

1010
CASSETTE RECORDER
FIELD SERVICE
MANUAL

ATARI



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ATARI

1010TM CASSETTE RECORDER

FIELD SERVICE MANUAL

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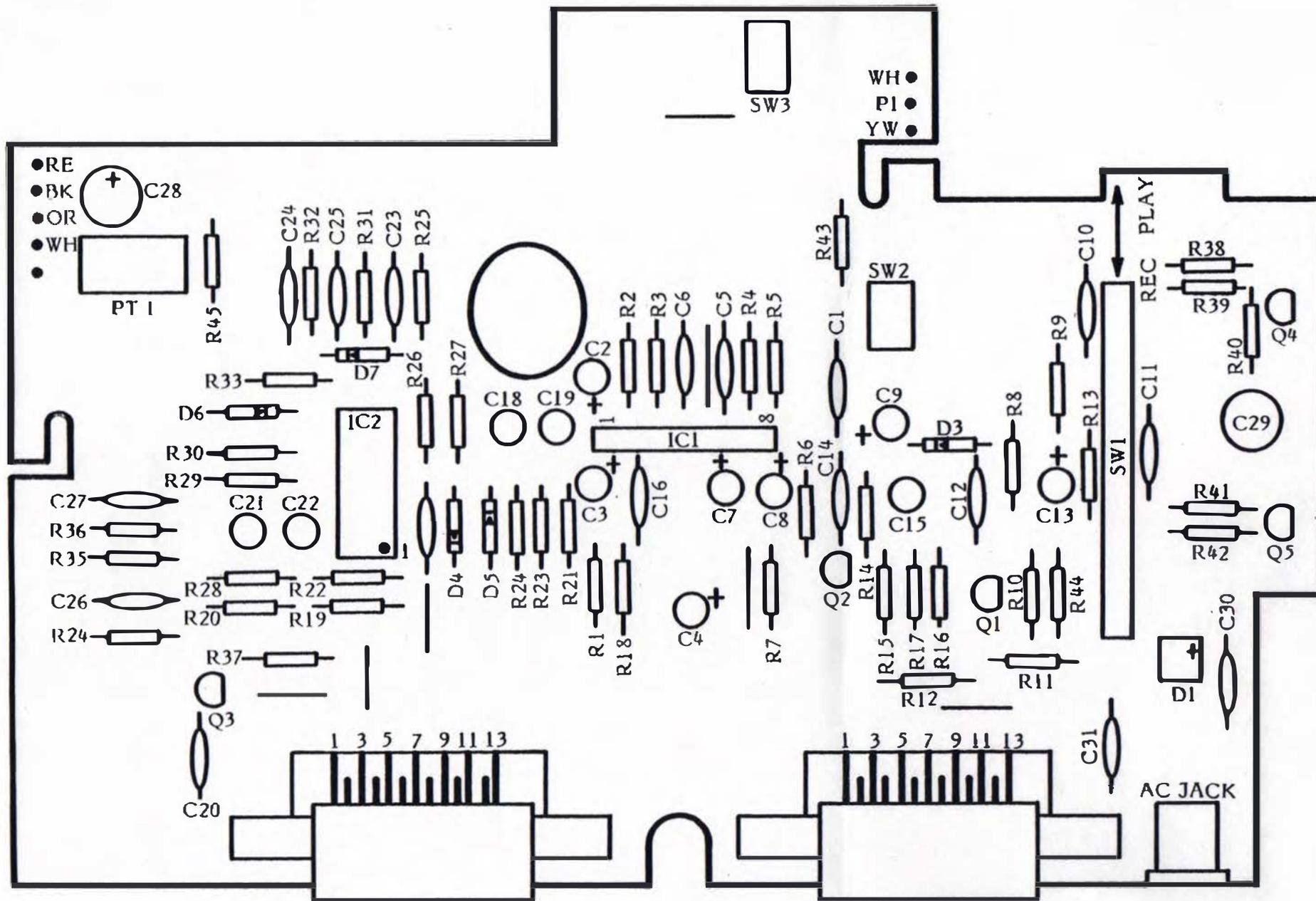
INTRODUCTION

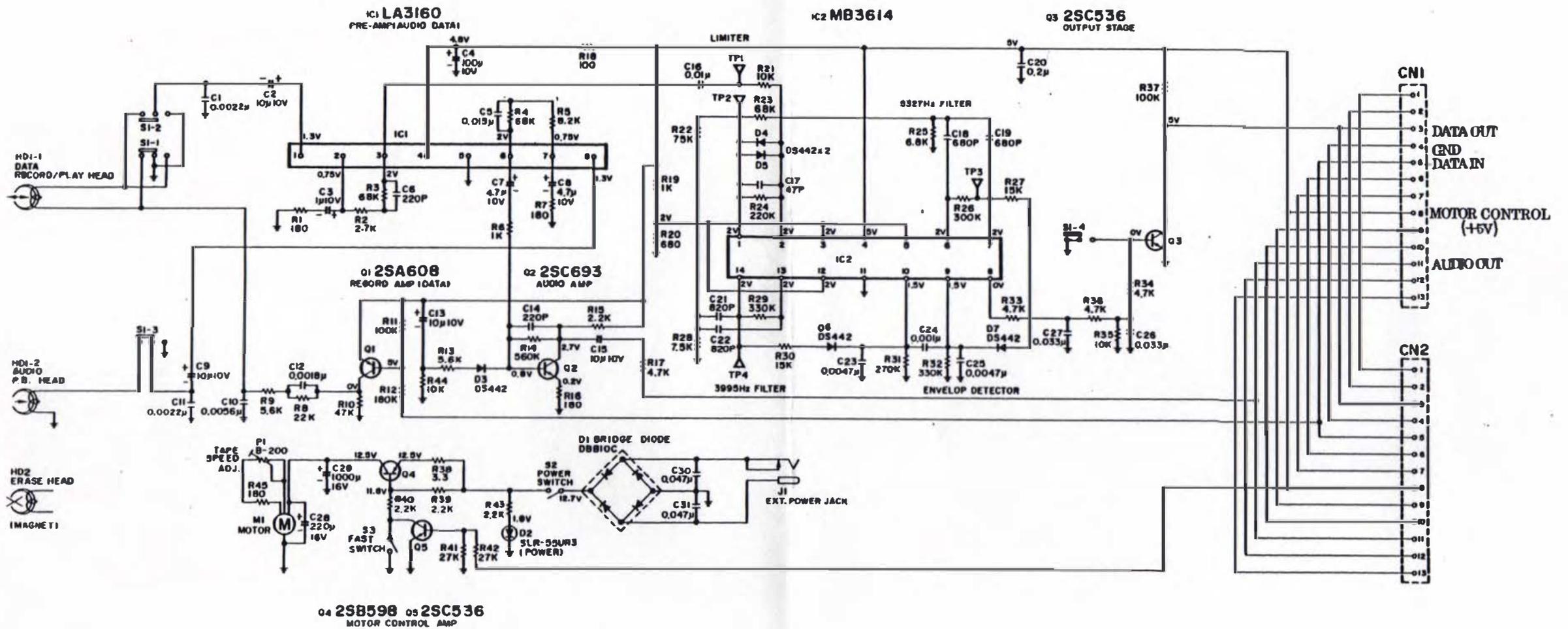
The ATARI 1010™ Cassette Recorder Field Service Manual is organized in seven sections:

- **Theory of Operation** - overview of how the electrical theory of the 1010 Cassette Recorder operates in both Sanyo and Chelco units.
- **Silkscreens and Schematics** - electrical drawings of the printed circuit boards and layouts.
- **Testing and Troubleshooting** - procedures for testing and repairing the units.
- **1010 Flowcharts** - flowcharts enabling the technician to test and troubleshoot a defective 1010 unit.
- **Symptom Checklist** - for the experienced technician, a list of symptoms with their probable causes and remedies.
- **Parts List** - list of all parts available for repairing and maintaining the 1010 unit.
- **Service Bulletins** - section to be used to hold service bulletins released by the Director of Technical Support. These bulletins will include changes in recommended repair procedures and required modifications for units in the field.

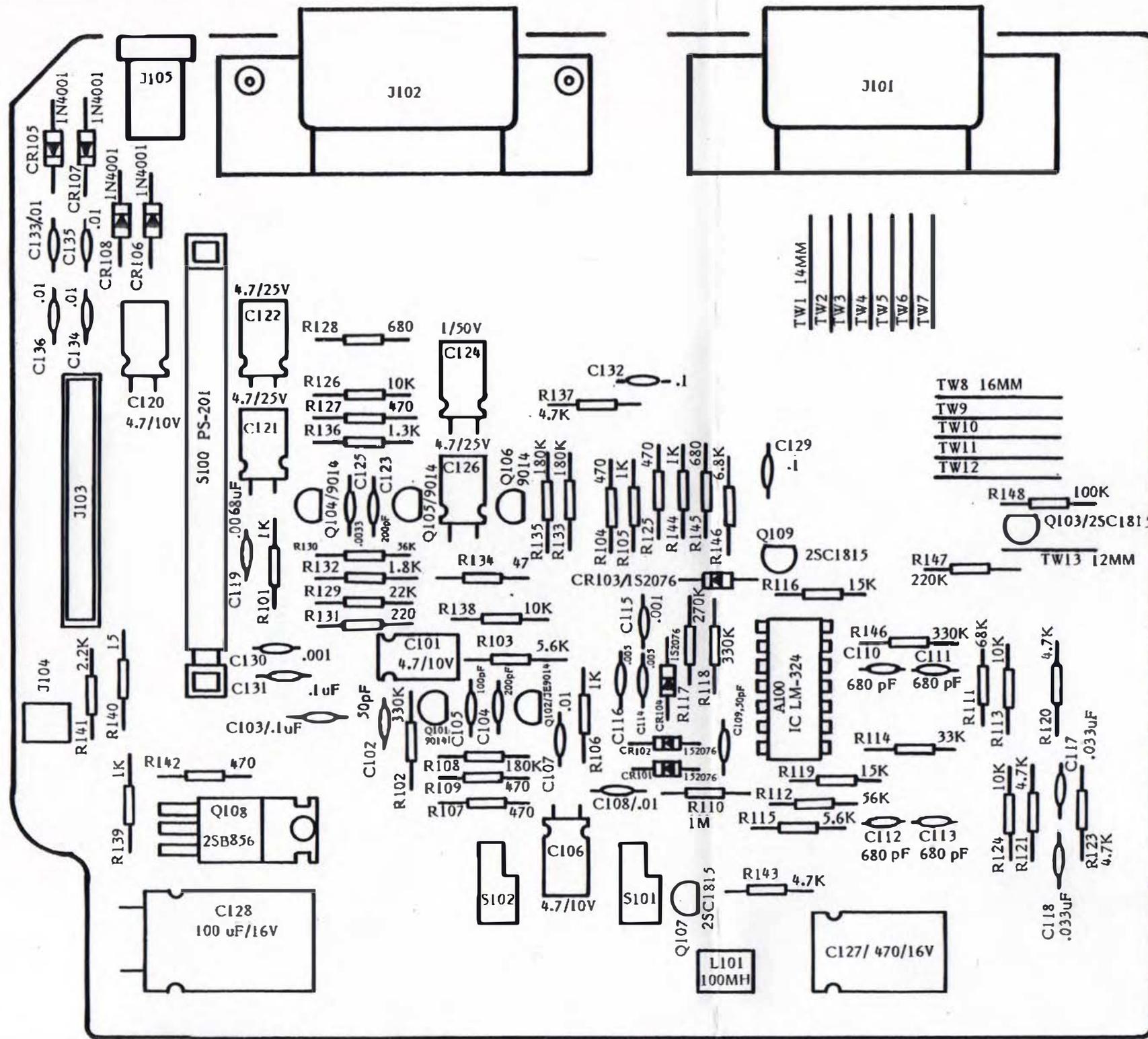
IMPORTANT: Two different ATARI 1010 Cassette Recorder Units have been released: The 1010S and the 1010C. To distinguish between the two, look at the FCC ID No. on the bottom of the unit. The order of the buttons on the top of the unit also differs. On the 1010S, reading from left to right, the PAUSE button precedes the STOP/EJ button. On the 1010C the STOP/EJ button precedes the PAUSE button.



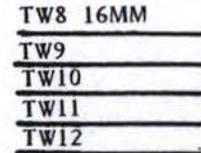


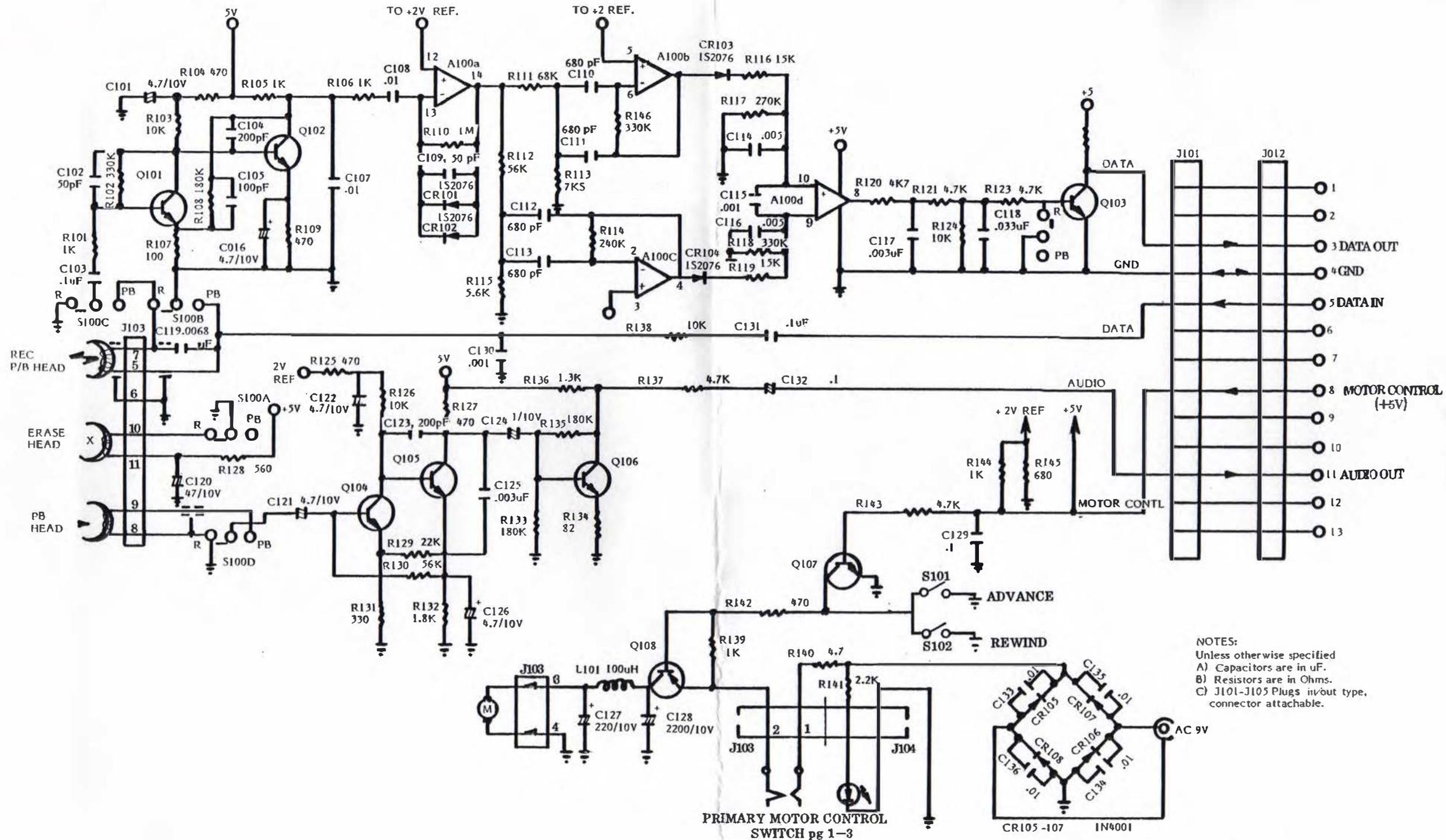


No.	Name	Position
S1	Record/Play Switch	PLAY
S2	Power Switch	FF
S3	Fast Switch	OFF



Unless otherwise specified
 1) Capacitors are in uF
 2) Resistors are in Ohms





NOTES:
 Unless otherwise specified
 A) Capacitors are in μF .
 B) Resistors are in Ohms.
 C) J101-J105 Plugs in/out type,
 connector attachable.

PRIMARY MOTOR CONTROL SWITCH pg 1-3

SECTION ONE

THEORY OF OPERATION

OVERVIEW

The ATARI 1010™ Cassette Recorder connects to the ATARI computer through an I/O cable. The 1010 loads programs into the computer's memory, and writes programs from the computer's memory onto cassette tape for storage purposes.

Two different ATARI 1010 Cassette Recorder units have been released: the 1010S unit and the 1010C unit. The 1010S unit is described first. It can be identified by the **BPA99H-1010** prefix of its FCC ID No., which is located on the bottom of the unit. Also, on the 1010S unit, reading from left to right, the PAUSE button precedes the STOP/EJ button. The 1010C unit, which is discussed secondly below, has an FCC ID No. prefix of **BPA7YJ-1010**. On the 1010C unit the STOP/EJ button precedes the PAUSE button.

1010S ELECTRICAL THEORY

1010S POWER SUPPLY

The 1010S power adaptor supplies 9 volts AC, which is converted to DC by a bridge rectifier. In early production units LED D2 lights as soon as the power adaptor is plugged in. In later models LED D2 will only light after you press PLAY, REWIND or ADVANCE.

1010S AUDIO AMPLIFIER

The Audio Amplifier contains an equalizer that raises the frequency gain in the lower range, and lowers the frequency gain in the high range. A filter circuit diminishes the hiss noise of the tape and scratch noise from the power input.

1010S DATA AMPLIFIER

The Data Amplifier has a 2K-10KHz bandwidth that is regulated by a filter circuit. Other capacitors diminish RF and scratch noise, as well as controlling frequency gains and resonance.

1010S RECORD AMPLIFIER

In the Record Amplifier the maximum recording current flows at 5327Hz. A capacitor (C10) regulates the inductance of the RECORD/PLAY head, forms the tank circuit and peaks at approximately 5.5KHz.

1010S LIMITER

The 3995Hz and 5327Hz signals from the Data Amplifier are not always equal. The Limiter equalizes and amplifies them. Signals are converted to FSK (Frequency Shift Key). The limiter also restricts high input by gauging the amount of feedback at the turn-on point of diodes D4 and D5. The characteristics of the filters are listed below:

<u>5327Hz Filter</u>		<u>3995Hz Filter</u>	
Center Frequency	5435Hz	Center Frequency	4092Hz
Q	3.483	Q	3.479
Gain	2.206	Gain	2.20

1010S ENVELOPE DETECTOR

Envelope detectors exist for both the limiter filters. Starting time for both is approximately 0.15 us, and discharging time approximately 1.27 us. Since discharging time for both filters is longer than the turn-on, by approximately a factor of 10, the ripple generated at 3995Hz and 5327Hz must be absorbed.

1010S OUTPUT STAGE

The Output Stage consist of two low-pass filters. The starting time of the Output Stage coincides with the transfer rate of the cassette interface at 600 baud.

1010C ELECTRICAL THEORY

1010C POWER SUPPLY

The 1010C power adaptor supplies 9 volts AC, which is converted to DC by a bridge rectifier. In early production units the power LED lights as soon as the power adaptor is plugged in. In later models the power LED will only light after you press PLAY, REWIND, or ADVANCE.

1010C CIRCUIT DATA OUT

The 1010C unit uses an active filter network that segregates the frequency encoded data into a comparator A100D, which then generates digital data.

The signals from the READ Head are amplified and applied to a high gain limiting amplifier (A100A). From the limiting amplifier, the signals are applied to two Multi-Pole Active Filters (A100B, A100C) which allow differing outputs as a function of frequency. Rectification and simple filtering of the Active Filter outputs place a psuedo-DC input to either side of a comparator. Finally, the output of the comparator is filtered and applied to a Driving Transistor Inverter (Q103), which drives the Data Line to the computer.

The 1010C receives its power (+5v) from the power supply of the Atari Computer.

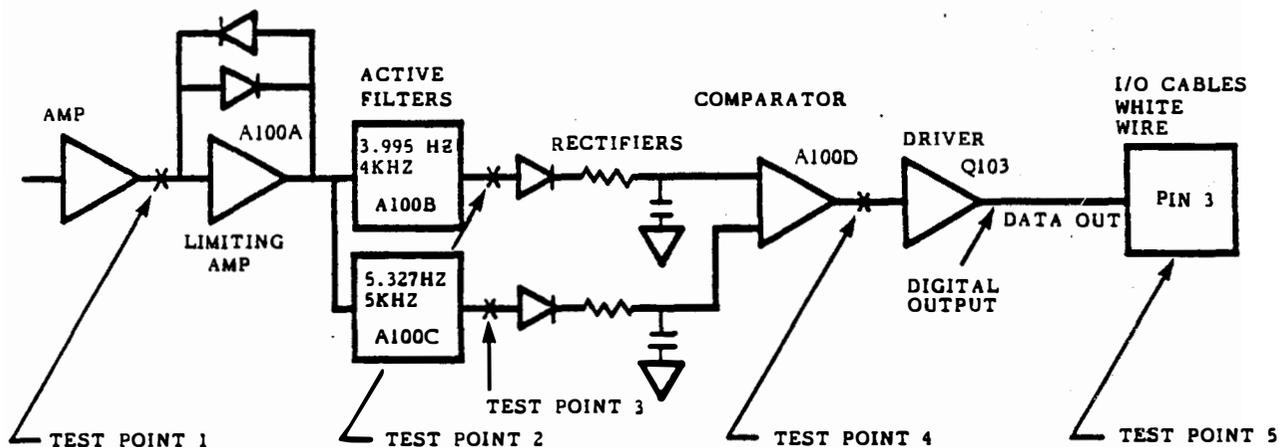


Figure 1-1. Circuit Data Out (1010C Unit)

1010C MOTOR CONTROL OPERATION

The Motor Control Line, Pin 8, of the Serial Bus Connector is in a Low state upon power-up of the system. It is connected to the computer motherboard (Q102 on the 400, Q107 on the 800, and Q3 on the 1200). This line in turn goes to Q107 and Q108 (Motor Control Circuit) on the 1010C PCB.

The primary Motor Control Switch on the drive mechanism is activated when the PLAY, ADVANCE, or REWIND button is pressed.

S101 is activated when the ADVANCE button is pressed; S102 is activated when the REWIND button is pressed.

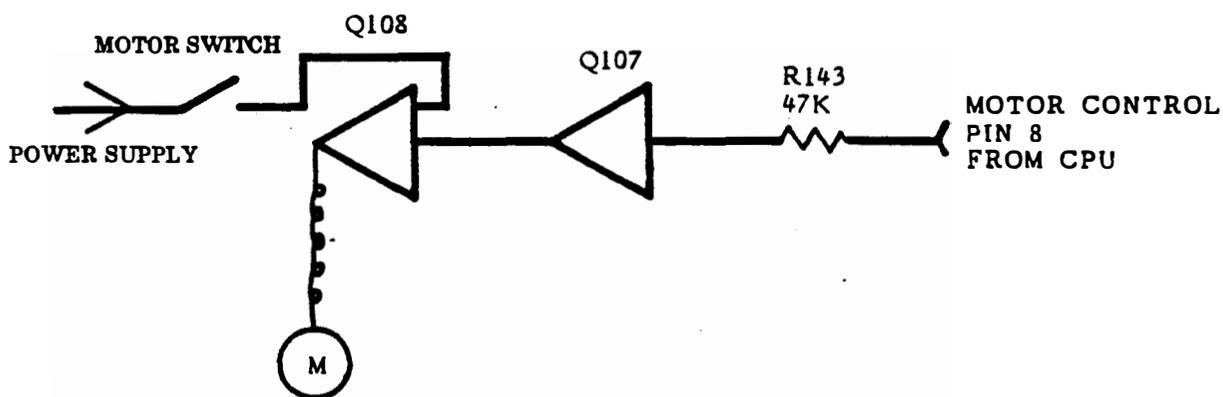
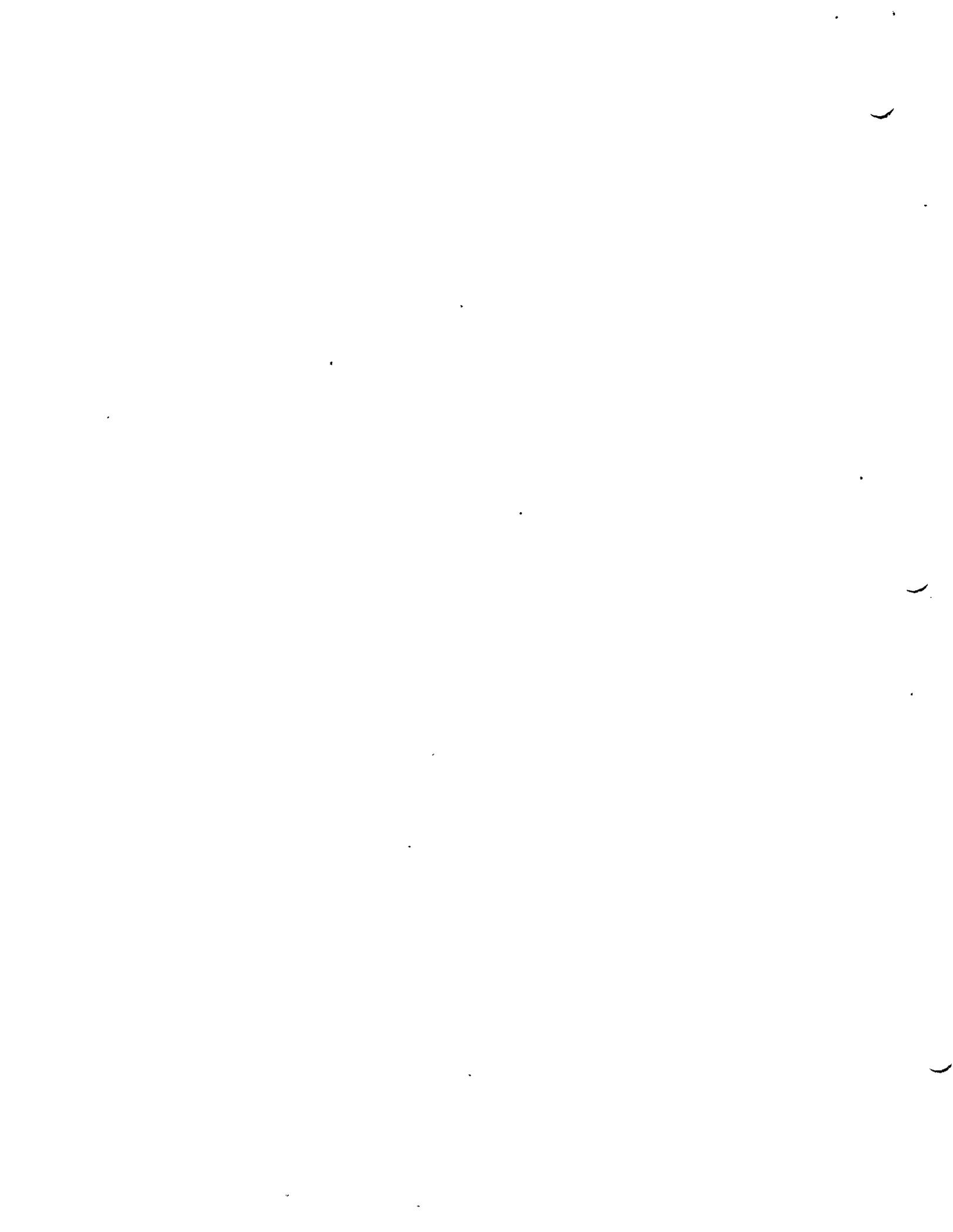


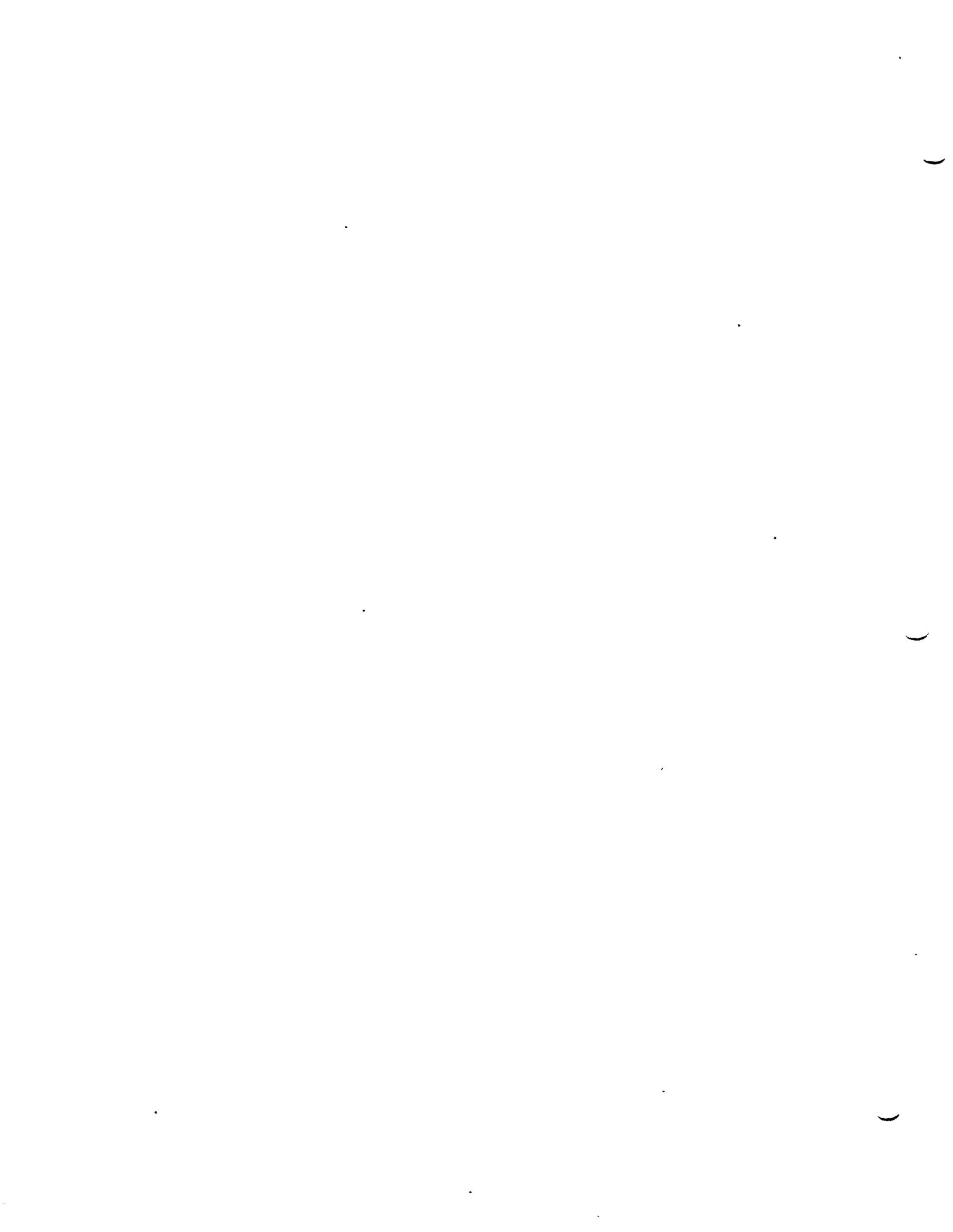
Figure 1-2. Motor Control Operation (1010C Unit)



SECTION TWO

SILKSCREENS AND SCHEMATICS

Oversized silkscreens and schematics for both the 1010S and 1010C units are folded and stapled to the manual cover. Detach and insert them behind this page.



SECTION THREE

TESTING AND TROUBLESHOOTING

OVERVIEW

A composite list of the tools and equipment required for all of the procedures in this section follows. At the beginning of each procedure the specific tools required for those steps are listed. The Maintenance, Head Alignment Check, Motor Speed Check and Read/Write Verify Test sections apply to both the 1010S and 1010C units, with their differences noted where it is appropriate. The disassembly/assembly instructions, however, are divided into separate 1010S and 1010C descriptions.

COMPOSITE TOOL AND EQUIPMENT REQUIREMENTS

- 1 Standard Tool Kit
- 1 Digital Voltmeter
- 1 Oscilloscope
- 1 Demagnetizing Tape or Tool
- 1 ATARI CPS Digital Test Tape (FD100220)
- 1 ATARI CPS 3KHz Test Tape (FD100221)
- ATARI Diagnostic Test Tape (FD100008)
- ATARI Blank Tape (FD100009)
- ATARI 1010 Cassette Recorder Field Service Manual (FD100223)
- Isopropyl Alcohol
- Tetrachloride Cleaning Fluid
- Cotton Swabs
- ATARI Computer Console (supplied with computer repair kit)
- ATARI BASIC cartridge (supplied with computer repair kit)
- 2 Jumper leads (Minimum 1 foot in length)

MAINTENANCE AND CHECKOUT PROCEDURES

Before beginning the test procedures follow the maintenance procedures listed below for each unit serviced.

TOOL AND MAINTENANCE EQUIPMENT

- Standard Tool Kit
- Isopropyl Alcohol - For PLAY/RECORD head
- Tetrachloride Cleaning Fluid - For rollers and capstan
- Cotton Swabs*

***ATARI recommends the use of swabs that are 100% lint free. DO NOT use Q-Tips.**

MAINTENANCE PROCEDURE

1. Drive Roller Clean with Tetrachloride.
2. PLAY/REC Head
 - 1) Clean head with Isopropyl Alcohol-DO NOT USE TETRACHLORIDE CLEANING FLUID.
 - 2) Check head for wear and replace it if necessary by following the procedure for the appropriate unit (1010S page 4-2, 1010C page 4-15).
 - 3) Demagnetize the head.
3. General Inspection Check the 1010 for physical damage and repair any found.

CONNECTING THE 1010 FOR TESTING

1. Connect the computer to the TV set as shown in the computer owner's manual.
2. Plug the 1010 into the power adaptor and then into the wall outlet.
3. Plug an I/O cable into the computer and the 1010.
4. Plug a BASIC cartridge into the computer and turn the computer ON. (If the computer fails to come on, refer to the appropriate ATARI computer repair manual).

TESTING THE 1010

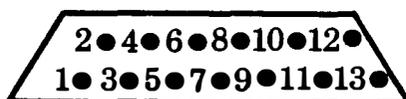
The testing procedures for the 1010 are broken into three parts:

1. Head Alignment Check using the 3KHz test tape
2. Motor Speed Check using the 3KHz test tape
3. READ/WRITE Verify Test, using the diagnostic test tape and the blank cassette.

WHENEVER ONE OF THESE TESTS FAILS, PROCEED TO FLOWCHART A FOR THE APPROPRIATE UNIT (1010S Page 4-2, 1010C Page 4-15).

HEAD ALIGNMENT CHECK

1. Set up the computer and the 1010 as described in Connecting the 1010 For Testing section.
2. Insert the 3KHz test tape.
3. Remove the I/O cable and plug a jumper plug between pin 4 (gnd) of the 1010 and pin 4 of the computer. The pin numbers are illustrated in Figure 3-1.
4. Put the second jumper plug between pin 8 (motor control) of the 1010 and pin 8 of the computer.
5. Hook the scope probe to pin 11 (Audio Out) of the unused I/O connector on the rear of the 1010 (use Pin 4 as ground).
6. Set the scope to a time base of .1 ms per division.
7. Type POKE 54018,52 into the computer and press RETURN.
8. Press **PLAY** on the 1010.
9. The signal on pin 11 should be at least 560 mv on a 1010S and 660 mv on a 1010 C. If it isn't, proceed to Diagnostic Flowchart D for the appropriate model (1010S page 4-5, 1010C page 4-18) to locate the Head Alignment procedures.
10. Do not disconnect the probes. Proceed to the MOTOR SPEED CHECK.



<u>PIN#</u>	<u>ASSIGNMENT</u>
3	DATA OUT
4	GROUND
5	DATA IN
11	AUDIO OUT

Figure 3-1. I/O Pin Assignments

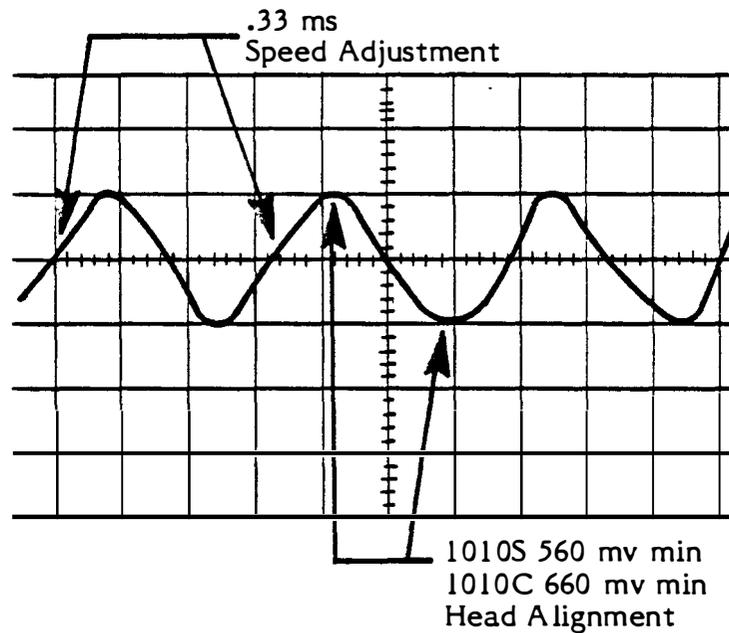


Figure 3-2. Head Alignment and Motor Speed Waveform

MOTOR SPEED CHECK

1. Follow steps 1-5 of the preceding HEAD ALIGNMENT CHECK to set-up for testing.
2. Unplug the jumper wires and plug the I/O cable back into the 1010 unit and the computer.
3. The wave length should be .33 ms, as illustrated in Figure 3-2.
4. If the waveform is not correct, proceed to the Diagnostic Flowchart F for the appropriate model (1010S page 4-8, 1010C page 4-21) to locate the speed adjustment procedure.
5. If it is correct, proceed to the 1010 READ/WRITE VERIFY TEST.

1010 READ/WRITE VERIFY TEST

Equipment Needed:

- ATARI Computer
- BASIC Cartridge
- ATARI Diagnostic Test Tape (FD100008)
- Blank Cassette Tape (FD100009)

The 1010 READ/WRITE VERIFY TEST may only be used with a known good computer. Make sure the ATARI computer has been checked out by using the proper test procedures for that unit.

To verify whether the 1010 can READ/WRITE:

- I. Examine the cassette deck for physical damage such as frayed cords or broken parts.
- II. Hook up the 1010 to the computer as described on page 3-2.
- III. Turn the computer ON with the BASIC cartridge plugged in.
- IV. Insert and rewind the Test Tape (FD100008-Side 1 up). Reset the tape counter.
- V. Press the **PLAY** button on the 1010.
- VI. Type **CLOAD** and press **RETURN**.
- VII. A beep should sound from the keyboard speaker. If it did not, make sure that you
 - a. Typed in the word correctly
 - b. Have a good BASIC cartridge plugged in
 - c. Have a properly functioning computer
- VIII. Press **RETURN** to start the loading of the test program. The cassette deck should run for several seconds. During this time you should hear audio coming from the television set.

If during this time **ERROR-138** appears, rewind the test tape, and advance it to a tape counter reading of 15. Return to Step V.

If any other **ERROR** appears, start the test over from Step III.

If the unit **ERRORS** twice, the ATARI 1010 is defective. Proceed to Diagnostic Flowchart A for the appropriate unit (1010S page 4-2, 1010C page 4-15).
- IX. When **READY** appears below the word **CLOAD**, type **RUN** and press **RETURN**.
- X. Follow the steps on the screen. At completion of each step, press **RETURN**.

CORRECT LOADING TEST

1. Rewind and remove the test tape.
2. Insert and rewind the blank tape (FD100009).
3. Simultaneously press the **RECORD** and **PLAY** buttons.
At this point, the computer should beep twice. If it does not, see Step 7.
4. Press **RETURN** to tape the test information.
The cassette deck should run for several seconds. If an **ERROR** appears, the cassette deck is defective. Proceed to Diagnostic Flowchart A for the appropriate unit (1010S page 4-2, 1010C page 4-15).
5. Rewind the blank tape.
6. Press the **PLAY** button.
7. Press **RETURN** to load the information from the tape.
If an **ERROR** message appears, the cassette deck is defective. Proceed to the appropriate Diagnostic Flowchart A for the unit (1010S page 4-2, 1010C page 4-15).
8. When **READY** appears at bottom left of the screen, type **RUN** and press **RETURN**.
If the test program does NOT start, the cassette deck is defective. Proceed to the appropriate Diagnostic Flowchart A for the unit (1010S page 4-2, 1010C page 4-15).
If the test program does start, the cassette deck is in good working condition.

1010S DISASSEMBLY/ASSEMBLY

1010S TROUBLESHOOTING DISASSEMBLY

- Turn the unit upside-down and remove the four screws holding the bottom cover in place.
- Remove the bottom cover.
- Remove the shield screw and the shield (see Figure 3-3).
- Remove the two screws holding the PCB in place (see Figure 3-3). Do not lift the PCB off yet. **Note: The longer screw with the larger thread bit must be returned to the plastic posthole.**

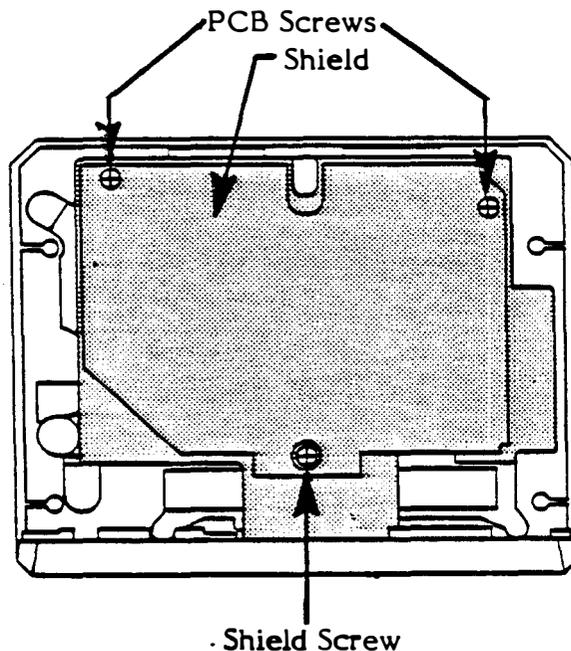


Figure 3-3. Accessing the 1010S PCB

- Remove the screw holding the LED in place on the front panel.
- Remove the two screws holding the front panel in place and slide it straight out.
- Slip the two blue wires out of their notch in the PCB.

NOTE: When lifting the PCB be careful not to damage the leaf switch.

- Carefully lift the PCB up and turn it over in the direction of the control buttons. It is hardwired to the drive mechanism and cannot be separated from it. (If you need to turn the PLAY switch on while troubleshooting, use an alligator clip to close SW2.)

- Remove the five screws holding the drive mechanism in place, as illustrated in Figure 3-4 below.

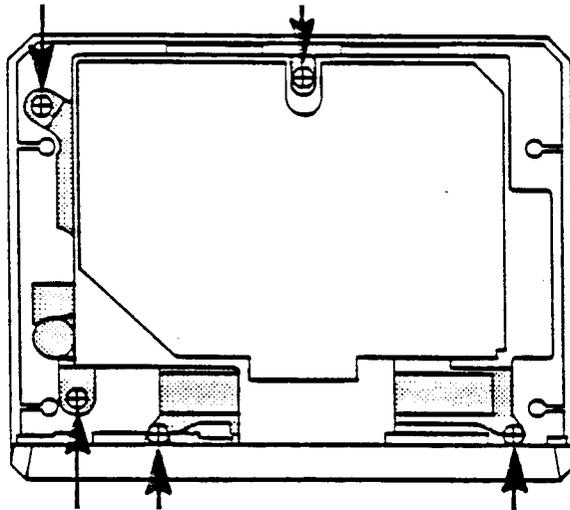


Figure 3-4. Removing the Drive Mechanism

- Lift the drive mechanism out of the top cover and set it securely on its supporting posts.

REPLACING THE 1010S PLAY/REC HEAD

Disassembly

- Follow the Troubleshooting Disassembly procedure.

IMPORTANT: After accessing the PLAY/REC head and before moving the PLAY/REC head out of position, observe the following:

- a. The order of the wires in the plastic guide (The ground wire is on top.)
- b. The location of the ground tab beneath the Phillip's- head screw
- c. The location of the spring under the flat-head screw and against the plastic housing
- d. The metal washer between the plastic housing and the plastic gear running beneath the head

All of these details will be important to remember for reassembling the module.

- Unscrew the screws on either side of the head and lift it out.
- Unsolder and solder the wires on the heads one wire at a time. Do not confuse them.

Assembly

- Feed the ground wire through the plastic guide and insert the screw through the head plate, ground tab and plastic housing.
- Placing the spring in the plastic housing, press down gently and insert the flathead screw through the head plate and spring.
- Set the reassembled housing for the head onto the plastic gear that controls engaging the PLAY/REC head. Tighten both screws carefully.
- Proceed to the Head Alignment Procedures, Flowchart D, Page 4-5.

REPLACING THE 1010S DRIVE MECHANISM

- Follow the Troubleshooting Disassembly procedure.
- Desolder and solder the wires connected to the PCB one at a time. Do not confuse them.
- Follow the Assembly After Troubleshooting procedure that follows.

ASSEMBLING THE 1010S AFTER TROUBLESHOOTING

- Replace the drive mechanism in the top cover and tighten the five screws that you removed (refer to Figure 3-4).

NOTE: Be sure that the motor wires do not interfere with the counter belt.

- Being careful not to bend the REW leaf switch, replace the PCB, component- side down, on top of the drive mechanism and fix in place with the two PCB screws.

NOTE: Be sure to put the longer screw with the larger thread bite into the black, plastic - threaded posthole.

- Feed the blue head wires through their slot on the PCB, under the LED wires.
- Slide the front panel on and secure it with the two screws at its base.
- Replace the LED on the front panel.
- Replace the RF shield.
- Attach the bottom cover with the four long screws.

1010C DISASSEMBLY/ASSEMBLY

1010C TROUBLESHOOTING DISASSEMBLY

- Turn the unit upside-down and remove the four recessed screws holding the bottom cover in place.
- Turn the bottom cover over to expose the PCB. Set it beside the top cover.
- Snap out the front panel and disconnect J104 from the PCB.
- Remove the drive mechanism from the top cover by removing the five screws holding it in place (see Figure 3-5 below) and releasing the cassette door lock (press the STOP/EJ button).
- Turn the mechanism over and prop it up in such a way that when it runs the gears and belts are not impeded.
- Follow the Assembly After Troubleshooting procedure when you are done.

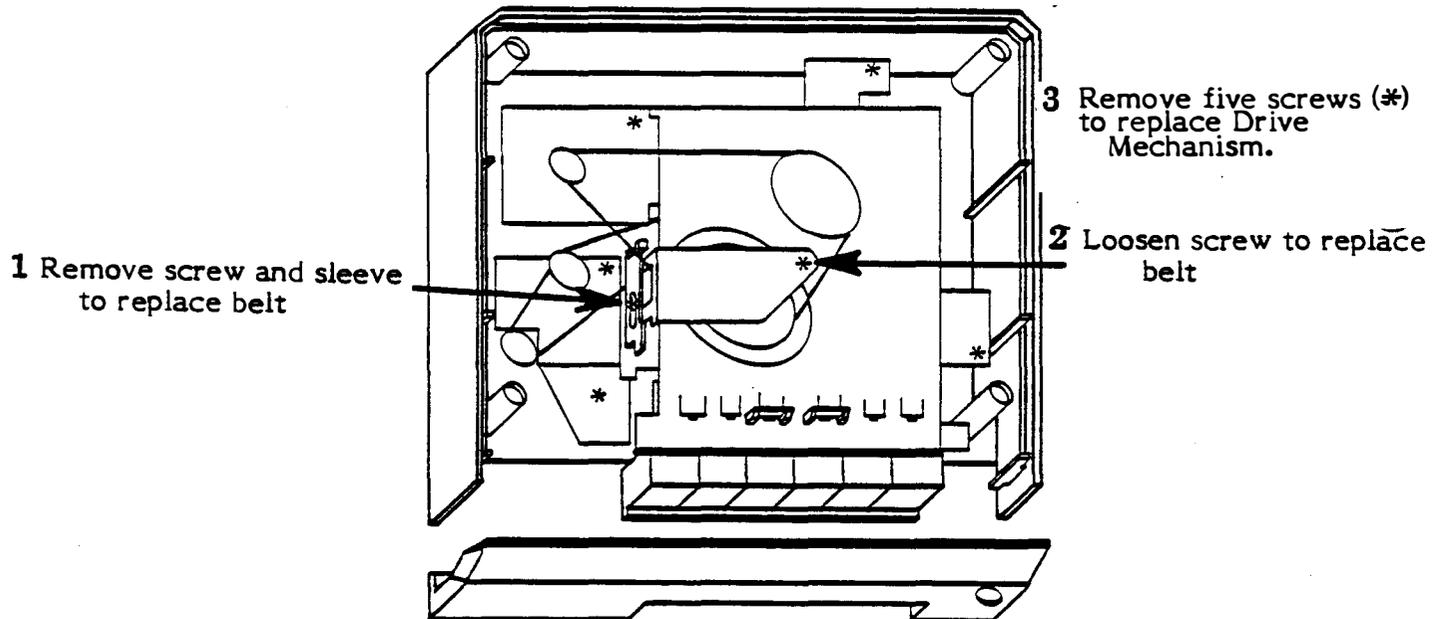


Figure 3-5. Screw Locations on the 1010C

REPLACING THE 1010C DRIVE BELT

- Remove the bottom cover that houses the PCB by removing the four recessed screws.
- Disconnect J103 and J104 on the PCB and set the bottom cover aside.
- Snap out the front panel with the LED on it and set it aside.
- With the control buttons facing you, remove the screw and its sleeve on the left side of the largest drive wheel. This screw is noted as 1 in Figure 3-5.

- Loosen the screw on the right side of the wheel shield. This screw is noted as 2 in Figure 3-5. Do not remove this screw completely.
- Tilt the shield up enough to slip the new belt through the slot on the shield and feed it around the three drive wheels. Make sure that it is not twisted.
- Replace and tighten the screw and sleeve on the left side of the wheel shield (2) and then tighten the screw on top (1).
- Connect J102 and J104.
- Replace the front panel and the bottom cover.

REPLACING THE DRIVE MECHANISM

- Follow the Troubleshooting Disassembly procedures.
- Swapout the defective drive mechanism.
- Follow the Assembly After Troubleshooting procedures below.

REPLACING THE 1010C PLAY/REC HEAD

- Follow the Troubleshooting Disassembly procedure.
- Before you remove the screws holding the head in place, observe the location of the following:
 - a. The order of the wires fed through the plastic guide
 - b. The placement of the ground wire ring
 - c. The location of the spring under the brass, head-adjust screw
- Remove the two screws holding the PLAY/REC head in position and lift the head out carefully.
- Unsolder and solder the wires to the heads one at a time. Do not confuse them.
- Replace the wires in the plastic guide.
- Insert the screws, washer and spring as before and tighten gently.
- Proceed to the Head Alignment Procedure, Diagnostic Flowchart D, on page 4-18.

REPLACING THE 1010C LED

- Remove the bottom cover.
- Disconnect the LED wires from J104 on the PCB.
- Unwrap the LED wires from the harness and snap out the front panel.
- Replace it with a new panel assembly.
- Connect J104 and snap the front panel in place. Be sure the plastic tab below the LED fits over the metal frame of the drive mechanism.
- Replace the bottom cover.

ASSEMBLING THE 1010C AFTER TROUBLESHOOTING

- Place the drive mechanism back into the top cover so that the five postholes are properly aligned and replace the five screws.

NOTE: Be sure that the plastic posthole screw with the coarser bit threads is replaced in the correct posthole.

- Replace the front panel. Be sure that the plastic tab below the LED fits over the metal frame of the drive mechanism.
- Connect J103 and J104, if they were disconnected.
- Replace the bottom cover and secure it with the four recessed screws.

SECTION FOUR

DIAGNOSTIC FLOWCHART

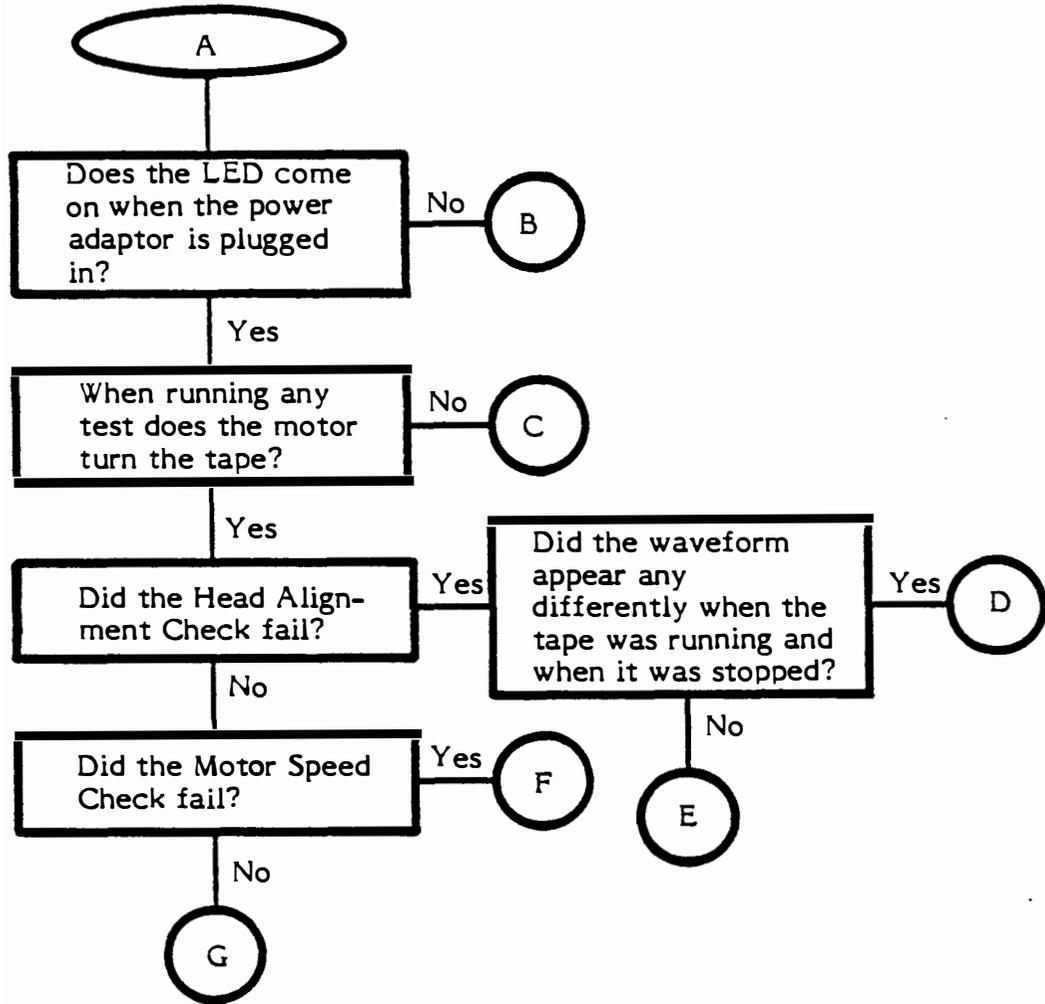
Separate Diagnostic Flowcharts are included in the following section for the 1010S and 1010C units, respectively. They are designed to be easy to use and the primary aid when troubleshooting the 1010. The disassembly procedures referenced in the flowcharts are all found in Section 3. When a line terminates with a letter inside a circle, locate the page that begins with that letter and continue the diagnosis. The flowcharts are arranged in alphabetical order from A to J.

If a flowchart has the subheading DIGITAL TEST TAPE or 3KHZ AUDIO TEST TAPE, you must insert that tape in the recorder, type in POKE 54018,52 on your computer, and press RETURN before the test procedure will work.

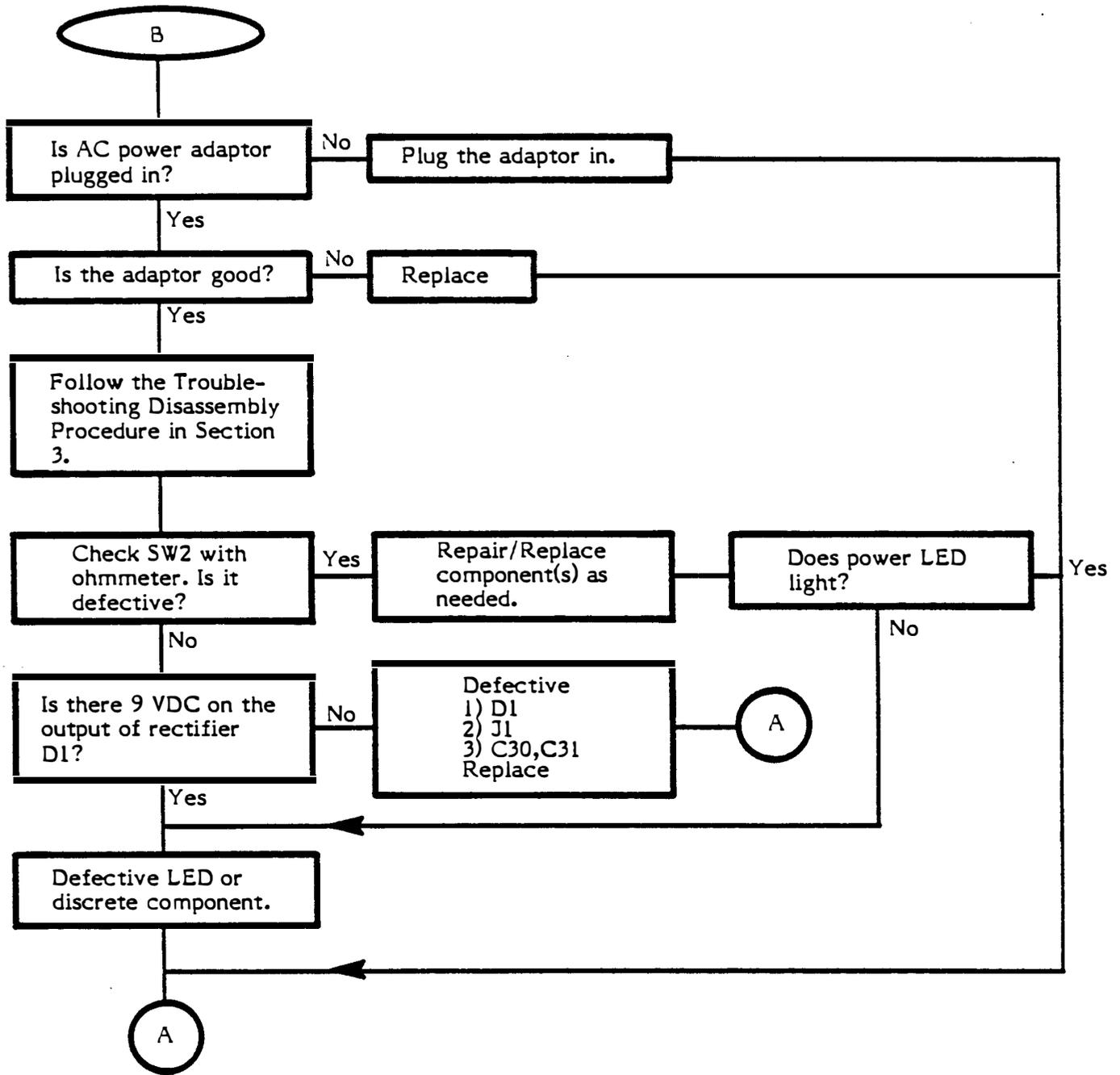
Should a problem persist despite your having followed all of the prescribed repair procedures, call the ATARI Techline Specialist:

Inside California (800) 672-1466
Outside California (800) 538-1535

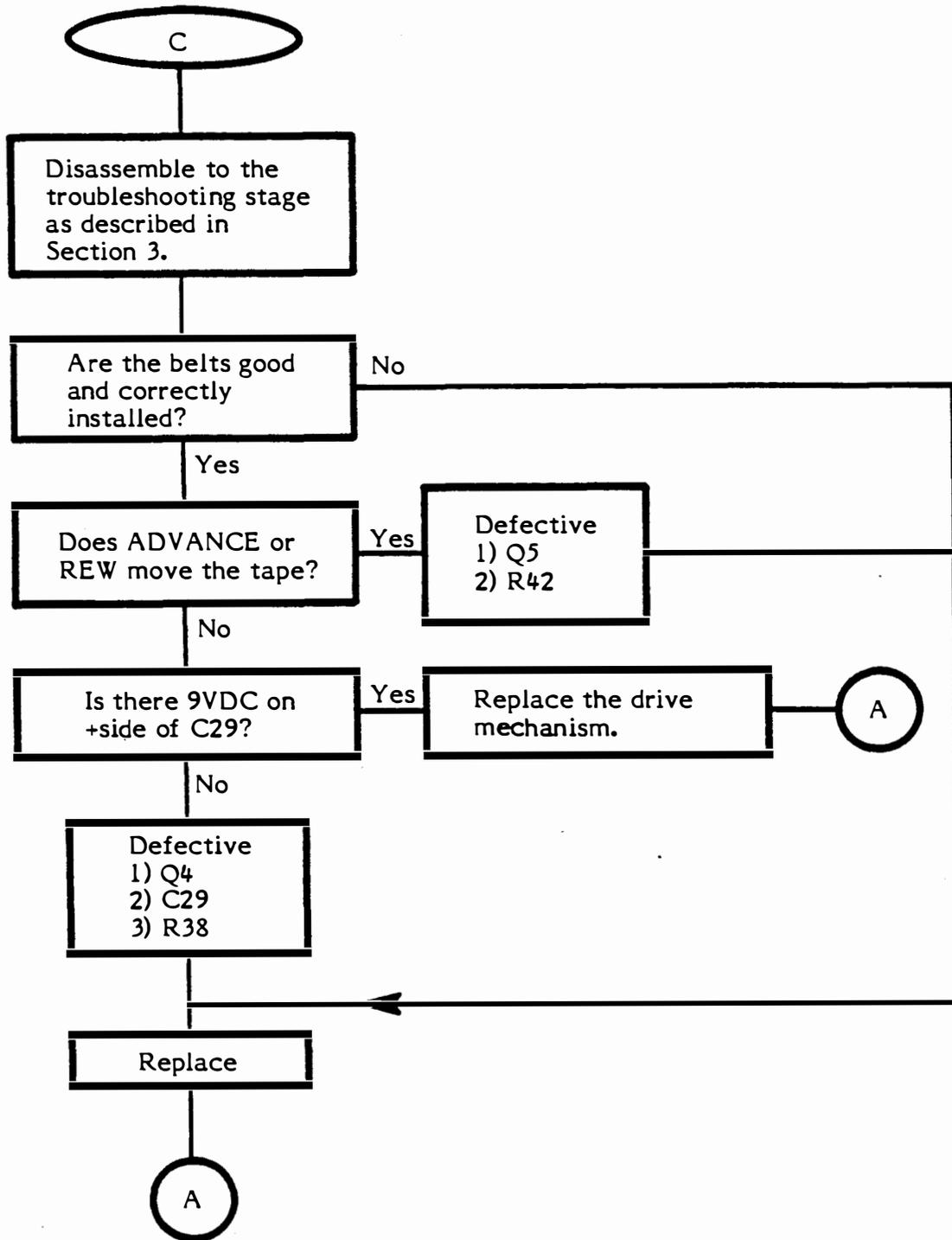
1010S START-UP PROCEDURE



1010S NO POWER-ON LED INDICATOR



1010S MOTOR WILL NOT TURN TAPE



1010S HEAD ALIGNMENT PROCEDURE (3KHz AUDIO TEST TAPE)

D

EQUIPMENT REQUIRED

- Standard Tool Kit
- Known-good ATARI Computer
- BASIC Cartridge
- ATARI 3KHz Audio Test Tape (FD100221)

PROCEDURE

1. Follow the set-up procedure of the HEAD ALIGNMENT TEST, steps 1-5 on page 3-3.
2. Insert the 3KHz test tape under the door of the cassette player, so that the door is open when the cassette is in place. This allows you to access the head-adjust screw through the hole in the plastic cover as illustrated in Figure 4-1 below.

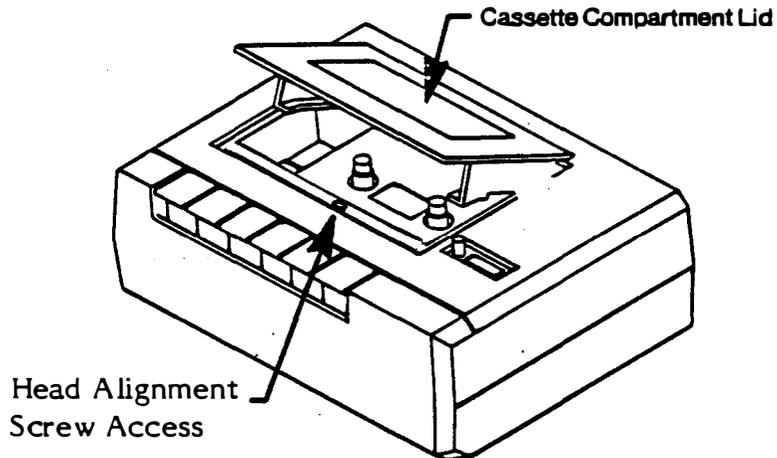


Figure 4-1. Accessing the 1010S Head-Alignment Screw

3. Attach the scope probe to pin 11 of the I/O connector not being used (Refer to Figure 3-1 for pin locations).

NOTE: Use Pin 4 as referenced ground.

4. Set the time base of the scope at .1ms per division.
5. Type POKE 54018,52 on the computer and press **RETURN**.
6. Press the **PLAY** button on the 1010.

7. Insert a 2.9mm flathead screwdriver through the head-adjust screw access and turn it to the maximum peak-to-peak signal, at least 560 mv as illustrated in Figure 4-2.

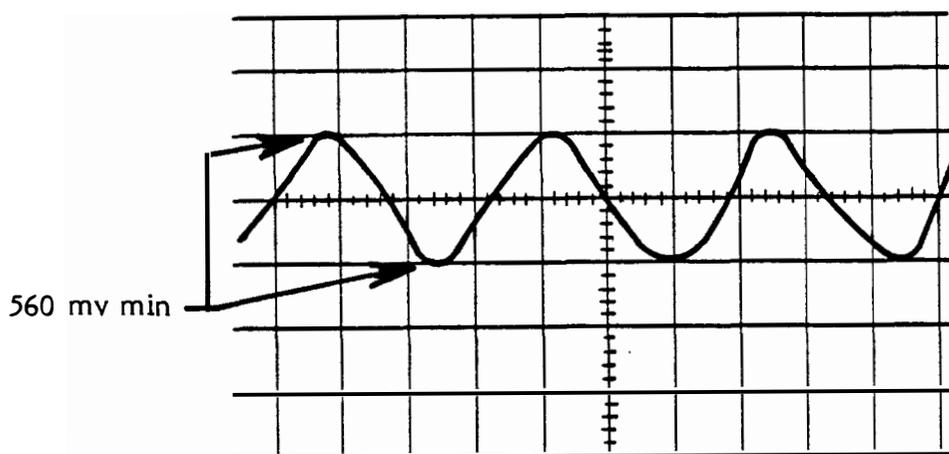
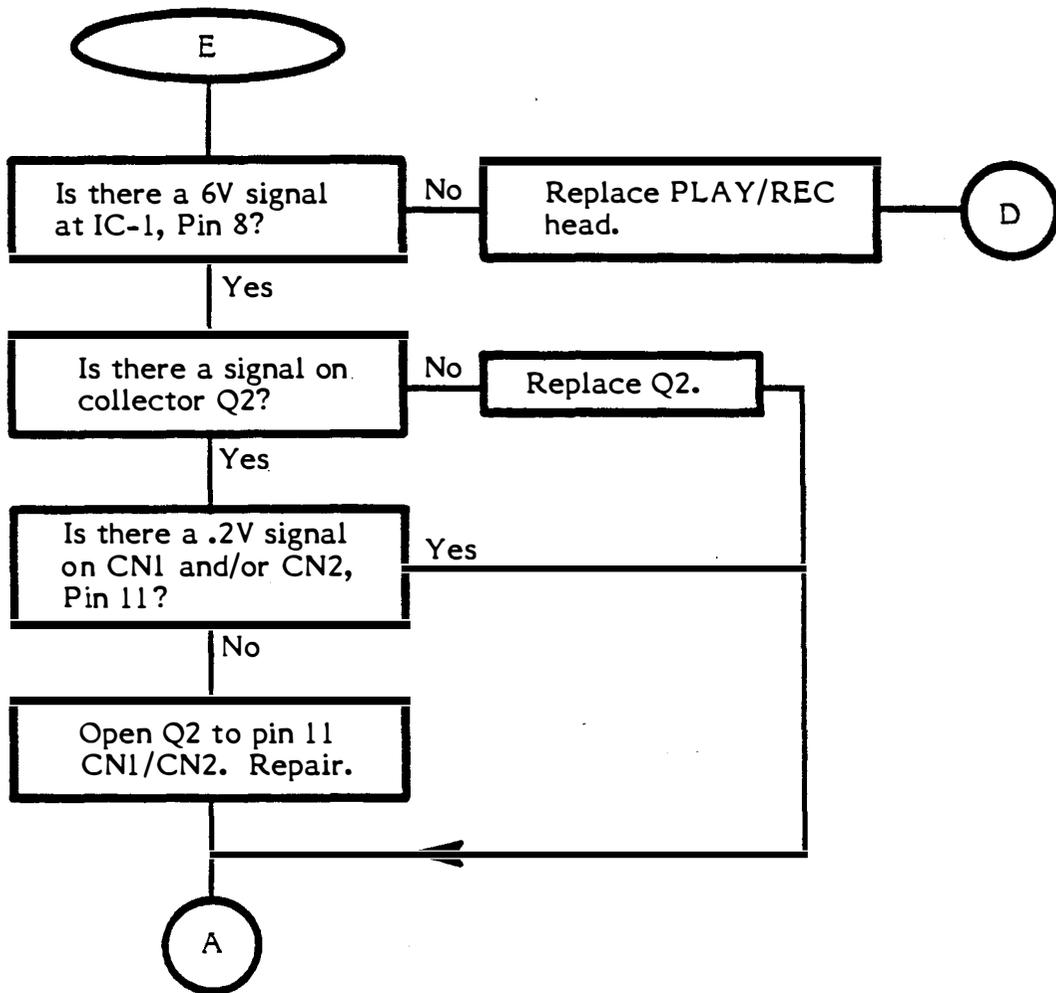


Figure 4-2. Head Alignment Waveform

8. If the signal will not adjust but there is a signal present, replace the head. If it still won't adjust, proceed to Flowchart E on page 4-7.
9. Return to the HEAD ALIGNMENT CHECK on page 3-3.

1010S NO AUDIO
(DIGITAL TEST TAPE)



1010S MOTOR SPEED ADJUSTMENT PROCEDURE (3KHz AUDIO TEST TAPE)

F

EQUIPMENT REQUIRED

- Standard Tool Kit
- Known-good ATARI Computer
- BASIC Cartridge
- ATARI 3KHz Audio Test Tape (FD100221)

PROCEDURE

1. Follow the set-up procedure, steps 1 and 2, of the MOTOR SPEED CHECK on page 3-4.
2. Insert the test tape and turn the unit over to locate the speed adjustment access, as illustrated in Figure 4-3 below.

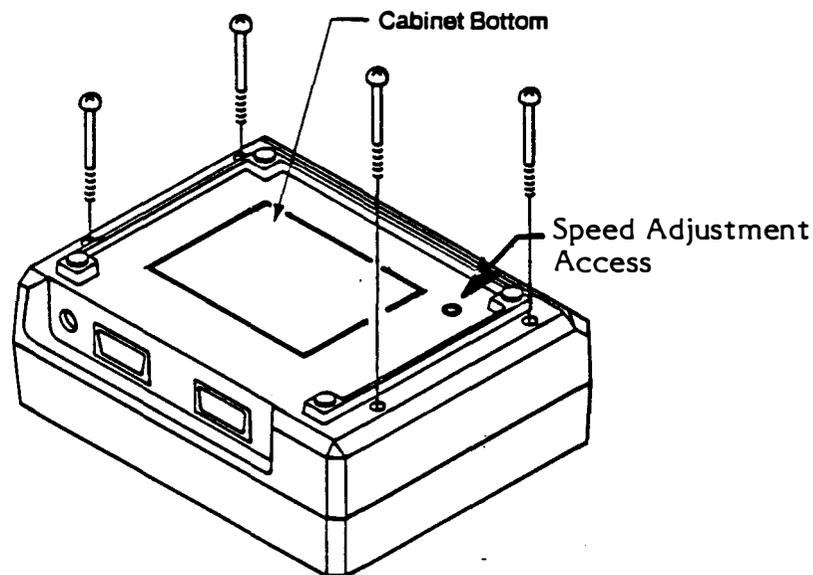


Figure 4-3. Speed Adjustment Access

3. Attach the scope probe to pin 11 of the unused I/O Connector on the 1010 (refer to Figure 3-1 for pin locations).

NOTE: Use Pin 4 as referenced ground.

4. Type POKE 54018,52 on the computer and press **RETURN**.
5. Press the **PLAY** button on the 1010.

6. Move the speed adjust screw by inserting a 2.0 m/m flathead screwdriver through the access illustrated in Figure 4-3. The wavelength should read .33 ms, as illustrated in Figure 4-4 below.

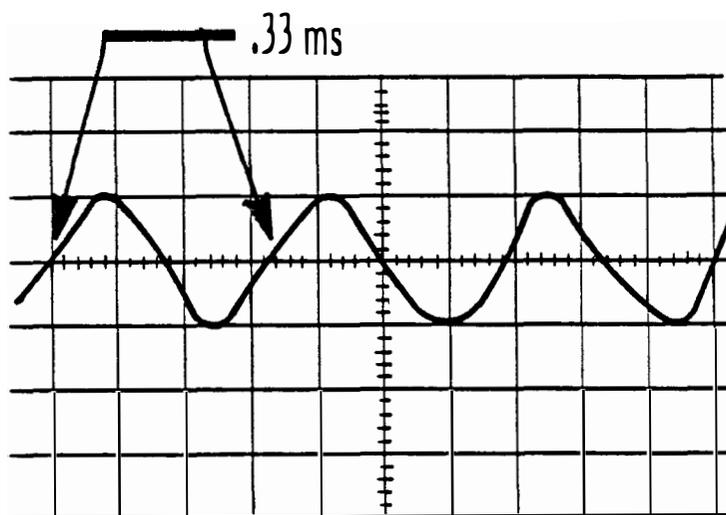
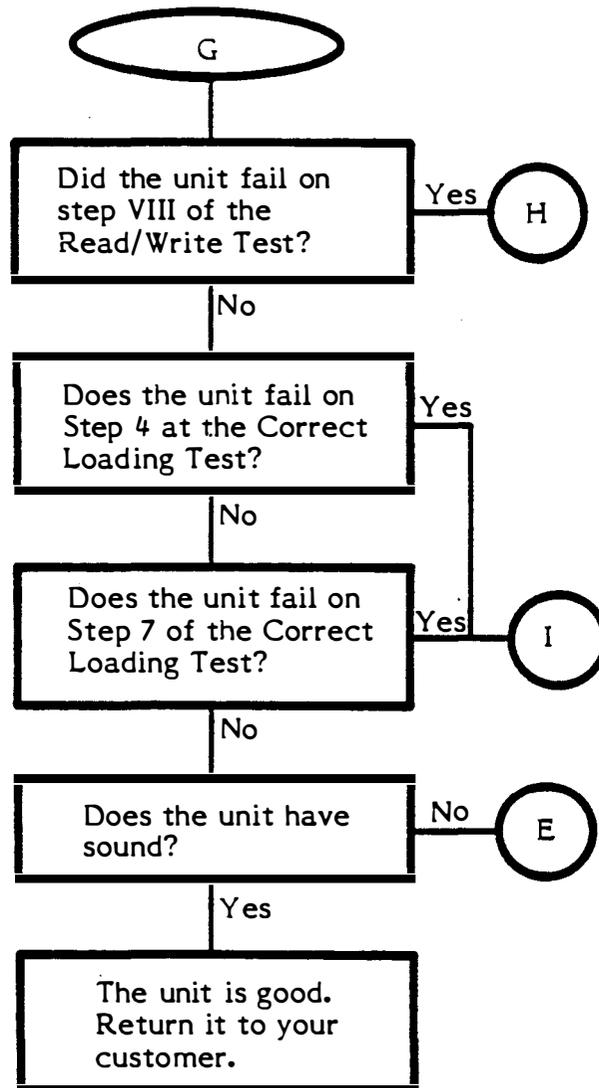


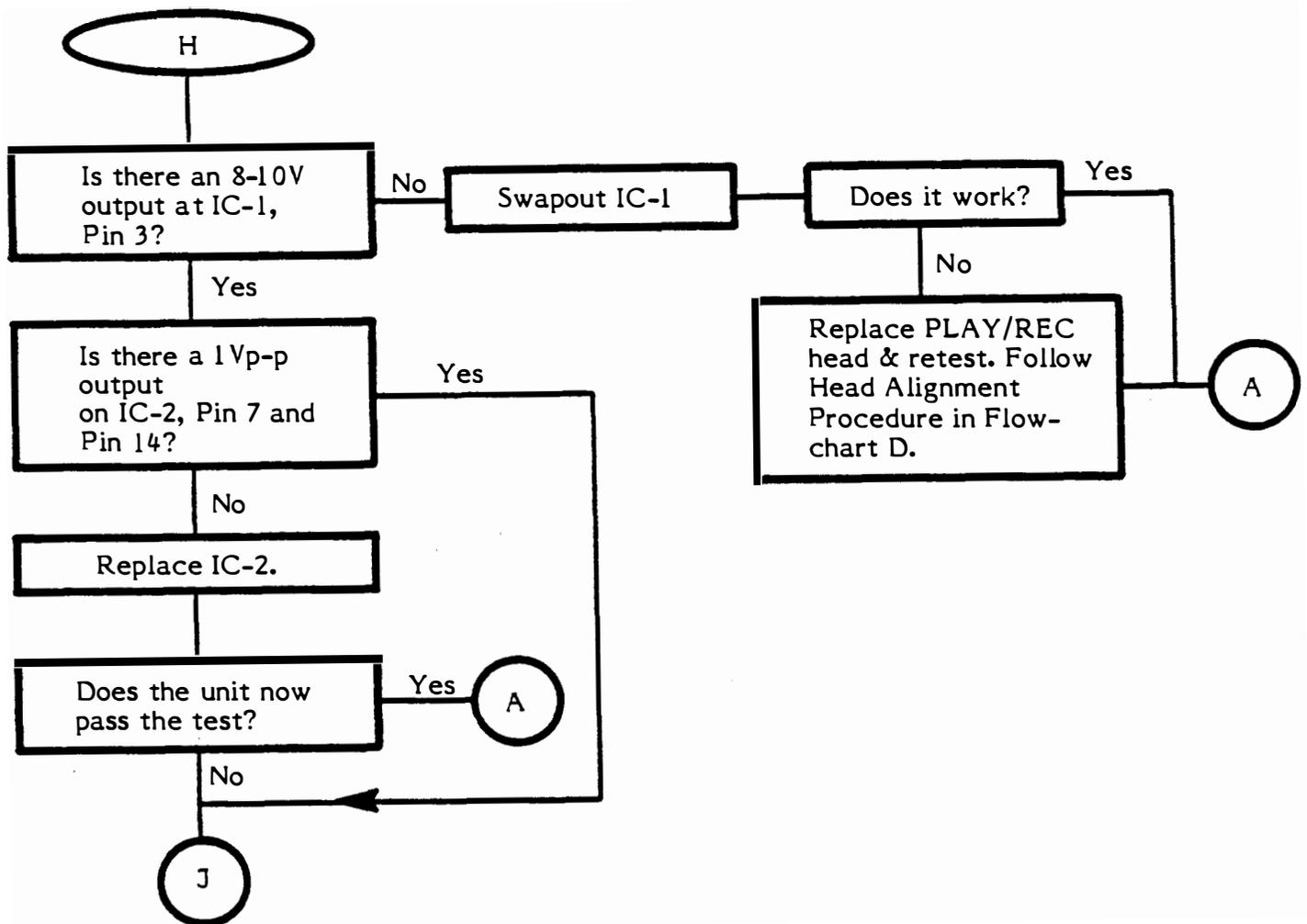
Figure 4-4. Speed Adjustment Waveform

7. If you can't adjust the waveform, replace the drive mechanism as described in Section 3, page 3-9. If the problem persists, return to Flowchart E, page 4-7.

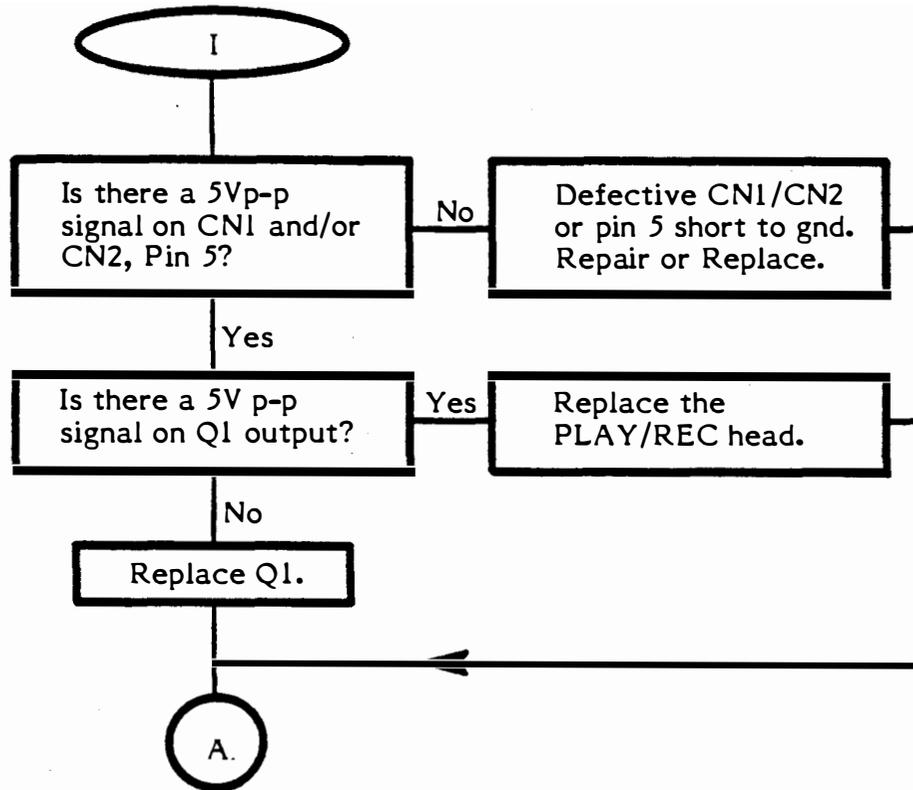
1010S START-UP PROCEDURE (CONTINUED)



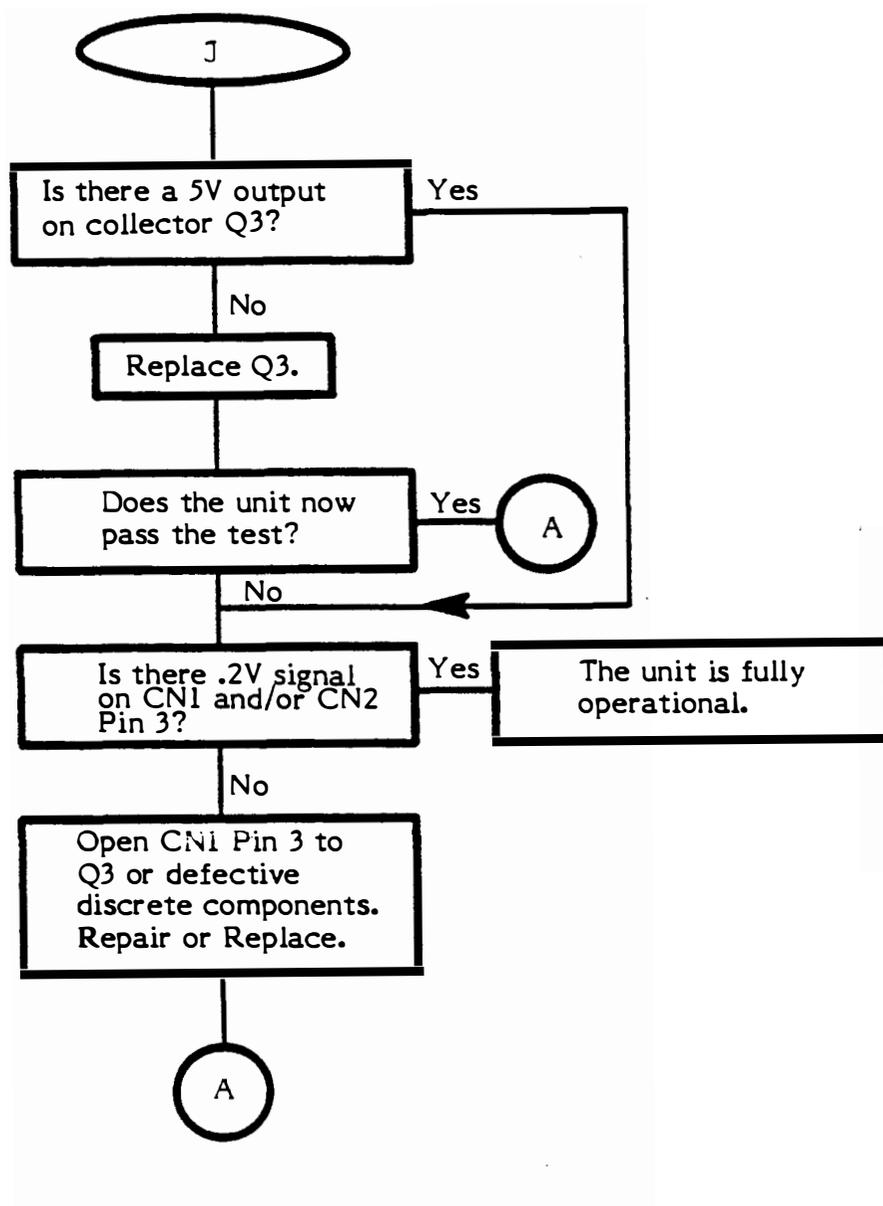
1010S WILL NOT READ PROGRAM FROM THE RECORDER
(DIGITAL TEST TAPE)



1010S WILL NOT RECORD
(DIGITAL TEST TAPE)

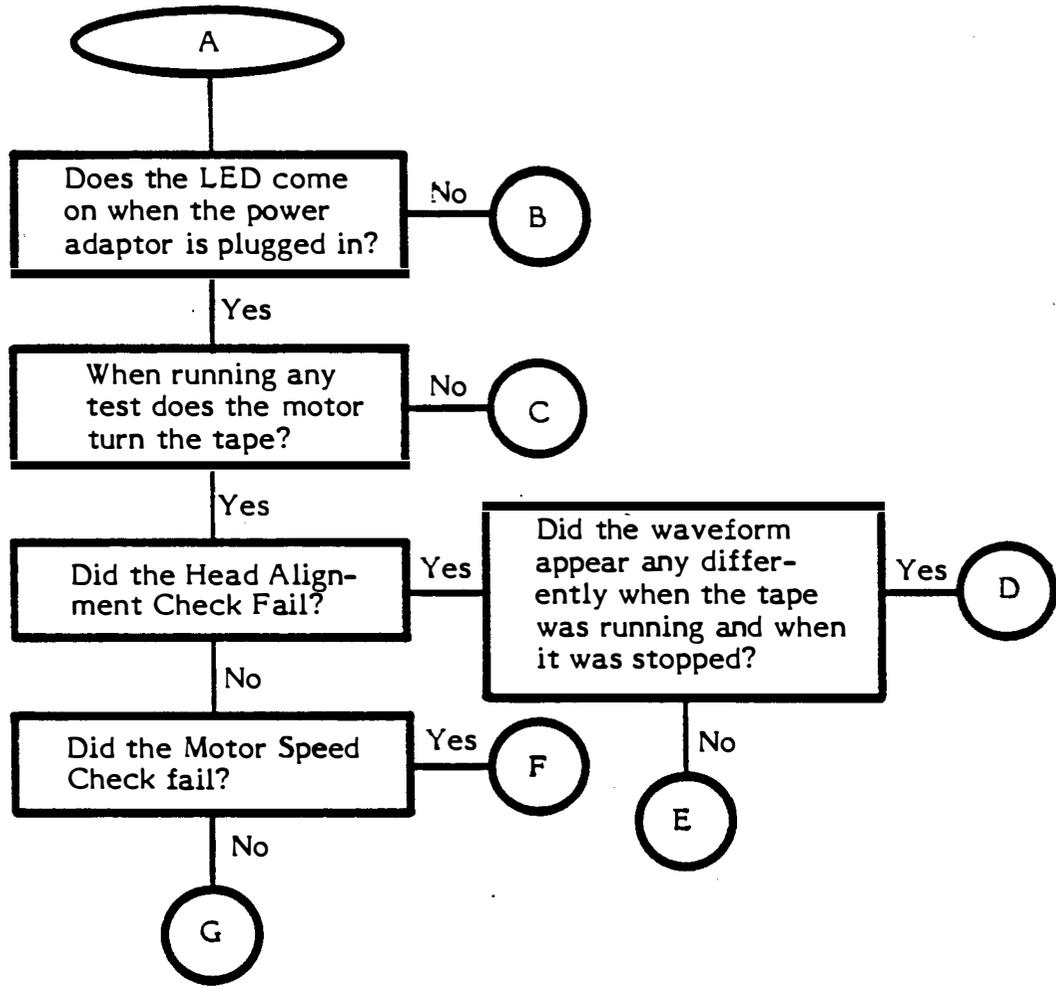


1010S WILL NOT READ PROGRAM FROM THE RECORDER (CONTINUED)
(DIGITAL TEST TAPE)

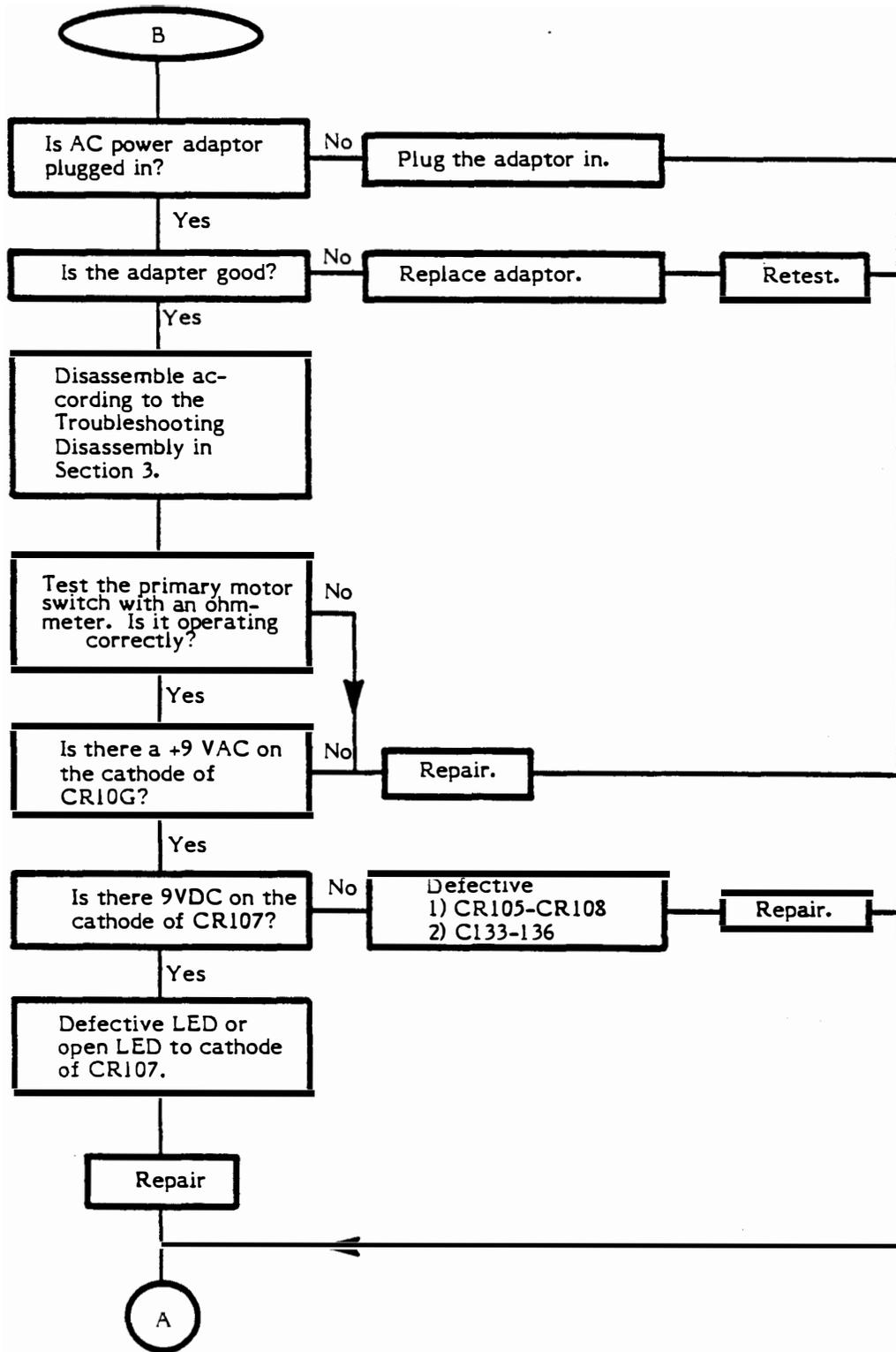


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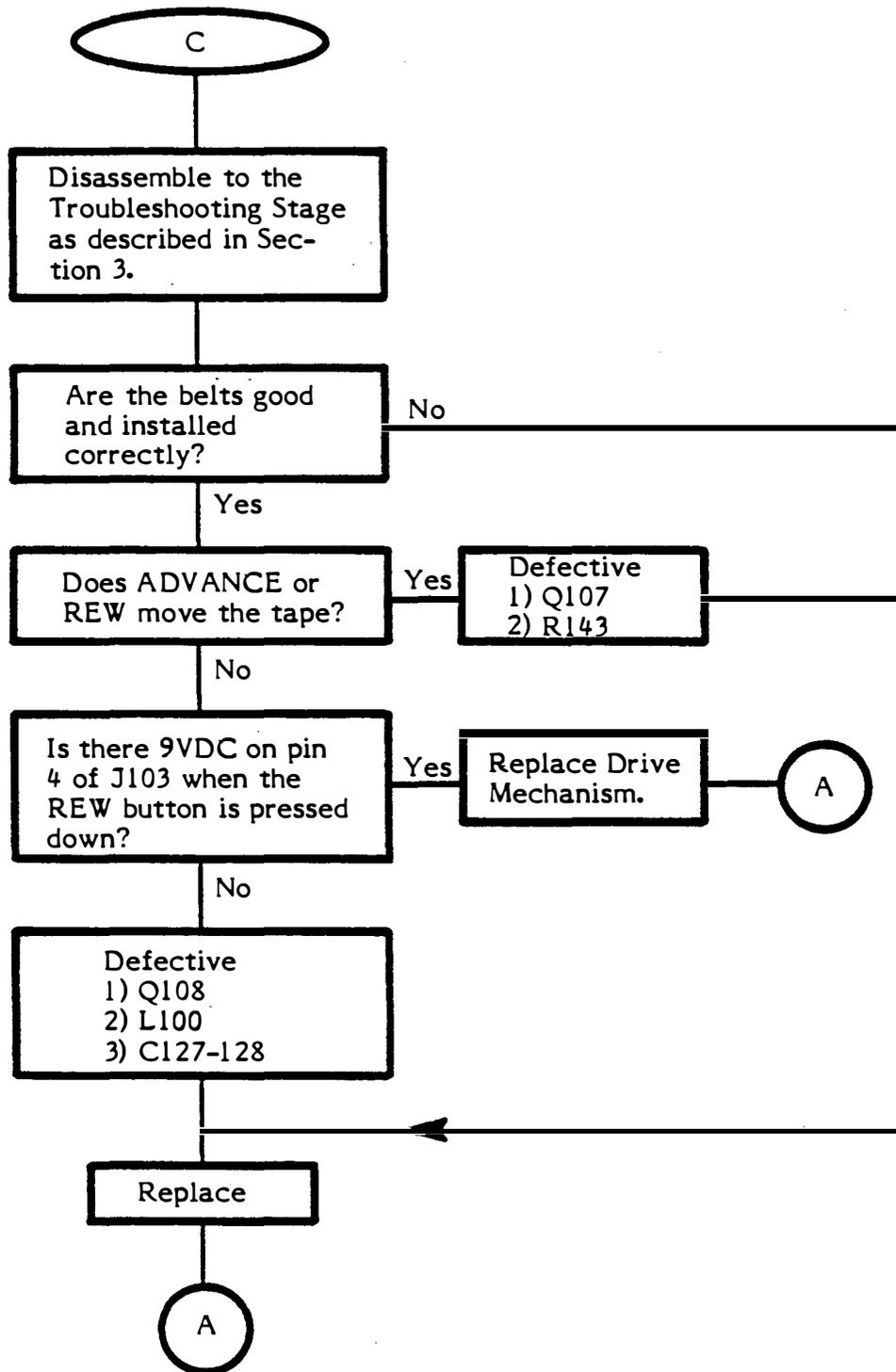
1010C START-UP PROCEDURE



1010C NO POWER-ON LED INDICATOR



1010C MOTOR WILL NOT TURN TAPE



1010C HEAD ALIGNMENT PROCEDURE (3KHz AUDIO TEST TAPE)

D

EQUIPMENT REQUIRED

- Standard Tool Kit
- Known-good ATARI Computer
- BASIC Cartridge
- ATARI 3KHz Audio Test Tape (FD100221)

PROCEDURE

1. Disassemble the unit to the Troubleshooting stage as described in Section 3, page 3-10.
2. Follow the set-up procedure in the HEAD ALIGNMENT TEST page 3-3, steps 1-5.
3. Insert the tape in the drive mechanism.
4. Attach the scope probe to pin 11 of the unused I/O connector (refer to figure 3-1 for pin locations).

NOTE: Use Pin 4 as referenced ground.

5. Set the time base of the scope at .1 ms per division.
6. Type POKE 54018,52 on the computer and press **RETURN**.
7. Press the **PLAY** button on the 1010.
8. Turn the Head Adjustment Screw on the 1010 as illustrated in Figure 4-6 until the maximum peak-to-peak signal is at least 660 mv, as illustrated in Figure 4-5.

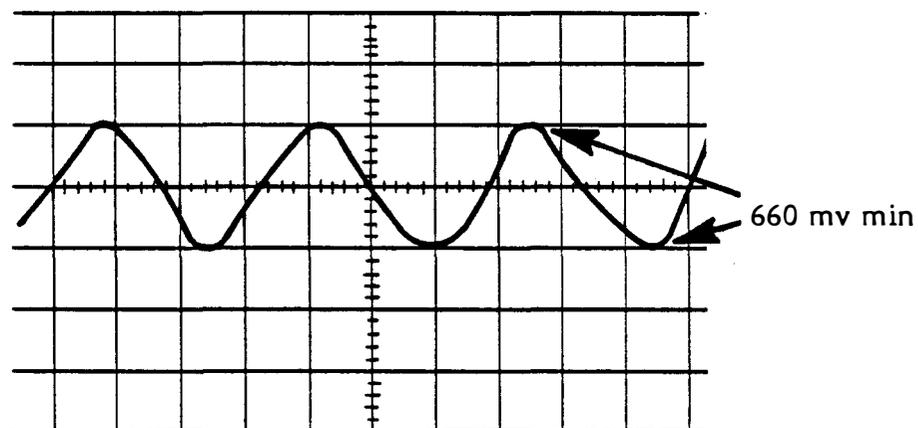


Figure 4-5. Head Alignment Waveform

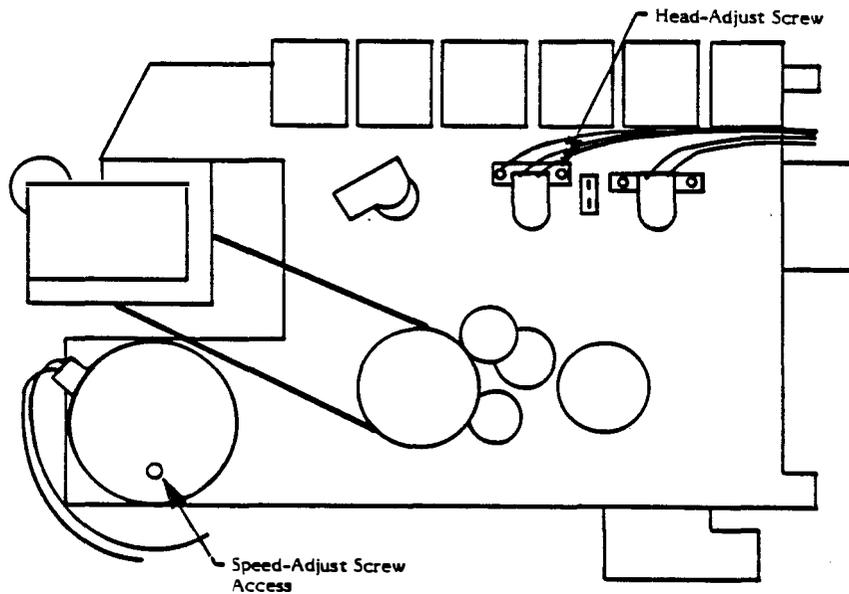
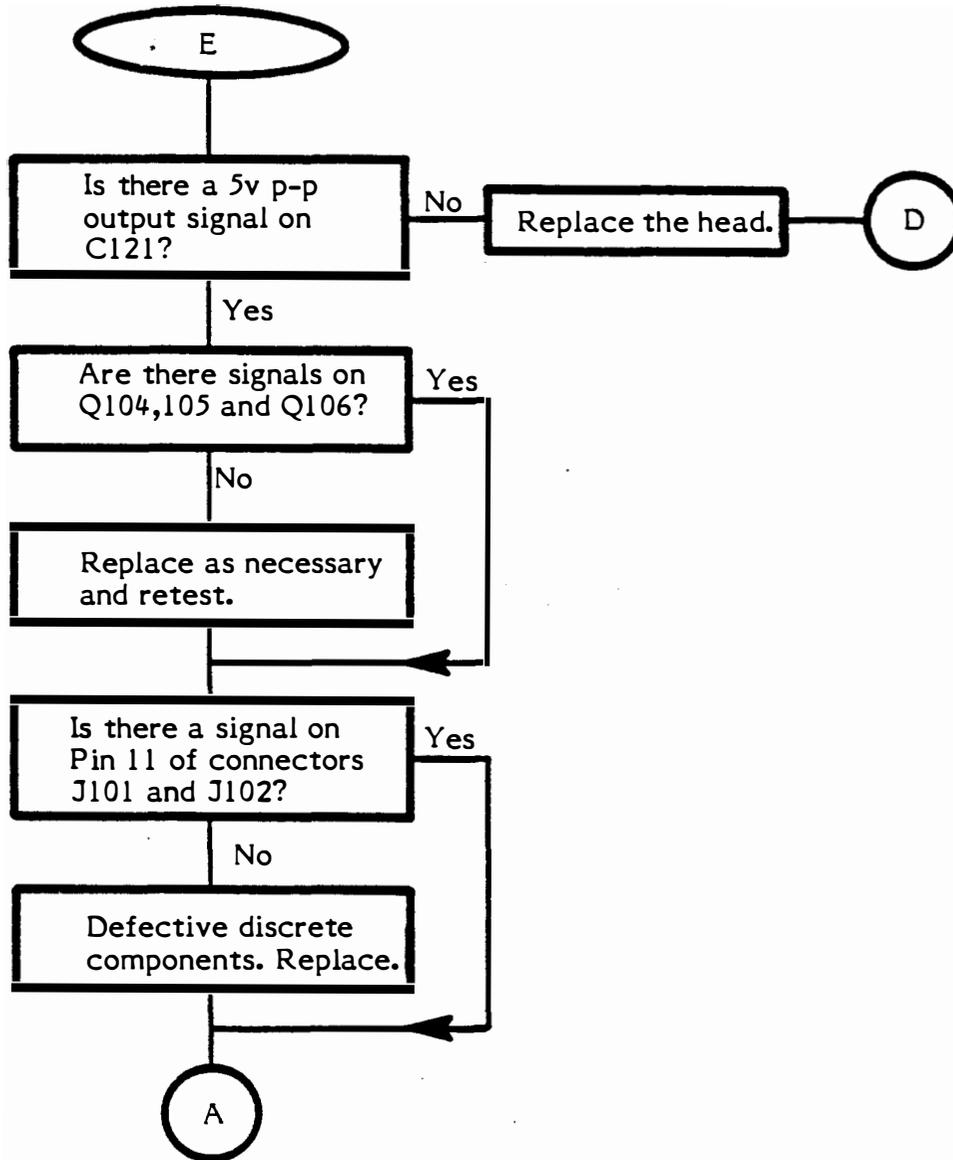


Figure 4-6. 1010C Head Alignment Screw

9. If the signal will not adjust but there is a signal present, replace the head. (Follow the procedure on page 3-11.) If it still will not adjust, proceed to Flowchart E, page 4-20.
10. Follow the Assembly after Troubleshooting procedure on page 3-12 and then return to the HEAD ALIGNMENT CHECK on page 3-3.

1010C NO AUDIO
(3KHZ AUDIO TEST TAPE)



1010C MOTOR SPEED ADJUSTMENT PROCEDURE (3KHz AUDIO TEST TAPE)

F

EQUIPMENT REQUIRED

- Standard Tool Kit
- Known-good ATARI computer
- BASIC cartridge
- ATARI 3KHz Audio Test Tape (FD100221)

PROCEDURE

1. Disassemble the unit to the Troubleshooting stage as described on page 3-10.
Follow the set-up procedure in the MOTOR SPEED CHECK, steps 1 and 2 on page 3-4.
2. Insert the test tape.
3. Attach the scope probe to pin 11 of the unused I/O connector on the 1010 (refer to Figure 3-1 for pin locations).

NOTE: Use Pin 4 as referenced ground.

4. Type in POKE 54018,52 and press **RETURN** on the computer.
5. Press the **PLAY** button on the 1010.
6. Adjust the speed adjustment screw inside of the motor by inserting a 2.0 mm flathead screwdriver through the insulated hole on the bottom of the motor (see Figure 4-6).
The wavelength of the signal should be .33 ms, as illustrated below in Figure 4-7.

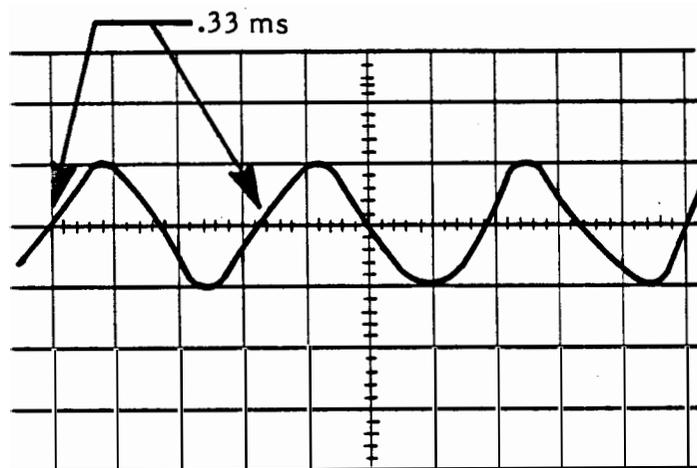
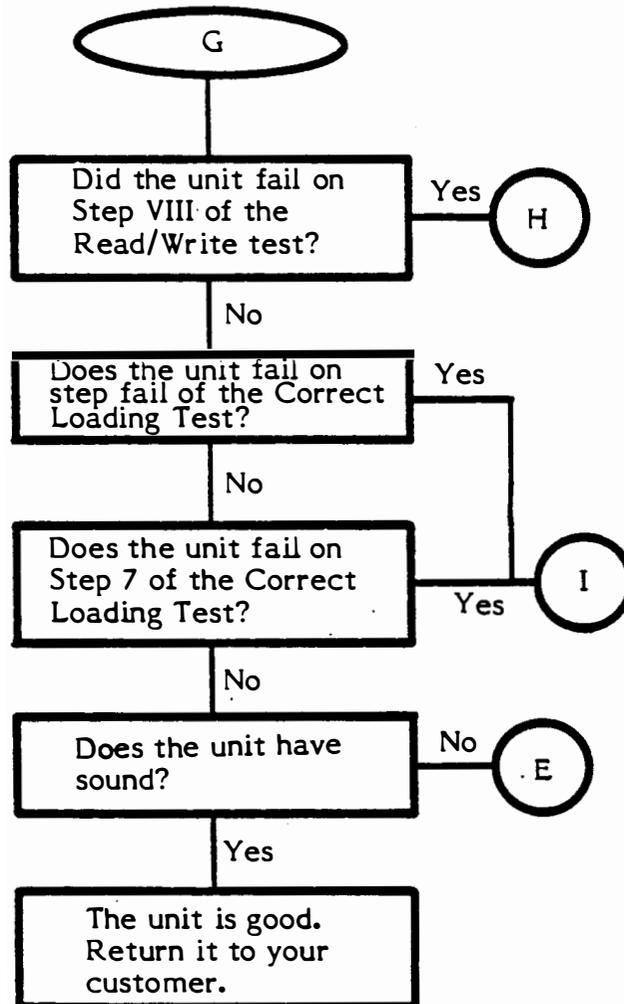


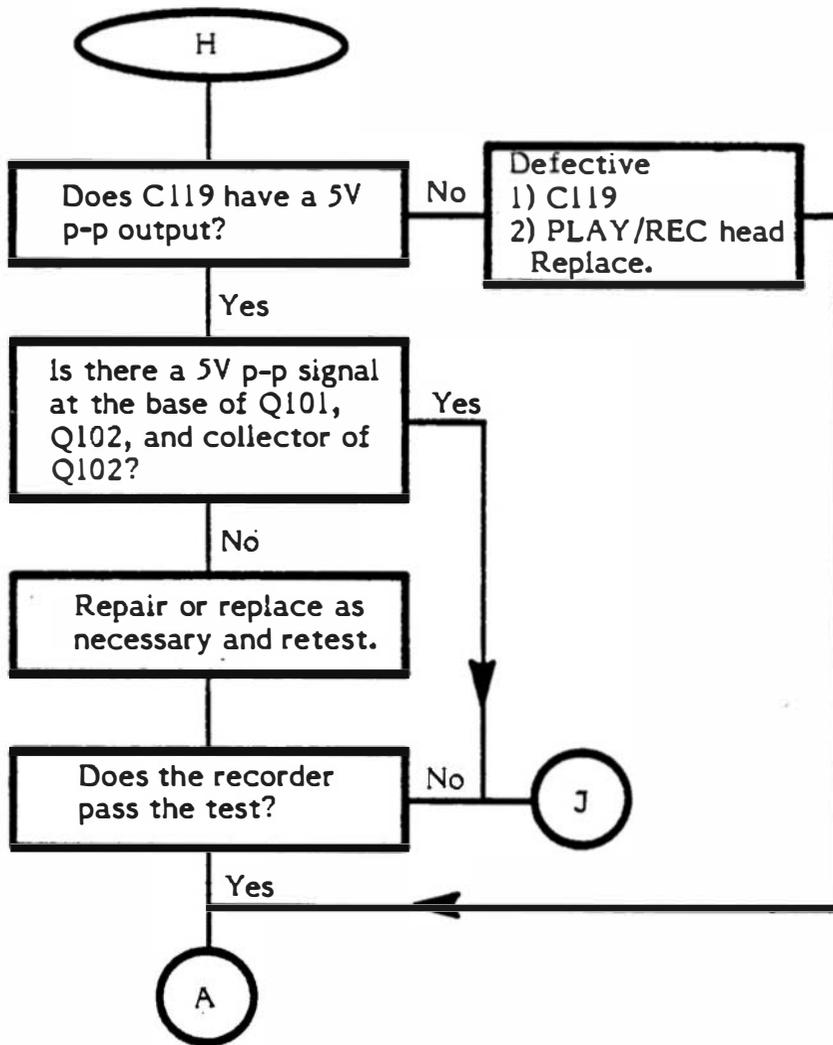
Figure 4-7. 1010C Speed Adjustment Wavelength

7. If you can't adjust the waveform, replace the head as described in Section 3, page 3-11. If that does not remedy the problem, return to Flowchart E, page 4-20.

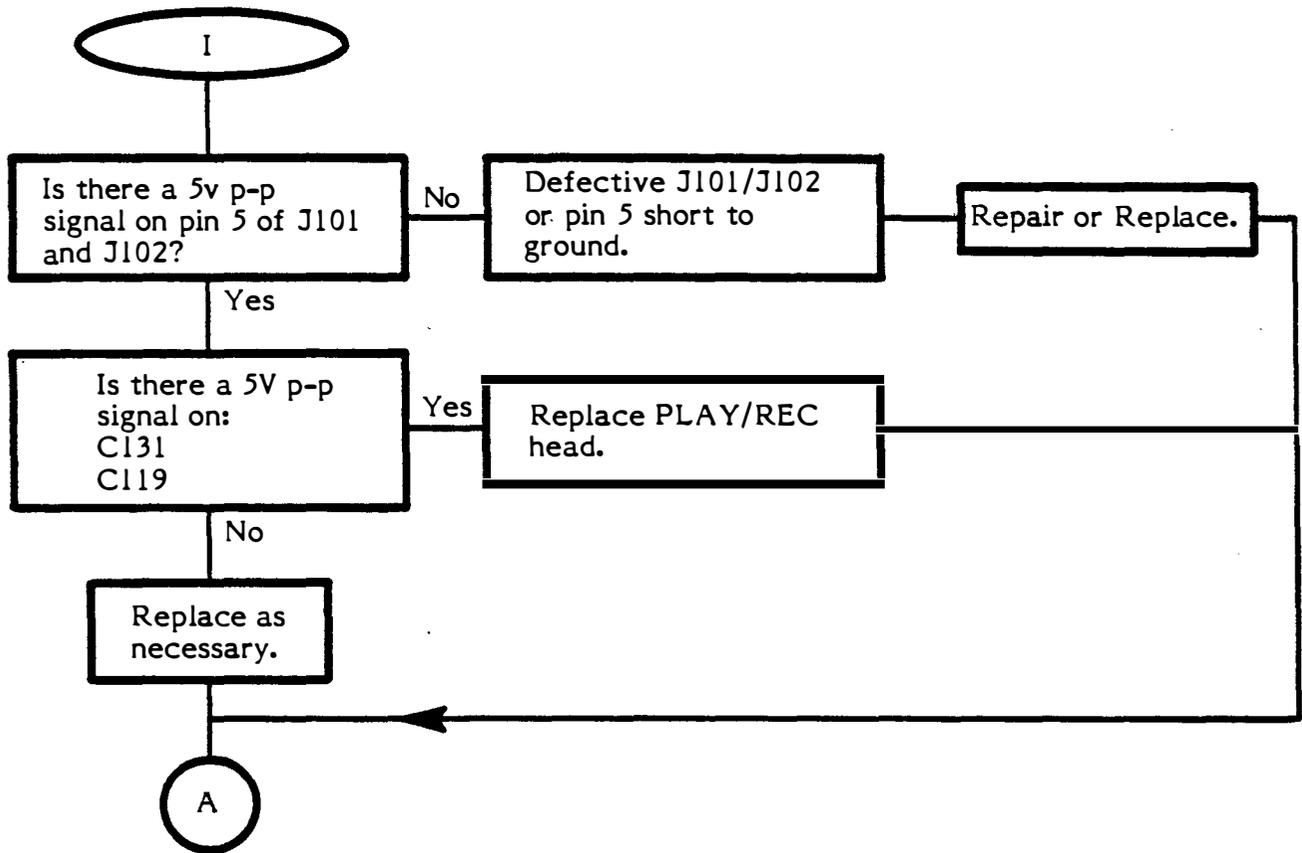
1010C START-UP PROCEDURE (CONTINUED)



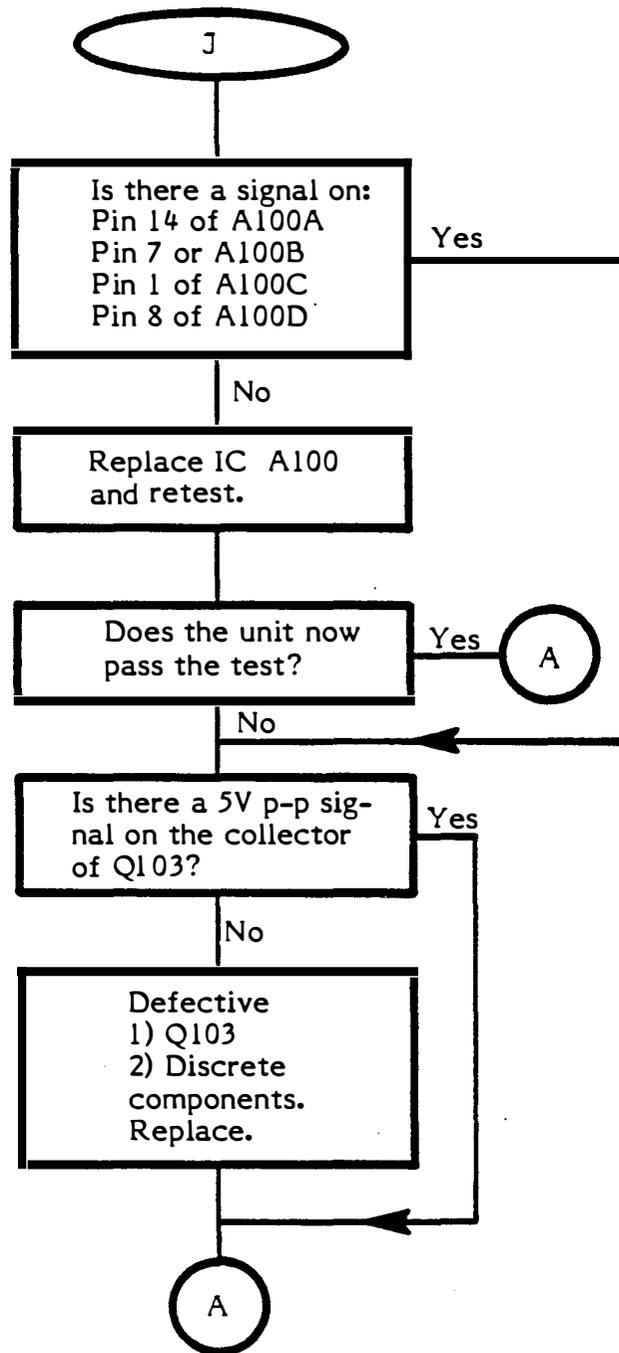
1010C WILL NOT READ PROGRAM FROM THE RECORDER
(DIGITAL TEST TAPE)



1010C WILL NOT RECORD
(DIGITAL TEST TAPE)



1010C WILL NOT READ PROGRAM FROM THE RECORDER (CONTINUED)
(DIGITAL TEST TAPE)



SECTION FIVE

ATARI 1010

1010S SYMPTOM CHECKLIST

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>DIAGNOSTIC FLOWCHART ENTRY POINT</u>
LED Not On	D1,D2,S2,J1	B
Motor Doesn't Run	Drive Belt, motor, Q4,Q5	C
No Speed or Head signal	IC1,IC2, Q2	D
Head Alignment Fails	Head, Q2 IC1,IC2	E
Speed Alignment Fails	Head, Q2 IC1,IC2	F
Unit Doesn't Load	Head, IC1,IC2, Q1	H
Unit Doesn't Write	IC1,IC2,Q3 Head	I
No or Bad Audio	IC1, IC2,Q2	E

1010C SYMPTOM CHECKLIST

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>DIAGNOSTIC FLOWCHART ENTRY POINT</u>
LED Not On	LED, R141 CR105-108 C133-136	B
Motor Doesn't Run	Drive Belts, Motor, Q108	C
No Speed or Head Signal	Head, Q104-Q106	D
Head Alignment Fails	Head, Q104-Q106	E
Speed Alignment Fails	Head, Q104-Q106	F
Unit Doesn't Load	Head, C119, C131 R138	H
Unit Doesn't Write	Q101, Q103, A100, Head	I
No or Bad Audio	Q104-Q106, Head	E

SECTION SIX

1010S PARTS LIST

<u>Part Number</u>	<u>Description</u>	<u>Location</u>
FA100224	Tape Drive w/9V Motor P/B Rec Head, Eraser Head	
FA100233	PCB (Loaded)	
FA100234	LED Board	
FC100225	P/B Rec Head	
FC100226	Switch, Leaf, Power	SW2
FC100227	Switch, Leaf, Fast	SW3
FC100228	Motor Drive Belt	
FC100229	Counter Belt	
FC100230	Door (Lid Assy)	
FC100231	IC, MB3614	IC2
FC100232	IC, LA3160	IC1
FC100235	Transistor, 2SA608	Q1
FC100236	Transistor, 2SC693	Q2
FC100237	Transistor, 2SC536 F-G	Q3, Q5
FC100238	Transistor, 2SB598P	Q4
FC100239	Potentiometer, 201	P1
FD100220	Digital Test Tape	
FD100221	3KHz Test Tape (Audio)	
C017945	Power Adaptor	
FC100240	Bridge Diode	D1
FD100008	Diagnostic Test Tape	
FD100009	Blank Tape	

1010C PARTS LIST

<u>Part Number</u>	<u>Description</u>	<u>Location</u>
FA100246	Tape Drive w/9V, Motor, PLAY/REC Head, and Erase Head	
FA100249	Door & Door Lens	
FA100252	LED Wire Harness, Holder, and Front Panel Assembly	
FA100255	PCB Assembly	
FC100247	PLAY/REC Head, BG-62 G205H	
FC100248	Metal Strip (Function Plate)	
FC100250	Motor Drive Belt	
FC100251	Counter Belt, 65x1x1	
FC100253	Switch, Leaf	S101, 102
FC100256	Transistor, NPN-9014B	Q101,102,104
FC100257	Transistor, NPN-9014C	Q103,105,106,107
FC100258	Transistor, PNP-2SB856C	Q108
FC100022	Transistor, 2SC1815	Q109
C014320-XX	LM324	A100
FD100220	Digital Test Tape	
FD100221	3 KHz Test Tape (Audio)	
C017945	Power Adaptor	
FD100008	Diagnostic Test Tape	
FD100009	Blank Tape	
FC100260	Push Button	

SECTION SEVEN

SERVICE BULLETINS

This section is to be used by you to file the three classifications of service bulletins that are periodically released by the Director of Technical Support.

The following are brief descriptions of each classification:

FIELD CHANGE ORDER

A Field Change Order describes mandatory hardware or software changes to ATARI Computer products and instructs how to implement these changes. The changes must be performed on all units serviced or repaired.

UPGRADE BULLETIN

An Upgrade Bulletin describes product improvements or modifications that the consumer may wish to purchase. These bulletins allow you to modify the customer's unit to add capabilities which may not have been available when the unit was originally manufactured.

TECH TIP

A Tech Tip is a document of a general nature which transmits routine service or repair information. By communicating methods developed since you attended training classes, Tech Tips aid to continuously improve repair skills and increase knowledge of ATARI Computer Products.

Other times, Tech Tips alert you to units that have been modified and are now standard for ATARI Manufacturing, but are different from many existing units and require different repair techniques.

