AeroElectric Connection

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Kit Contents: Numbers in [brackets] refer to item numbers on assembly drawing.

- **1 EA .1 uF Capacitor** [6]
- **2 EA 20 uF OR 10 uF/35 V electrolytic Capacitors** [16 & 17]
- **1 EA 160 ohm resistor** [10]
- **1 EA 360 ohm resistor (14-VOLT) OR 560 OHM RESISTOR (28-VOLT)** [7]
- **1 EA LM317K Integrated Circuit**
- **1 EA 3 position terminal strip** [2]
- **1 EA bracket** [1]
- **1 EA heatsink**
- **1 EA I.C. Socket** [9]
- **2 EA 6-32 x .50" machine screw** [8]
- **1 EA 4-40 x .63" machine Screw** [3]
- **1 EA 4-40 x .43" machine Screw** [19]
- **1 EA 4-40 x .25" machine screw** [15]
- **2 EA solder lugs** [4 & 14]
- **4 EA 4-40 x .25" hex nut** [5, 13 & 18]
- **1 EA heatsink insulator**
- **1 EA 1000 ohm (14-VOLT) OR 2500 OHM (28-VOLT) miniature pot with wires**
- **1 EA knob**
- **5 EA #6-red spade terminals**
- **1 EA Small Quantity Electronic Solder**

Assembly steps

(1) Heat sink may have captive nuts hardware installed in mounting holes; remove with pliers. Drill heat sink mounting holes to .250". Carefully debur holes. Check i.c. socket mounting dimensions with existing holes in bracket; you may have to work on the smaller holes a tad with a rat-tailed file. Suggest you glue heat sink to bracket with contact cement and allow to dry before mounting remainder of parts - you're less likely to damage insulating washer and/or slide parts under the i.c. causing shorts.

(2) Mount integrated circuit, heatsink, integrated circuit socket [9] and gray insulating washer using two (.50") 6-32 machine screws [8] . Heatsink goes on side opposite mounting flange on bracket.

Note

Gray insulating washer installs between the integrated circuit and the heatsink.

(3) Mount terminal block [2] using two 4-40 screws [3, 19] and hex nuts [5, 18]. The lower screw [19] flange) is longer (.63") to provide ground wire connection in plastic airplanes. Install second nut [18] on extended threads of screw [19]. Install solder lug [4] under nut [5]. Use tiny drop of "super glue" on threads under nut just before final tightening.

(4) Remove three inboard terminal block screws. Wires will be soldered directly into threaded holes.

Note

Take care that wires do not extend too far into holes causing shorts to bracket beneath the terminal strip.

(5) Install solder lug [14] in remaining #30 hole using 4-40 x .25" screw [16] and hex nut [13]. Use tiny drop of "super glue" on threads under nut just before final tightening. Be sure that solder lug points to 10 o'clock position approximately as shown.

(6) Install resistors [7] and [10]. 160-ohm resistor at [10] (color bands brown-blue-brown), 360-ohm resistor at [7] (orange-blue-brown). 28-volt dimmers use 560-ohm resistor at [7] (green-blue-brown) .

(7) Install electrolytic capacitors [16, 17] . Observe polarity markings on capacitor body; minus (-) arrow points to lead which should be grounded .

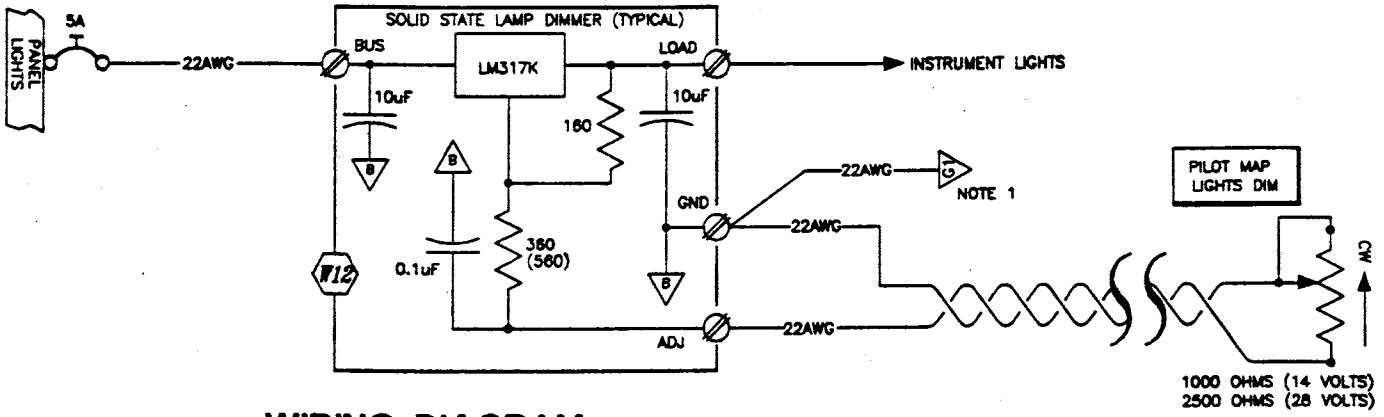
(8) Install 0.1 uF capacitor [6].

(9) Cut and strip ends of 1-1/4" pieces of 22 AWG insulated wire. Install at [11] and [12].

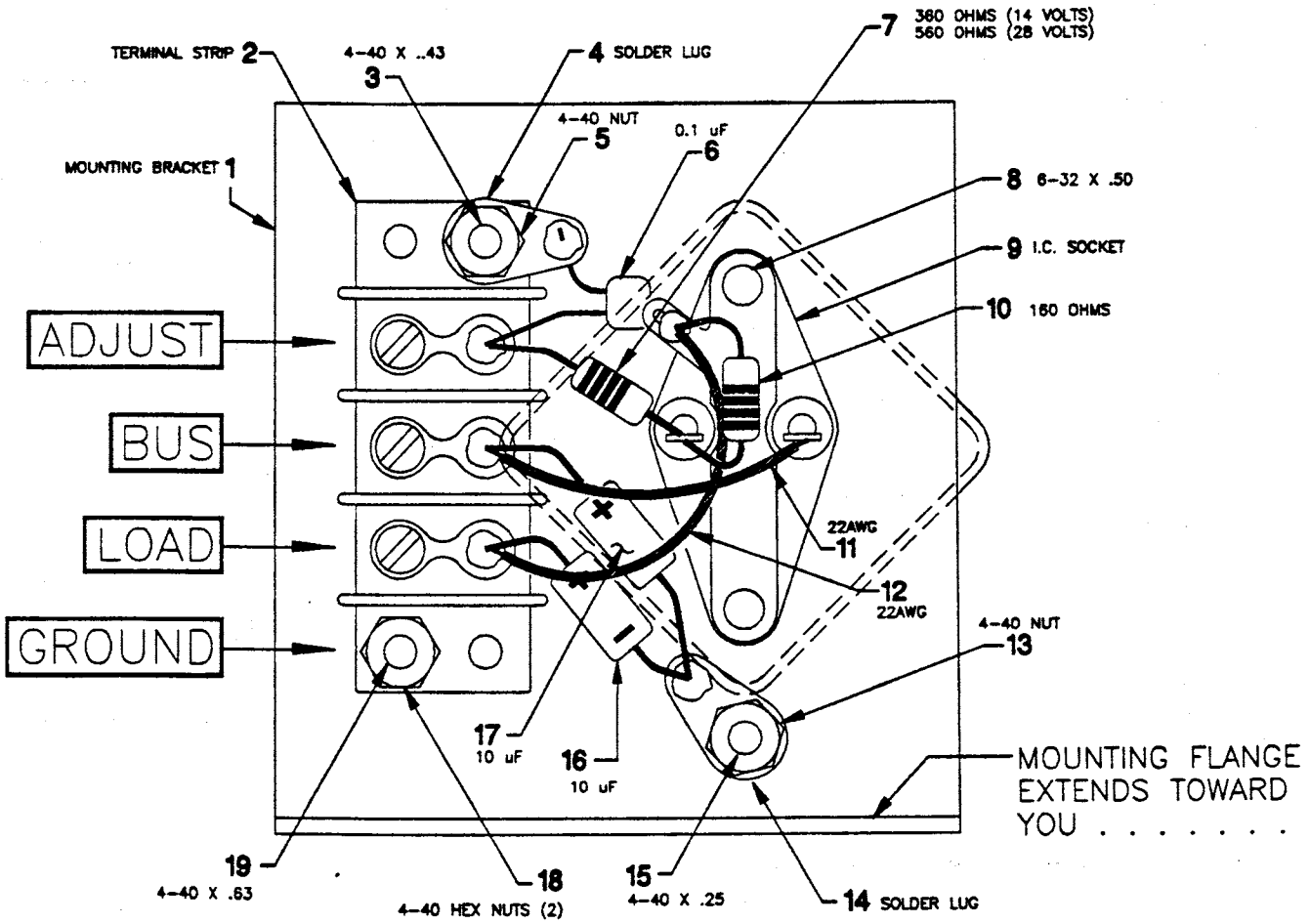
(10) The potentiometer shaft may be shortened as desired using large diagonal cutters or line-man's pliers. Use fine file to debur cut end before installing knob.

Note

The knob supplied with the kit may be one of two types: (1) it may attach with one or more set screws or (2) grip the shaft with a precision collet which is tightened by means of a screw under a removable gray plastic cover.



—WIRING DIAGRAM—



—ASSEMBLY DRAWING—

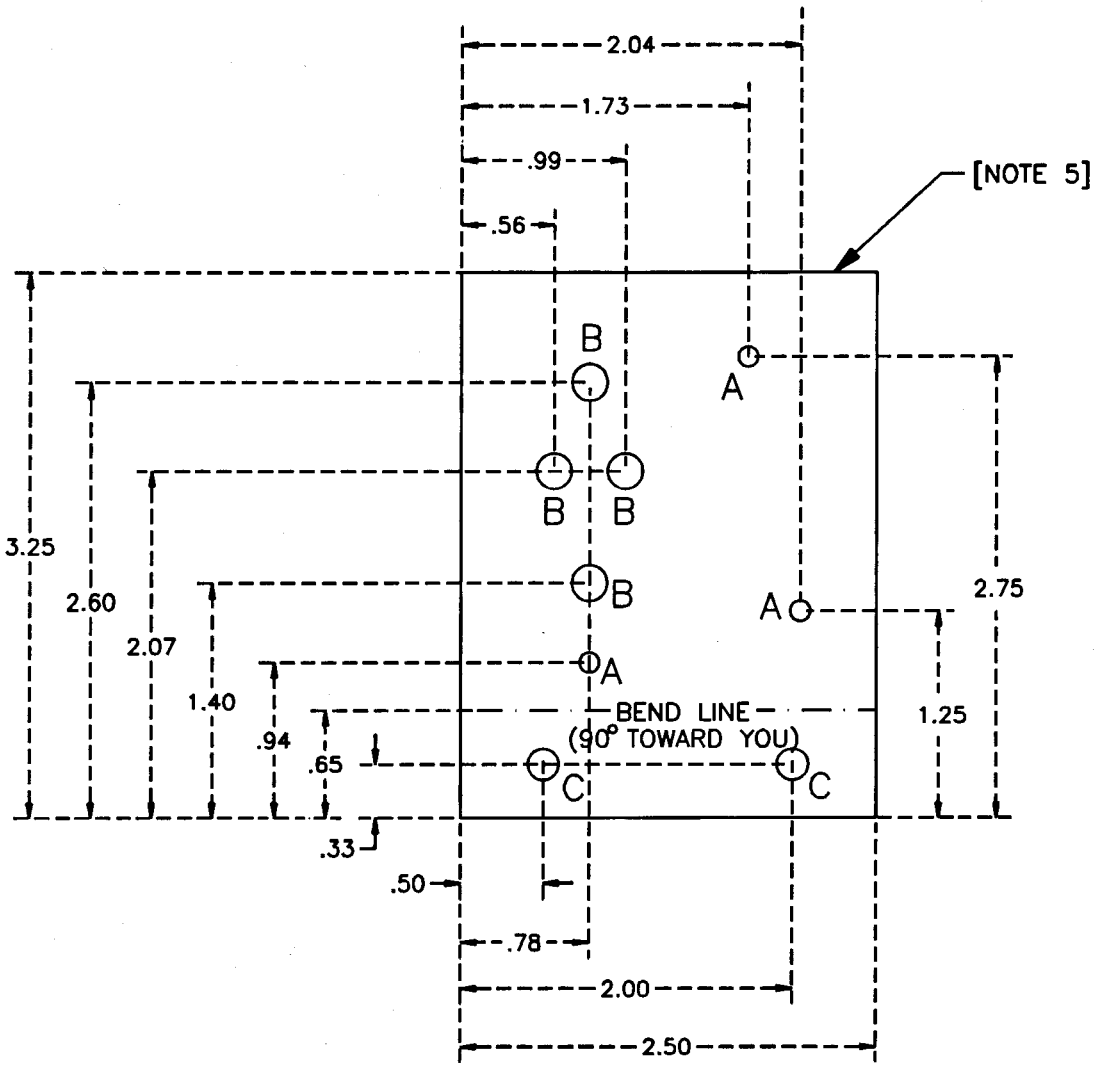
NOTES:

1. WHEN INSTALLED ON METAL AIRCRAFT, MAKE SURE BRACKET IS WELL GROUNDED TO AIRFRAME. ON COMPOSITE AIRCRAFT, INSTALL GROUND LEAD FROM GROUND LUG TO INSTRUMENT PANEL GROUND BUS.

2. TO TEST FINISHED ASSEMBLY: FIRST TEST WITH OHMMETER TO MAKE SURE THAT INTEGRATED CIRCUIT CASE IS INSULATED FROM BRACKET (INFINITE OHMS). IF INTEGRATED CIRCUIT IS NOT SHORTED TO BRACKET, THEN MAKE TEMPORARY CONNECTION OF POTENTIOMETER BETWEEN GROUND POST [19] AND ADJUST TERMINAL. APPLY +14 VOLTS TO BUS TERMINAL; MINUS GOES TO GROUND POST. MEASURE VOLTAGE BETWEEN GROUND POST AND LOAD TERMINAL WHILE ADJUSTING THE POTENTIOMETER. OUTPUT VOLTAGE SHOULD RANGE FROM ABOUT 4 VOLTS UP TO ABOUT 11 VOLTS AS THE POTENTIOMETER IS VARIED OVER FULL RANGE.

3. 28 VOLT DIMMERS WILL SUBSTITUTE A 560 OHM RESISTOR FOR [7] AND A 2500 OHM POTENTIOMETER. TEST WITH 29 VOLTS APPLIED. ADJUSTMENT RANGE WILL COVER RANGE OF ABOUT 5.6 VOLTS UP TO 25 VOLTS.

TITLE	PAGE
DIMMER KIT ASSY	2.0


2.04
1.73
.99
.56
[NOTE 5]
B
A
B
B
B
3.25
2.60
2.07
1.40
.94
.65
.33
.50
.78
2.00
2.50
B
A
A
2.75
1.25
BEND LINE
(90° TOWARD YOU)
C
C

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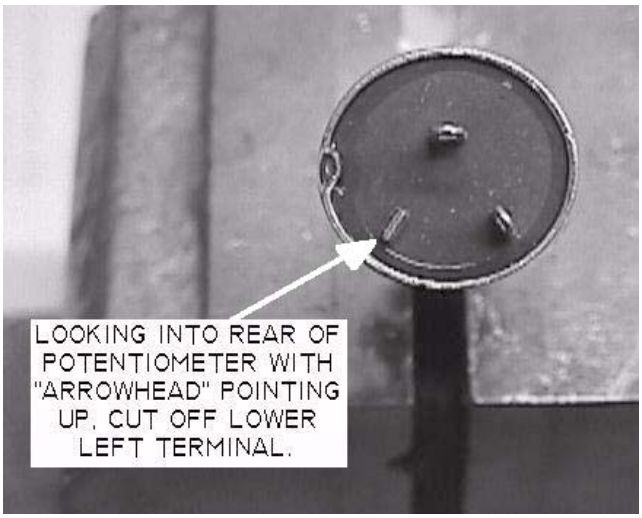
Installation Instructions for Instrument Lighting Dimmers.

1. Select a location for the remote mounted dimmer assembly. The preferred mounting locations allow the fins to be oriented vertically. The dimmer assembly should be mounted clear of heat sources such as radio stacks and heater or defroster outlets.

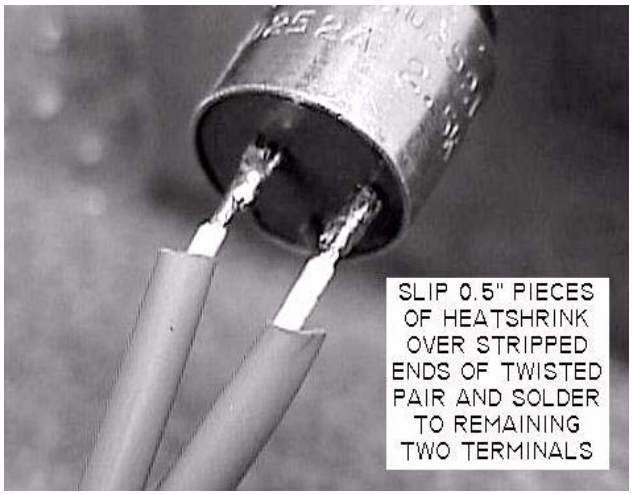
2. Referring to outline drawing, drill 3 (larger dimmers use 4 mounting holes) #26 holes in the selected mounting surface and attach the heatsink using 6-32 screws and nuts (not included). For easier, one handed installation and removal, consider installing #6 nutplates in lieu of nuts.

3. Cut two lengths of 22AWG wire (Mil-W-22579/16-22 recommended) to run between panel mounted control potentiometer and dimmer assembly. Use drill motor to twist the two wires to about 4 twists per inch. Carefully release the twisted pair - holding it so that it "unwinds" in an orderly fashion without tangling.

4. Strip ends of twisted pair 1/4". Cut two pieces of 1/8" heat-shrink, 1/2" long. Slip pieces of tubing over prepared ends.



5. Use electronic grade solder (60/40 or 63/37 tin-lead, rosin core) to attach wires to terminals on the control potentiometer. Hook wires over the terminals and solder.

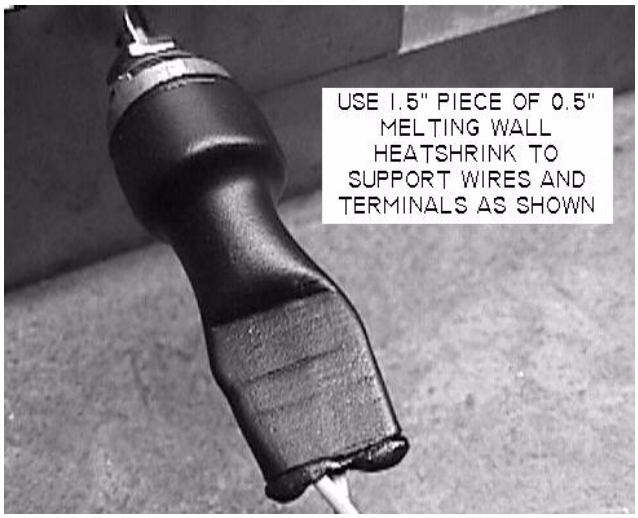


After joints cool, slide heatshrink pieces over the joints and shrink them down.

6. Slide piece of 1/2" heatshrink over the wires and onto the body of the potentiometer. The heatshrink should extend just past the shaft end of the potentiometer body.

7. Apply heat to shrink the portion of the tubing over the potentiometer body. Do not overheat or it will shrink too aggressively and crawl off the potentiometer! Heat it just enough that you can see some "wetness" showing at the end where the internal sealant has softened and to a point where it just starts to shrink over the wire end of the potentiometer. Stop at this point and let the assembly cool for several minutes.

8. Now apply heat to the wire end of the heatshrink segment being careful not to re-melt the shrink over the body of the



potentiometer . . . when the heatshrink has reduced to approx 1/4", lightly "squash" the hot tubing with a pair of needle nose pliers so as to close the tube down on the wires. An internal melting sealant will ooze out of the end. Work the end down to fully encase the wires and flatten the tubing as it cools.

Note
If you do not plan to label the dimmer control with a plastic overlay panel, you may wish to delete the #38 holes in the next step. Most installations do feature some sort of overlay that hides these anti-rotation holes. If you choose not to use them, the anti-rotation tabs may be snipped or sanded off the potentiometer.

9. Referring to the outline drawing, locate and drill two #38 and one .25" hole in the panel for installation of the potentiometer. Deburr holes.

10. Install overlay before installing the control potentiometer from behind using supplied lockwasher and nut. A 5/16" nutdriver fits the potentiometer mounting nut.

Note:
There are two variations of the dimmer assembly that use different pin numbers on the connector. Make sure you use the numbers appropriate to the revision level of your dimmer.

11. Referring to wiring diagram, complete the wiring of the dimmer assembly using electronic grade solder to attach wires to the dimmer assembly's mating connector. Use 1/2" pieces of 1/8" heatshrink over the soldered connections.

12. Install retaining screws on connecter using supplied clips. After the screws are installed, the "threaded" portion of the clip may be flattened to prevent loss of the screw by excessive rotation during subsequent removals.

13. You may shorten the potentiometer shaft with a large pair of diagonal cutters or line-man's pliers. Cut shaft with the potentiometer un-mounted from the panel so that shock of the "snip" doesn't damage the potentiometer's bearing. Attach knob by tightening setscrew with 0.050" allen wrench.

14. Install connector on dimmer assembly and snug down the retaining screws. Tie wires into ship's wire bundles.

16. At maximum counter clockwise, the dimmer assembly will keep about 4 volts on the panel lamps. Their life under this condition is VERY long; keeping the bulbs warm even during daytime flight makes them more resistant to vibration. We do not recommend installation of upstream switches of any kind which would turn the lamps completely OFF.

Kit checklist:

1 each, 2.5K potentiometer (Make sure potentiometer has nut and lockwasher).

1 each, Dimmer assembly (Tested)

1 each, Knob (Make sure knob has both setscrews installed).

1 each, 9-Pin, D-sub Female connector

1 each, Kit of connector retaining screws and clips

6 inches, 1/8" heatshrink

1 inch, 1/2" internal melting wall heatshrink.

1 set, Instructions (4 Sheets).

Variations on a theme:

Only the smaller of the heavy duty heatsinks for a DIM15-14 and DIM10-28 dimmers is illustrated (1.50" wide). The DIM30-14, DIM28-28, DIM50-14 and DIM35-28 heatsinks are twice as wide (3.00") and mounts with four screws.

All dimmers of the same revision level have the same wiring diagram and differ only in size of heatsink and current rating of the integrated circuit dimming controller.

The schematic on page 4 and an inset on page three give wiring details for the gooseneck map light assembly

INSTALLATION KIT CONTENTS:

1.5/3.0 AMP DIMMER ASSEMBLY

9-PIN, D-SUB CONNECTOR, FEMALE

RETAINING SCREW KIT

2.5K MINIATURE POTENTIOMETER

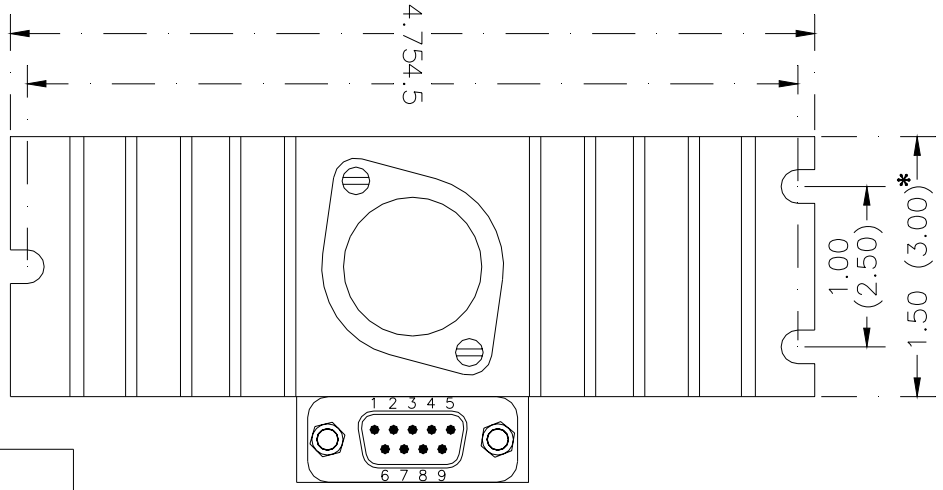
KNOB

1/2" HEATSHRINK, 1" LONG

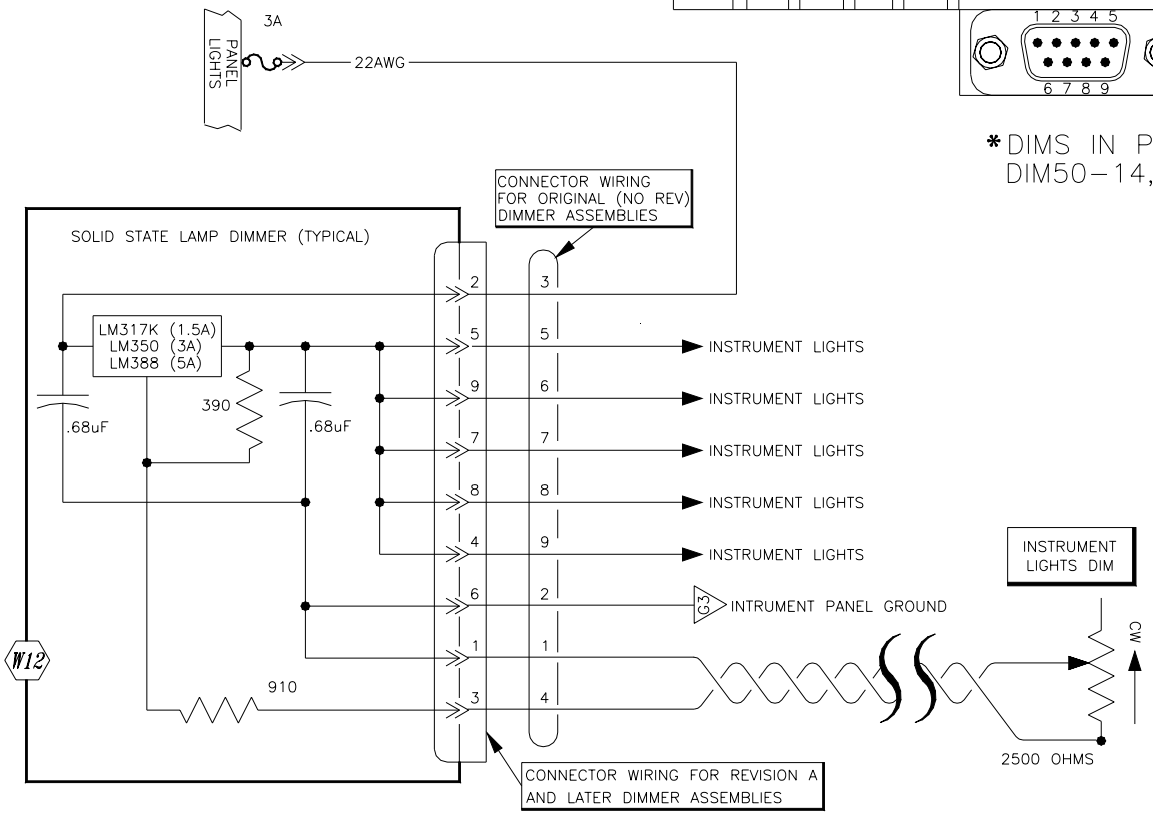
1/8" HEATSHRINK, 6" LONG

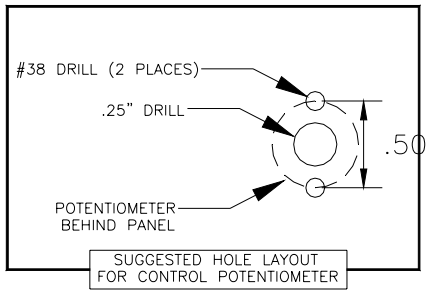
SCHEMATIC AND OUTLINE DRAWING

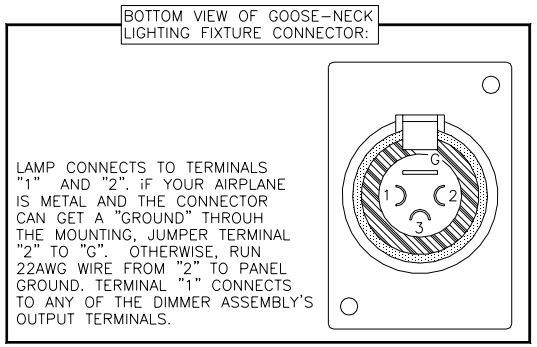
INSTRUCTION SHEET

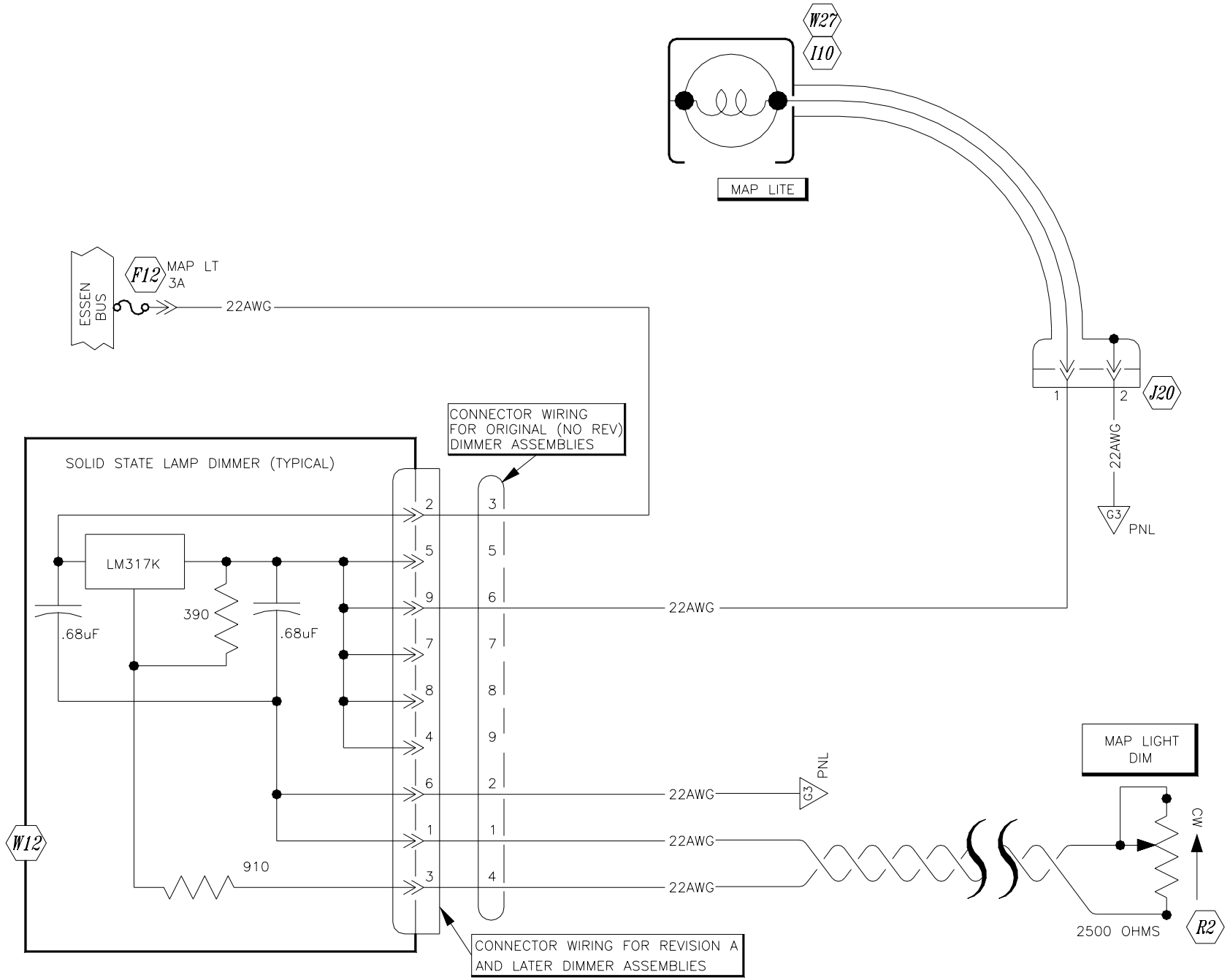


*DIMS IN PARENS ( ) APPLY TO
DIM50-14, DIM22-28, DIM30-14 & DIM22-28








W27
I10
MAP LITE
ESSEN BUS
F12
MAP LT
3A
22AWG
1
2
J20
22AWG
G3
PNL
CONNECTOR WIRING FOR ORIGINAL (NO REV) DIMMER ASSEMBLIES
SOLID STATE LAMP DIMMER (TYPICAL)
LM317K
.68uF
390
.68uF
910
W12
22AWG
22AWG
22AWG
MAP LIGHT DIM
CW
2500 OHMS
R2
CONNECTOR WIRING FOR REVISION A AND LATER DIMMER ASSEMBLIES