

hp Model 175A Oscilloscope
Serials Below 326-01376

Thermal Switch Assembly Modification Kit
hp Stock No. 175A-95E

This Service Note obsoletes Service Note 175A-2

Installation of Thermal Switch Assembly Modification Kit, hp Stock No. 175A-95E, in hp Model 175A Oscilloscope, serials below 326-01376, will provide component protection from damage due to excessive temperatures.

The thermal switch will turn off the oscilloscope if the fan fails and the instrument starts to overheat. Cutoff temperature can be controlled over a range of a few degrees by positioning of the series regulator shunt resistor in relation to the thermal switch. A new shunt resistor is provided in the kit and is mounted on the thermal switch support bracket.

Installation of the Thermal Switch Assembly Kit involves some component and wiring changes. It also requires drilling of two small holes in the oscilloscope main frame. Except for a hand drill, special tools are not required.

After completing the installation, an operating check of your oscilloscope should be made, but calibration or adjustment is not required.

Material Furnished in hp 175A-95E Kit

<u>Qty</u>	<u>Description</u>	<u>hp Stock No.</u>
1	Thermal Switch Assembly	175A-19H
1	Cable	175A-16AC
1	Terminal Board, two tie-points and ground	0360-0015
1	Terminal Board, right-hand tiepoint and ground	0360-0014
	Wire, 6 inch, white, 18 gauge	8150-0081

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Material Furnished in hp 175A-95E Kit (contd)

<u>Qty</u>	<u>Description</u>	<u>hp Stock No.</u>
4	Wire, 6 inch, slate, 18 gauge	8150-0087
	Machine Screw, #6-32, SS,	2360-0005
	Round Heat, 3/8" long	
2	Nut, Hex, with external	2420-0001
	lockwasher	
3	Lockwasher, external #6	2190-0007

INSTALLATION PROCEDURE

1. The 2.3 ohm, 45 watt resistor located on the bracket of Thermal Switch Assembly, stock no. 175A-19H, is a replacement for R482. Position this resistor 1/16 - 1/8 inch below the thermal switch and rotate its terminals to the rear (away from the neon lamp) and tighten its mounting screws.
2. Connect and solder the 6 inch white wire to one terminal and the 6 inch slate wire to the other terminal.
3. Place the Model 175A Oscilloscope upside-down. Remove the screws that secure the Low Voltage Power Supply Board (175A-65D).
4. Remove the white, blue, and black leads by removing the edge-on connectors from the front edge of the board.
5. Lay back the board toward the rear of the instrument to fully expose the electrolytic capacitors.
6. Without disconnecting any leads, remove and lay back the three capacitors nearest L481. These capacitors are C441, C442, and C443.
7. Notice that the capacitor mounting bracket ends before reaching the inductor L481. Center-punch a mark in line with the center of this mounting bracket and about 3/8" from L481. (About halfway between L481 and the edge of the mounting bracket)
8. Center-punch another mark 3-1/8" from the first and centered on the capacitor mounting bracket.

9. Drill the holes with a #20 drill.
10. Install the thermal switch assembly on the top of the main deck behind the vertical plug-in slot, and positioned with the neon bulb forward. Use the hardware provided.
11. Replace the electrolytic capacitors and the low voltage power supply board.
12. Reconnect the white, blue, and black leads to front edge of board.
13. Locate, remove and discard the old R482. It may be found to the right and rear of the newly installed thermal assembly. Cut the attached wires close to the resistor terminals.
14. Install the terminal strip with the two tiepoints and ground in place of resistor R482. Use one of the #6-32 screws and an external lockwasher.
15. Solder the white lead from the new R482 and three white leads removed in step 13 to one of the tiepoints.
16. Solder the gray lead from the new R482 and the gray leads removed in step 13 to the other tiepoint. (The ground lug is not used at this time.)
17. Strip the leads and feed the shielded cable through the chassis hole located forward of Diodes CR481 and CR482.

Note

The end of the cable having the longest exposed leads should be on the bottom side of the oscilloscope, and will connect to the fuseholder.

18. Remove the protective cover from the top of the terminal switch assembly.
19. The exposed terminals are marked 1, 2, and 3. Terminal 2 has a white wire connected to it.

19. (contd)

- a. Connect and solder the black conductor to terminal 1.
- b. Connect and solder the white conductor to terminal 3. (The neon is attached here.)
- c. Connect and solder the black shield wire to the center tiepoint on the terminal strip.

20. Recheck solder connections and replace protective cover.

21. Route the shielded cable along the bottom of the chassis to the line fuseholder.

22. Mount the terminal board, stock no. 0360-0014, with the convenient chassis screw located forward of rear panel.

23. Connect and solder the black shield wire to the ground terminal.

24. Connect the white conductor to the tiepoint.

25. Remove the black lead from the side terminal of the fuseholder and connect it to the tiepoint with the white conductor (step 24). Solder connections.

26. Connect and solder black conductor from shielded cable to the side terminal of the fuseholder.

OPERATIONAL CHECK

An operational check of your Model 175A Oscilloscope completes the procedure.