5				
79	96	91	87	83	79	75	71	68	64	60	57	53	50	46	43	40	37	34	31	28	25	22	19	17	14	11	9	6				
80	96	91	87	83	79	75	72	68	64	61	57	54	50	47	44	41	38	35	32	29	26	23	20	18	15	12	10	7				
81	96	91	87	83	79	75	72	68	64	61	57	54	50	47	44	41	38	35	32	29	27	24	21	19	16	13	11	8				
82	96	92	88	84	80	76	72	69	65	61	58	55	51	48	45	42	39	36	33	30	28	25	22	20	17	14	12	10	7	5	2	
83	96	92	88	84	80	76	72	69	65	61	58	55	51	48	45	42	39	36	33	30	28	25	23	20	17	14	12	10	7	5	2	
84	96	92	88	84	80	76	73	69	66	62	59	56	52	49	46	43	40	37	35	32	29	26	24	21	19	16	14	12	9	7	5	3
85	96	92	88	84	80	76	73	69	66	62	59	56	52	49	46	43	41	38	35	32	30	27	25	22	20	17	15	13	10	8	6	4

Figure 2



PICTORIAL 3-1



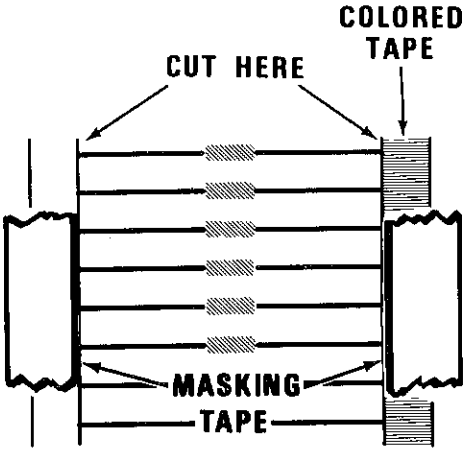
PICTORIAL 3-2

TAPED COMPONENTS CHART

Read and Follow These Instructions Before You Install The First Component.

Use masking tape, as shown in the Taping Detail, to secure the component strips over the component drawings. Make sure that each component matches the color bands or part number next to its illustration. Cut the tapes, as necessary, so that you can properly align the components in each section. Do not remove any components from the strip until they are called for in the assembly instructions.

NOTE: Never attempt to pull the components from the tape unless you are instructed to do so in a step; gum residue from the tape could cause an intermittent solder connection. Use diagonal cutters to remove each part as it is called for in the assembly instructions. Cut the leads at the inside edge of the tape as shown.



Taping Detail