SERVICE NOTE

SUPERSEDES

None

MODEL: HP 3960
Tape Recorders

Serial Prefix 941

FILE NO. 42-080

DATE: 12 March 1970

SUBJECT: END OF TAPE SENSE DELAY

The 3960 (941) series recorders have certain operational characteristics that can cause a false end-of-tape to be sensed. A false end-of-tape can occur when an operator threads tape too tightly and the damper assembly springs become too tightly compressed. When this condition exists, if Play, Fast Forward, or Fast Reverse mode is energized, it is possible to sense a false end-of-tape because of the energy stored in the springs. A false end-of-tape can also occur when coming from Play, Fast Forward, or Fast Reverse through the Stop mode if the springs are too tightly compressed during normal braking action of the reel motors. A delay circuit can be incorporated which will mute the end-of-tape sense during the first 1.5 seconds of tape motion. This will allow the damper assembly to stabilize before it senses an end-of-tape. The delay circuit consists of a RC time constant (See Fig 6, C-3 and R-12) which controls relay K2 Turn-off time. The following is a step-by-step procedure to incorporate this change, if desired. The approximate time needed to incorporate this change is two hours.

1. Close reel cover and place recorder in inverted position on bench. Place pad under recorder to prevent scratching of paint and reel cover.

2. Case Assembly Removal
   a. Remove Six screws which secure case assembly.
   b. When an Inverter is installed, remove 2 (two) additional screws on Case Assembly which secure case to the Inverter.

3. Remove Switch Shield (See Fig 1)

4. Remove all 7 switch knobs (See Fig 1)

5. Remove recessed power cover panel (See Fig 2)

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6. Remove screws that secure the A17 (See Fig 3) Switch Assembly - do not remove Switch Assembly.
   Note: Observe location of shims before removal of mounting screws for proper alignment of the Switch Assembly during installation.

7. Delay circuit card A18 Removal (See Fig 4)
   Note: Observe and make note of the location and color code of wires for reinstallation of the Delay Card.

   a. Tilt A17 switch assembly to gain access to screws which secure Delay Circuit Card.

   b. Remove all four screws.

   c. Unsolder circuit connections from eyelet 1 through eyelet 14 of the Delay Circuit card.

   d. Remove Delay Circuit card.

8. Remove Brown wire from eyelet connector 1 of the A17 Switch Assembly card. The other end of the Brown wire was previously removed from eyelet 1 of the Delay Card.

9. Delay Board Modification (See Fig 5)

   a. Remove diodes CR-1 and CR-2 and discard.

   b. Add R-13, a 2.15K resistor, between eyelet 8 and 9. Leave enough clearance in the eyelet holes for later reinstallation of wires previously removed.

   c. Connect (-) negative side of C-3, a 50 MF electrolytic capacitor, to eyelet 1. (See added parts list)

   d. Connect (+) positive side of C-3 to one end of R-12, a 100 ohm resistor.

   e. Connect other end of R-12 to the ground side of R-1. The ground side of R-1 is electrically common with eyelet 9.

10. Open recorder to swing-away position position. (See Fig 1)

11. Add violet wire (22 guage) to Pin #2, XA15, the Power Regulator Connector (See Fig 1)

    a. Route wire through existing harness down through hole #1 (See Fig 1)
       Note: Cut wire sufficient length to connect to eyelet V of A17 switch assembly.

12. Remove existing green wire from eyelet V of the A17 switch assembly card. (See Fig 4) Splice in an additional 8 inch length of Green wire #20 guage to the end of Green wire just removed from eyelet V.

13. Connect the Green wire, previously added in Step 12 to the Junction of eyelet #1 and the (-) negative side of C-3 on the Delay Board.

    Note: The eyelet hole will not be large enough for the Green wire. Wrap the bare end of the Green wire around (-) negative lead or C-3 which passes through eyelet #1 and solder.

14. Reconnect wires previously removed from eyelet #2 through 14 in Step 7c.

15. Secure wire harness (See Fig 4)

16. Solder diode CR10 to relay socket of K-2. (See Fig 5) Connect the cathode to Pin #4 and the anode to Pin #1. Cathode end has the band.

17. Reassemble parts in reverse order of disassembly.

    Note: After reassembly, make sure A17 switch assembly does not bind during operation of the switch. It may be necessary to add or remove shims. Check for normal operation of the End-of-Tape delay, the Start delay, and Transfer delay circuits.

18. Up-date Delay Schematic in 3960 Manuals.

Add Parts:

1. C-3, 50 MF, 25V, HP P/N 0180-0058
2. R-12, 100 ohms, HP P/N 0757-0401
3. R-13, 2.15K ohms, HP P/N 0698-0084
4. CR-10 Diode, HP P/N 1901-0026

Delete Parts:

1. CR-1 Diode HP P/N 1901-0026
2. CR-2 Diode HP P/N 1901-0026

BW/caa/wa

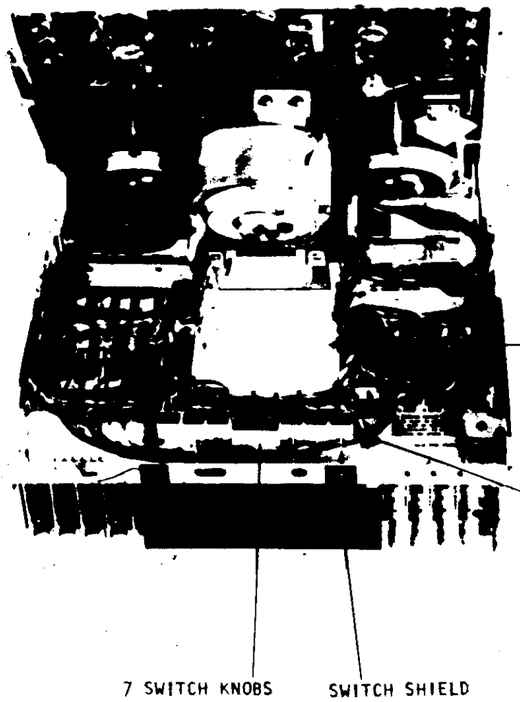
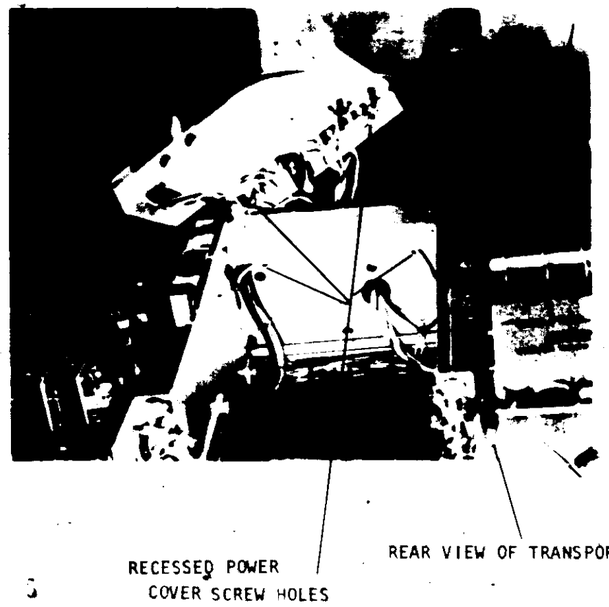


FIGURE 1

FIGURE 2



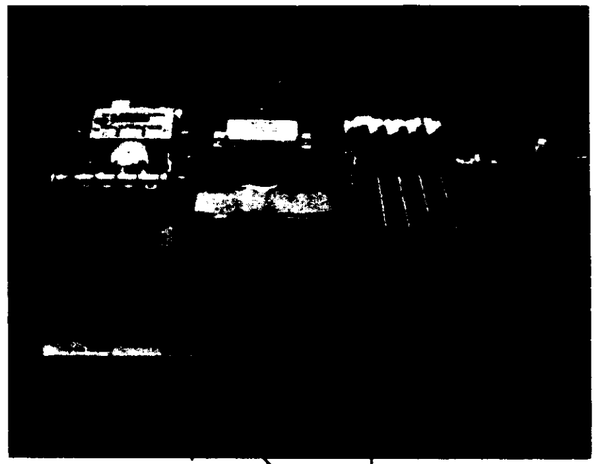
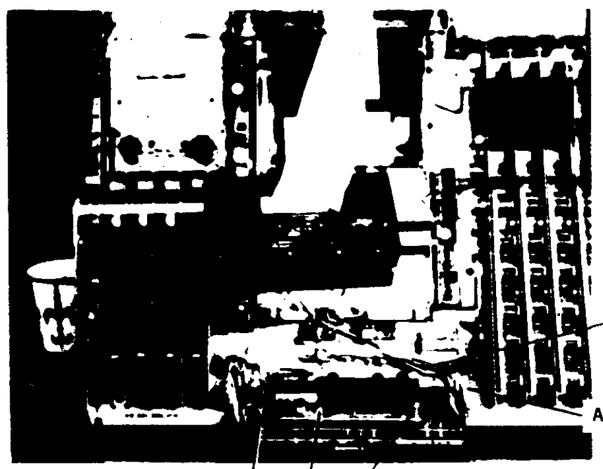


FIGURE 3

FIGURE 4



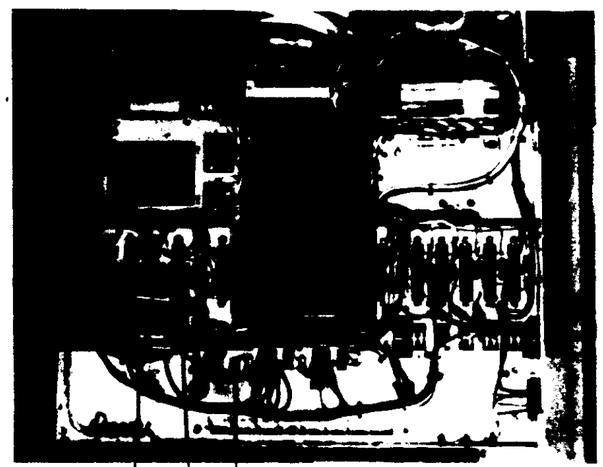


FIGURE 5

MODIFIED DELAY CIRCUIT

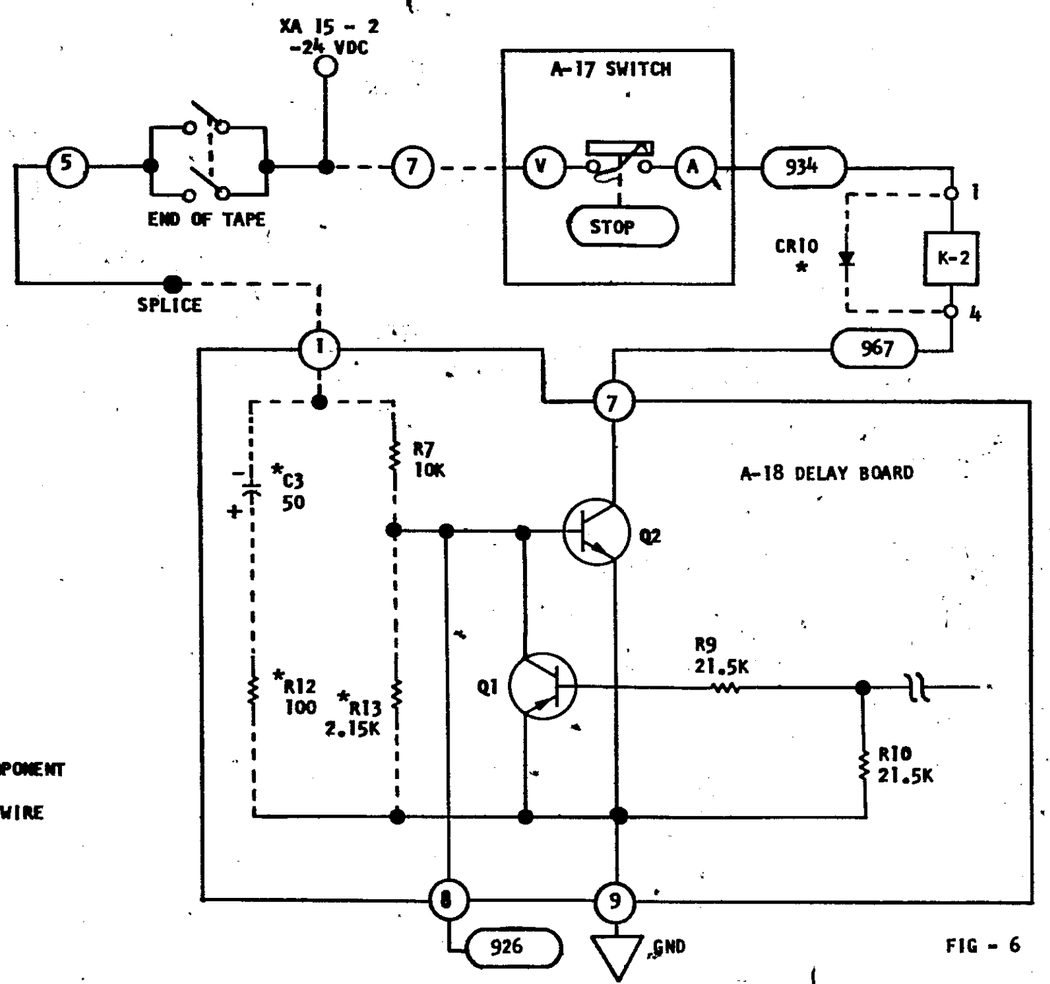


FIG - 6

* ADDED COMPONENT

----- ADDED WIRE