SECTION III

OPERATION

3-1. GENERAL.

3-2. The information contained in this section is based on the assumption that an Ampex manual control panel is incorporated into the tape transport. Since equivalent control circuitry must be provided by the customer if a manual control panel is not included with the tape transport, only minor differences in nomenclature should occur and no basic difference in operating procedure will be encountered.

3-3. OPERATING CONTROLS.

3-4. The operating controls for the tape transport are grouped on the front panel of the manual control panel. These controls and their functions are indicated in Figure 3-1.

3-5. THREADING TAPE LEADER.

3-6. Under normal operating conditions, the take-up reel of the transport is never removed. Successive reels of tape, or files, are placed on the supply reel hub.

3-7. The operation of re-threading the tape transport for each file reel is avoided by attaching a permanent leader to the take-up reel. A connector tab on this leader mates with notches in the leader of each file reel.

3-8. The machine leader is normally supplied on the take-up reel and will last for many months in normal operation. Should the leader require replacement, the following procedure is recommended.

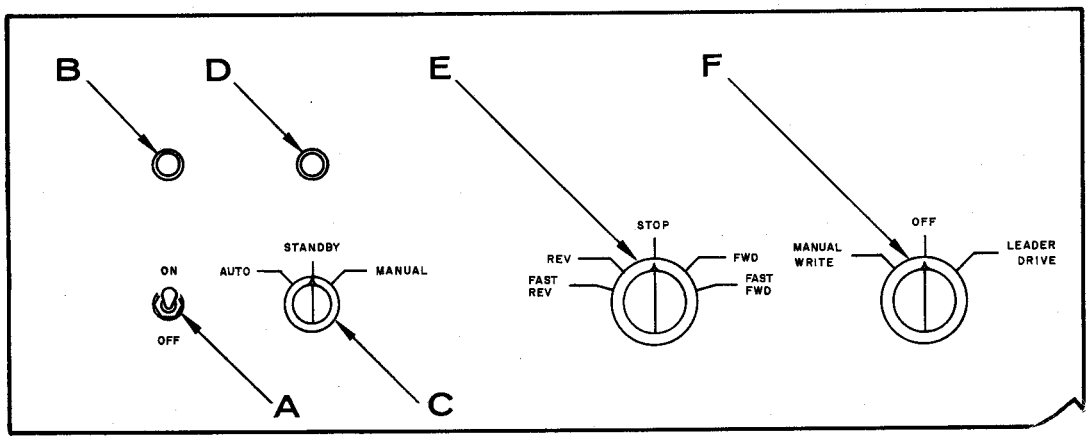
Step 1: Remove any leader or tape from the take-up reel.

Step 2: Place the tape transport in the Standby mode. Press the lower REEL BRAKE pushbutton and starting with the plain end of the new leader, wind approximately 10 feet of leader on the reel by rotating a reel in a clockwise direction.

Step 3: Open the tape drive mechanism cover and the glass vacuum chamber doors.

Step 4: Referring to Figure 3-2, pass the tape to the right of the solid fixed guide, to the left of the lower leader sensing post, over the roller guide of the vacuum chamber, and between the lower vacuum chamber guide and the chamber wall.

Step 5: Route the leader over the upper guide, between the upper guide and the chamber wall, under the buffer spring guide of the vacuum chamber, between the right-hand brake weight and brake post, and between the right-hand capstan and capstan roller.



CONTROL	DESCRIPTION	FUNCTION
A	POWER SWITCH	POWER ON OR OFF
B	ORANGE INDICATOR	POWER ON
C	MODE SELECTOR SWITCH	AUTO, STANDBY, OR MANUAL
D	GREEN INDICATOR	READY
E	MANUAL CONTROL SWITCH	FAST FORWARD, FORWARD, STOP, REVERSE, OR FAST REVERSE
F	MANUAL WRITE / LEADER DRIVE SWITCH	MANUAL WRITE, OFF, OR LEADER DRIVE

Figure 3-1
Operating Controls
Manual Control Panel

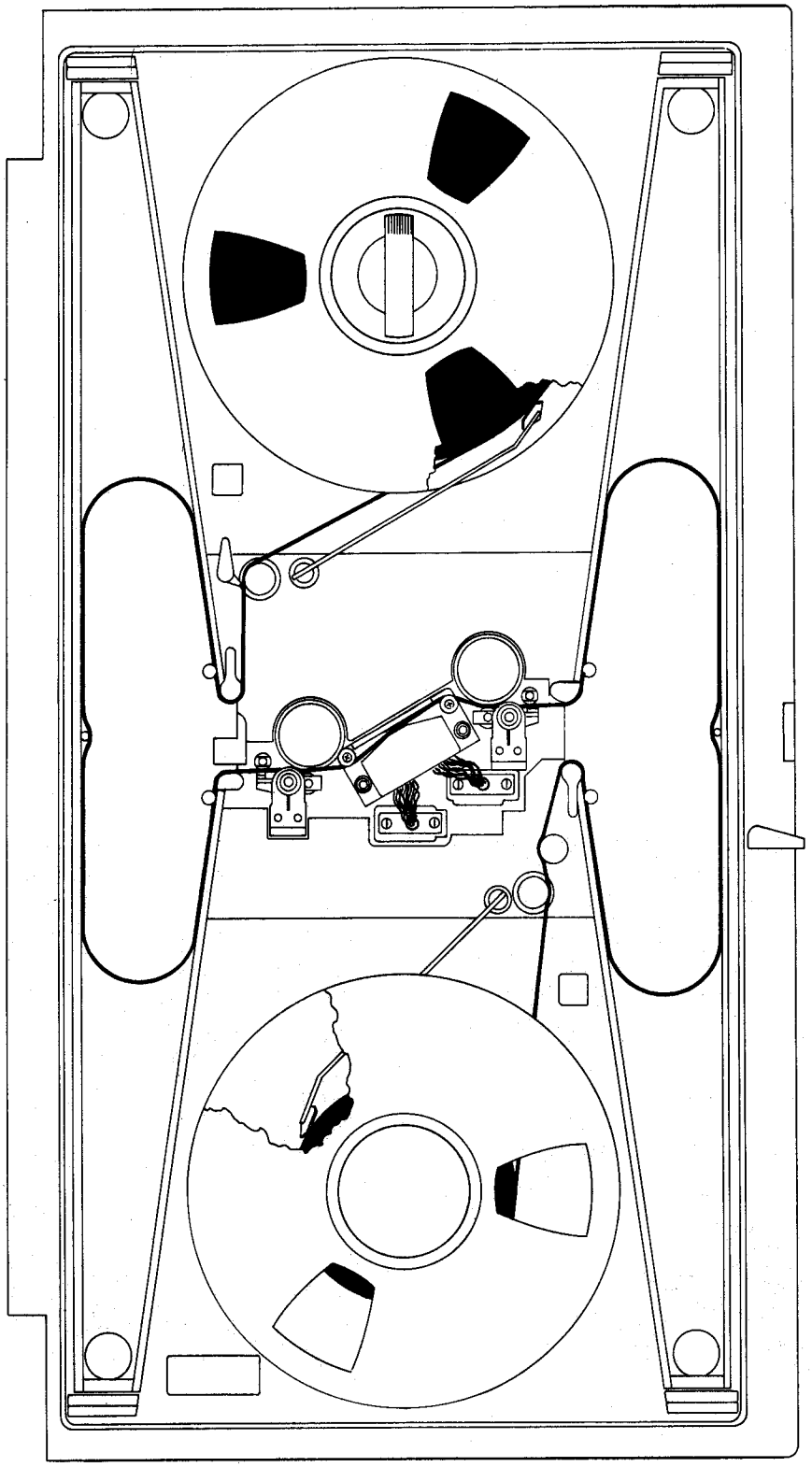
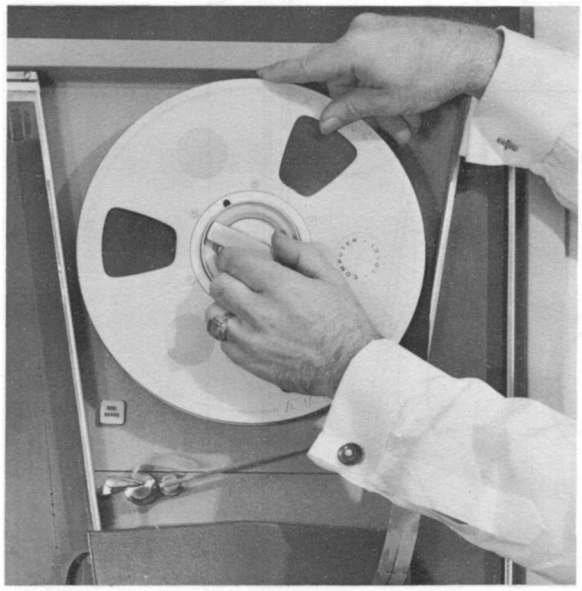


Figure 3-2
Tape Threading Path

Step 6: Pass the leader over the right-hand guide of the head assembly, between the hinged head cover and the head stack, and under the left-hand guide on the head assembly.

Step 7: Continue the threading by passing the leader between the left-hand capstan and capstan roller and the left-hand brake weight and brake post. Pass the leader between the photosense head and the buffer spring guide of the left-hand vacuum chamber. If photosense is not used, the leader is routed directly over the buffer spring guide of the left-hand vacuum chamber.

Step 8: Thread the leader between the lower chamber guide and the chamber wall, over the upper chamber guide and between this guide and the chamber wall, and under the roller guide on the



Ampex File Reel

IBM File Reel

Figure 3-3
Mounting a File Reel

vacuum chamber. Open the leader clamp at the upper leader sensing post and clamp the leader against the post. Close the vacuum chamber doors and the tape drive mechanism cover.

3-9. INSTALLING FILE (SUPPLY) REEL. (Figure 3-3)

3-10. When the permanent leader has been threaded on the tape transport as above, the file reel may be installed by following the procedure below.

Step 1: Open the transport access door and engage the leader clamp (if not already engaged).

Step 2: (Ampex reel retainer)--Press the serrated end of the reel retainer handle. If the reel retainer has previously been locked, the lock will release.
(IBM Compatible reel retainer)--Rotate the retainer knob in a counterclockwise direction until the metal plate no longer presses against the tire.

Step 3: If a write enable ring is to be used, install the ring on the back of the file reel.

Step 4: (Ampex reel retainer)--Slip the file reel over the reel retainer. Hold the reel firmly against the turntable surface and rotate the reel retainer handle approximately 120 degrees clockwise, at which point the reel retainer handle will lock into position. Check to see that the reel is snugly mounted on the retainer.
(IBM Compatible reel retainer)--Slip the file reel over the reel retainer. Hold the reel firmly against the turntable surface and rotate the retainer knob in a clockwise direction until the reel is snugly mounted on the retainer.

Step 5: Press the upper REEL BRAKE pushbutton, releasing the mechanical brake on the upper reel. Pull sufficient tape from the reel to reach the end of the permanent take-up leader held in the tape clamp.

Step 6: Connect the file leader to the take-up leader as shown in figure 3-4. One-inch tape leaders have two sections in the quick-connect splice, one-half-inch tape leaders have a single section splice.

Step 7: Press the upper REEL BRAKE pushbutton and turn the file reel in a counterclockwise direction to take up all slack between the file reel and the leader clamp.

Step 8: Release the leader clamp. The upper tape packer arm will move in against the tape pack.

NOTE

The leader clamp must be opened to complete the tape transport interlock.

Step 9: Close the transport access door.

NOTE

The transport access door must be closed to complete the tape transport interlock.

Step 10: Place the MODE SELECTOR switch in the MANUAL position. Place the MANUAL CONTROL switch in the FORWARD position. Hold the MANUAL WRITE/LEADER DRIVE switch in the LEADER DRIVE position until metalized leader no longer contacts the sensing posts. When the MANUAL WRITE/LEADER drive control is released it will automatically return to OFF position. Tape will continue to move in the forward direction.

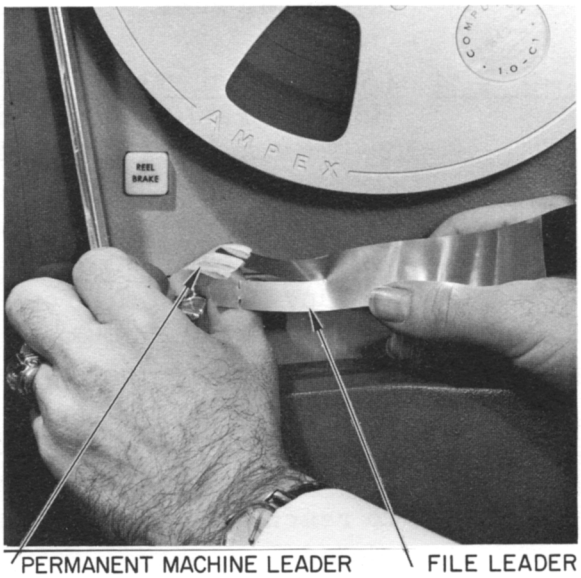


Figure 3-4
Connecting Leaders

Step 11: Permit the tape to move forward until the opaque recording tape is completely threaded between the file and take-up reels. Tape motion may now be stopped by turning the MANUAL CONTROL switch to the STOP position.

3-11. MANUAL OPERATION.

3-12. Manual operation is obtained at all times when the MODE SELECTOR switch is in the MANUAL position. Tape motion control is exclusively a function of the five-position MANUAL CONTROL switch, with writing possible when the MANUAL WRITE/LEADER DRIVE switch is in the MANUAL WRITE position.

3-13. If an entire reel of tape is to be run, the MANUAL CONTROL switch may be left in the FORWARD position. The tape transport will move tape forward until metalized leader at the end of the file reel contacts the leader sensing post, at which time tape motion will automatically stop. Likewise, the tape may be moved in the reverse direction at normal tape drive speed by utilizing the REVERSE position of the MANUAL CONTROL switch. Tape motion will stop when the metallic leader at the beginning of the file reel contacts the tape sensing posts.

3-14. If only certain portions of the tape are to be run, the desired section may be more rapidly reached by the use of the FAST FORWARD or FAST REVERSE positions of the MANUAL CONTROL switch. The presence of the metallic leader will stop the tape transport at the end of the reel. (FAST FORWARD and FAST REVERSE operation are locked out when the diameter of the tape pack on the take-up reel falls below a minimum point.)

3-15. If the tape motion is interrupted for any reason, such as breaking the tape transport control interlock circuitry by opening the transport access door, the MANUAL CONTROL switch must be turned to the STOP position after the interruption is cleared before tape motion can be resumed.

3-16. AUTOMATIC OPERATION.

3-17. Placing the MODE SELECTOR switch on the manual control panel in the AUTO position connects all control inputs of the tape unit to external equipment. Control of tape motion is therefore exclusively a function of the computer, and operation of the MANUAL CONTROL or MANUAL WRITE/LEADER DRIVE switches will have no effect on operation.

3-18. If tape motion is interrupted for any reason, such as breaking tape transport control interlock circuitry by opening the transport access door, tape motion is resumed as soon as the interruption is cleared. If this is not desirable, the MODE SELECTOR switch should be turned to the STANDBY position before the interruption is cleared. It will be noted that even though the operation is resumed immediately upon clearance of the interruption, the logical sequence of the programming may be destroyed.

3-19. REMOVING FILE REEL.

3-20. When operating in the MANUAL mode, tape motion is automatically stopped by the presence of metallic leader across the upper leader sensing post. (Leads from this post are available for similar control in the AUTOMATIC mode.) To return the tape to the file reel, the following procedure should be followed:

Step 1: Turn the MODE SELECTOR switch to the MANUAL position, the MANUAL CONTROL switch to the FAST REVERSE position, and the MANUAL WRITE/LEADER DRIVE switch to the LEADER DRIVE position. The tape will move at high speed from the take-up reel to the file reel. As the rewind cycle is nearly completed the position of the take-up reel packer arm trips a switch to slow the tape transport to normal reverse speed. As the metallic leader passes over the upper leader sensing post, tape motion is automatically stopped.

Step 2: Turn the MODE SELECTOR switch to STANDBY and the MANUAL CONTROL switch to STOP.

Step 3: Open the transport access door.

Step 4: The tape will be stopped with the leader connection between the file reel and the leader clamp. Close the leader clamp, gripping the tape.

Step 5: Disconnect the permanent machine leader from the file leader.

Step 6: Depress the upper REEL BRAKE pushbutton and rotate the reel in a counterclockwise direction until the file leader is completely wound on the reel.

Step 7: (Ampex reel retainer)--Depress the serrated end of the reel retainer handle to release the lock, permit the handle to rotate in a counterclockwise direction. Remove the reel from the hub. (IBM Compatible reel retainer)--Turn the retainer knob in a counterclockwise direction until the reel can be removed from the hub.

Step 8: The equipment is now ready to be reloaded. If another file reel is not to be installed immediately, close the transport access door.

3-21. INTERLOCKS.

3-22. Interlocks are provided in the tape transport mechanism to protect the operator and tape. These interlocks should be defeated only when absolutely necessary and with full realization of potential hazards.

3-23. The transport access door interlock switch, located at the lower left front of the tape transport, permits operation of the transport only with the access door closed or when the switch has been defeated. The defeat is possible by gripping the plunger and pulling it toward the operator.

WARNING

With the transport access door interlock defeated, the servo systems may be operative. The operator should avoid placing hands near the reels unless the system is in the STANDBY mode.

3-24. PREPARING TAPE INDICATORS.

3-25. The tape sensing posts mounted near the file reel and the take-up reel may be used for indicators in control circuits, logic circuits, etc. Metalized leader placed on the tape backing may be used to ground either or both insulated rings of the sensing post (if the metal leader extends across the lower half of the width of the tape, the inner ring will be grounded; if the leader extends the full width of the tape, both rings will be

grounded.) The maximum current capacity of each sensing post is 60 milliamperes. The posts are completely available only when the transport is operating in the AUTOMATIC mode; in MANUAL operation, the outer ring of the upper leader sensing post is required to stop tape motion.

3-26. If a photosense unit is incorporated into the tape transport, a level change and/or relay operation are available for control and logic circuits. Photosense signals are not used within the tape unit. Two channels are used, one each for beginning of file and end of file. Placement of the photosense tabs on the tape is indicated in figure 3-5.

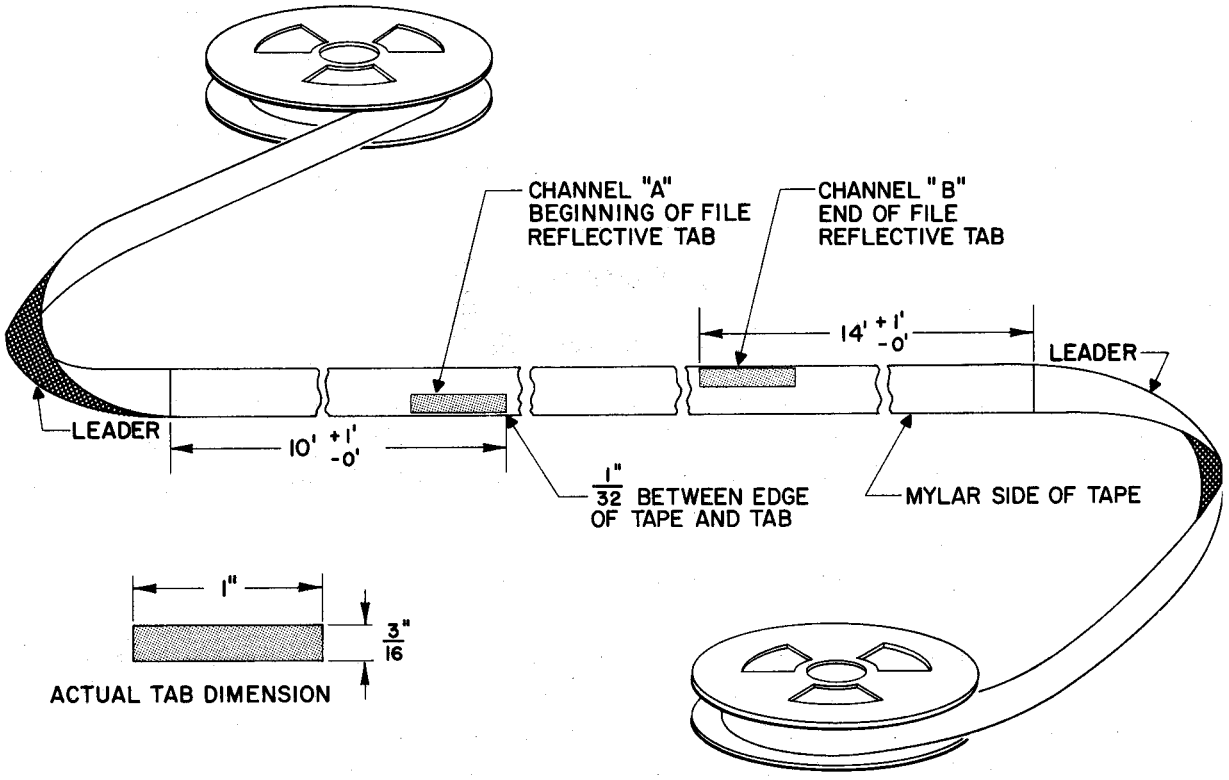


Figure 3-5
Placement of Photosense Tabs on Tape