1050™
DISK DRIVE
FIELD SERVICE
MANUAL

ATARI

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SECTION 1

THEORY OF OPERATION

OVERVIEW

The ATARI 1050 Disk Drive is a record/playback device that allows information to be stored and retrieved quickly and accurately. The actual recording is much like a tape recording process and is done on similar material. The data is magnetically recorded on a 5 1/4 inch diameter diskette. Each diskette can store 88K bytes of data in single density mode and 133K bytes in double density however, double density can only be implemented in conjunction with DOS3. The diskette is inserted through a door in the front panel of the drive unit. The 1050 Disk Drive is used with a single ATARI 400, 800 or 1200 Computer with a minimum of 16K of RAM installed.

Figure 1-1 is a simplified block diagram of the functional flow of the 1050 follows. Each of its functional units are explained in greater detail below.
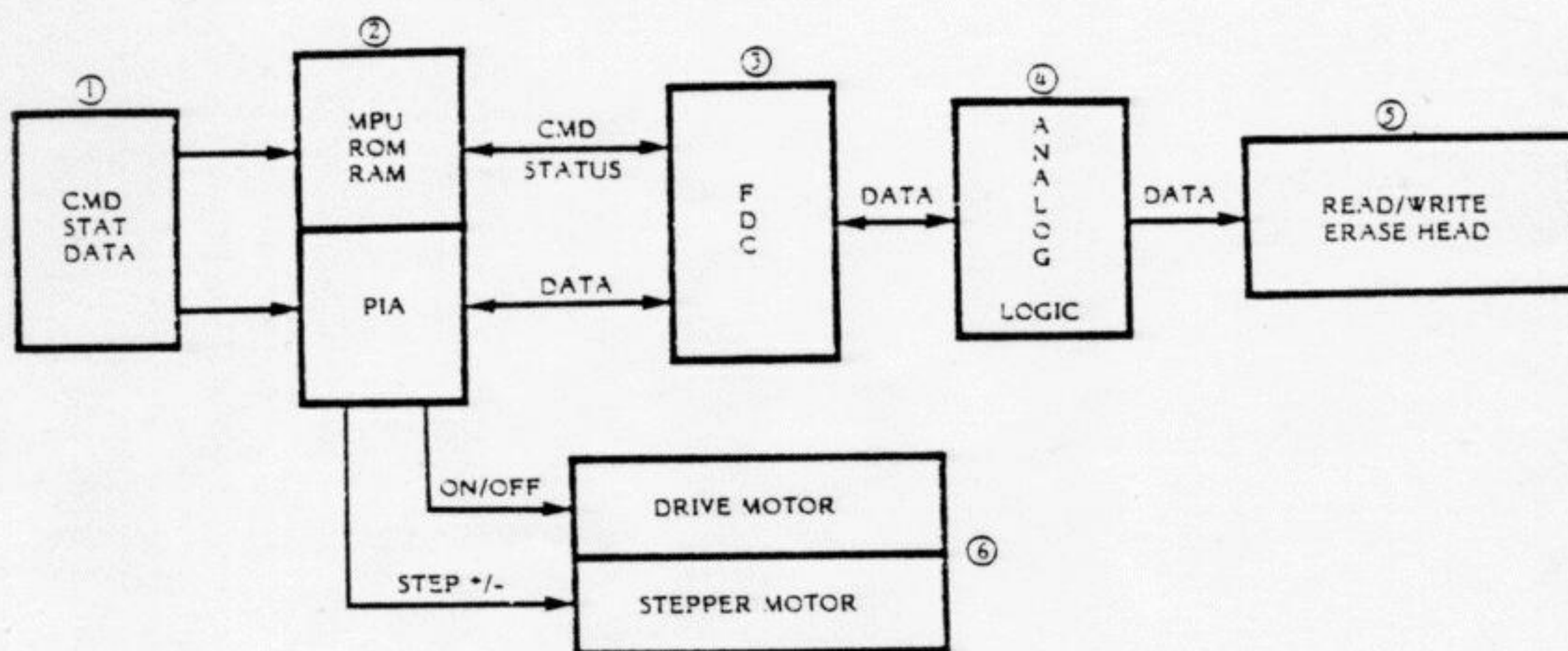
Figure 1-1. Simplified Block Diagram

Block 1   includes the Data Input/Output (I/O) connectors. They are the origin and destination of all commands, status and data.

Block 2   includes the Microprocessor (MPU), Read-Only-Memory (ROM), Random-Access-Memory (RAM) and Peripheral Interface Adaptor (PIA). They process all commands and control data flow to and from the console.

Block 3   includes the 2793 Floppy Disk Controller (FDC). The FDC controls data flow to and from the diskette.

Block 4   includes the Analog Logic. The Analog Logic processes all data to and from the Read/Write Head.

Block 5   includes the Read/Write and Erase Head.

Block 6   includes the Stepper Motor and Drive Motor which are located in the Drive Mechanism. They receive signals from the PIA.

OPERATOR FUNCTIONS

Each 1050 Disk Drive comes with an AC Power Adaptor and a Data Cord. Figure 1-2 shows how to connect the Disk Drive and computer console.
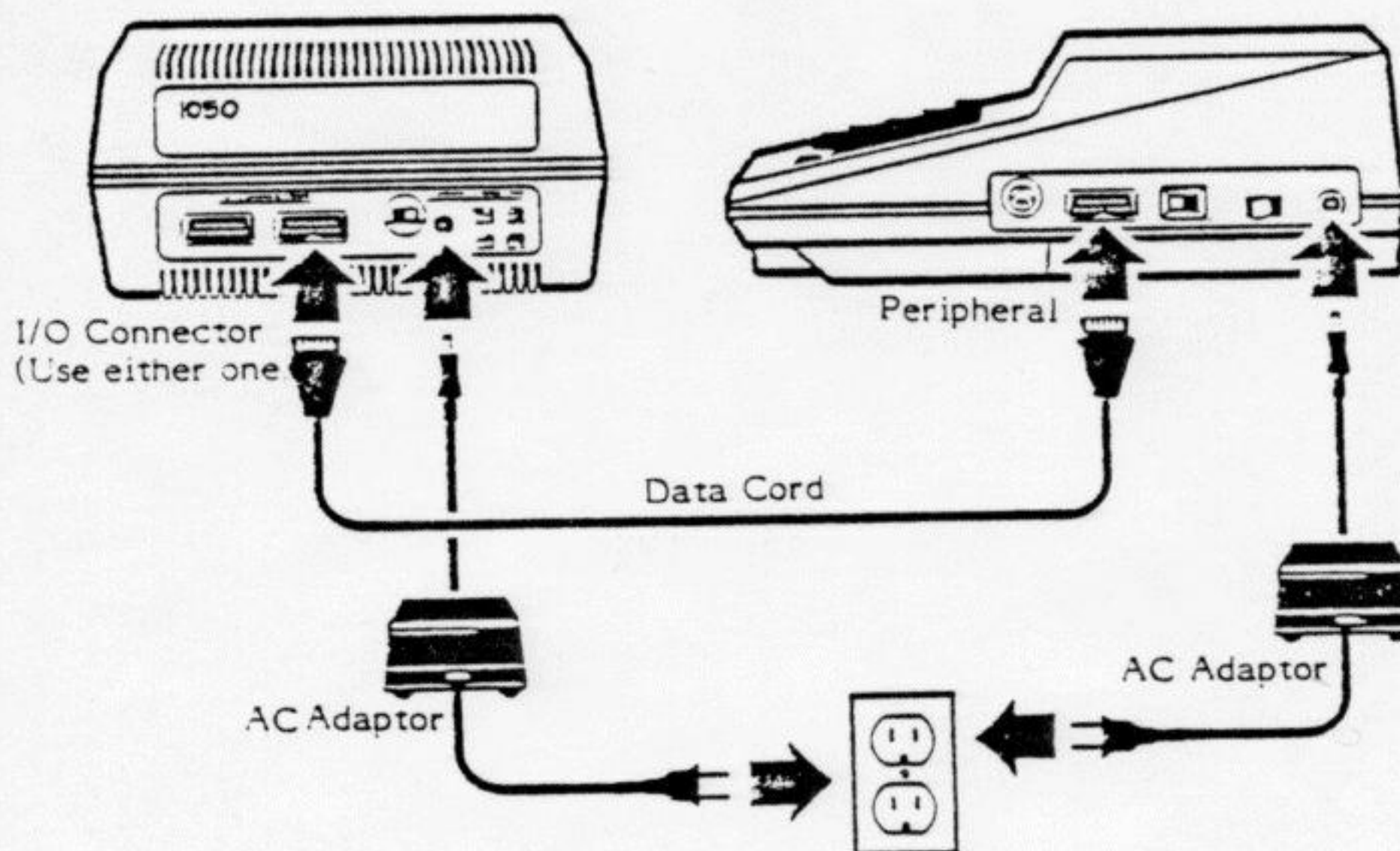
Figure 1-2. System Hook-up

The Controls/Indicators are located on the front and back panels of the 1050. The front panel of the 1050 contains the Activity Light, the Power Indicator Light, the Power ON/OFF switch, and the door latch. The rear panel of the 1050 contains the Input/Output (I/O) connectors, Power-Jack, and Drive Code Switch. (Use Atari 810 switch settings to identify drive as number 1,2,3, or 4.).

These functions are illustrated in Figure 1-3 and discussed in the following paragraphs.

FRONT PANEL

DOOR LATCH

ACTIVITY LIGHT

POWER ON/OFF
SWITCH

POWER INDICATOR
LIGHT

BACK PANEL

DRIVE CODE SWITCH

I/O CONNECTORS

POWER JACK

Figure 1-3. ATARI 1050 Disk Drive Control/Indicators

Front Panel

The Activity Light lights whenever the drive is reading from or writing to a diskette or when the diskette is first inserted and the door latch turned down. **DO NOT OPEN THE DRIVE DOOR, TURN POWER OFF, OR ATTEMPT TO REMOVE THE DISKETTE WHEN THIS LIGHT IS ON!**

The Power Indicator Light lights whenever power to the Drive is **ON.**

The Power ON/OFF switch is a toggle switch pushed to the right for **ON,** and to the left for **OFF. ALWAYS insert or remove a diskette with Power ON.**
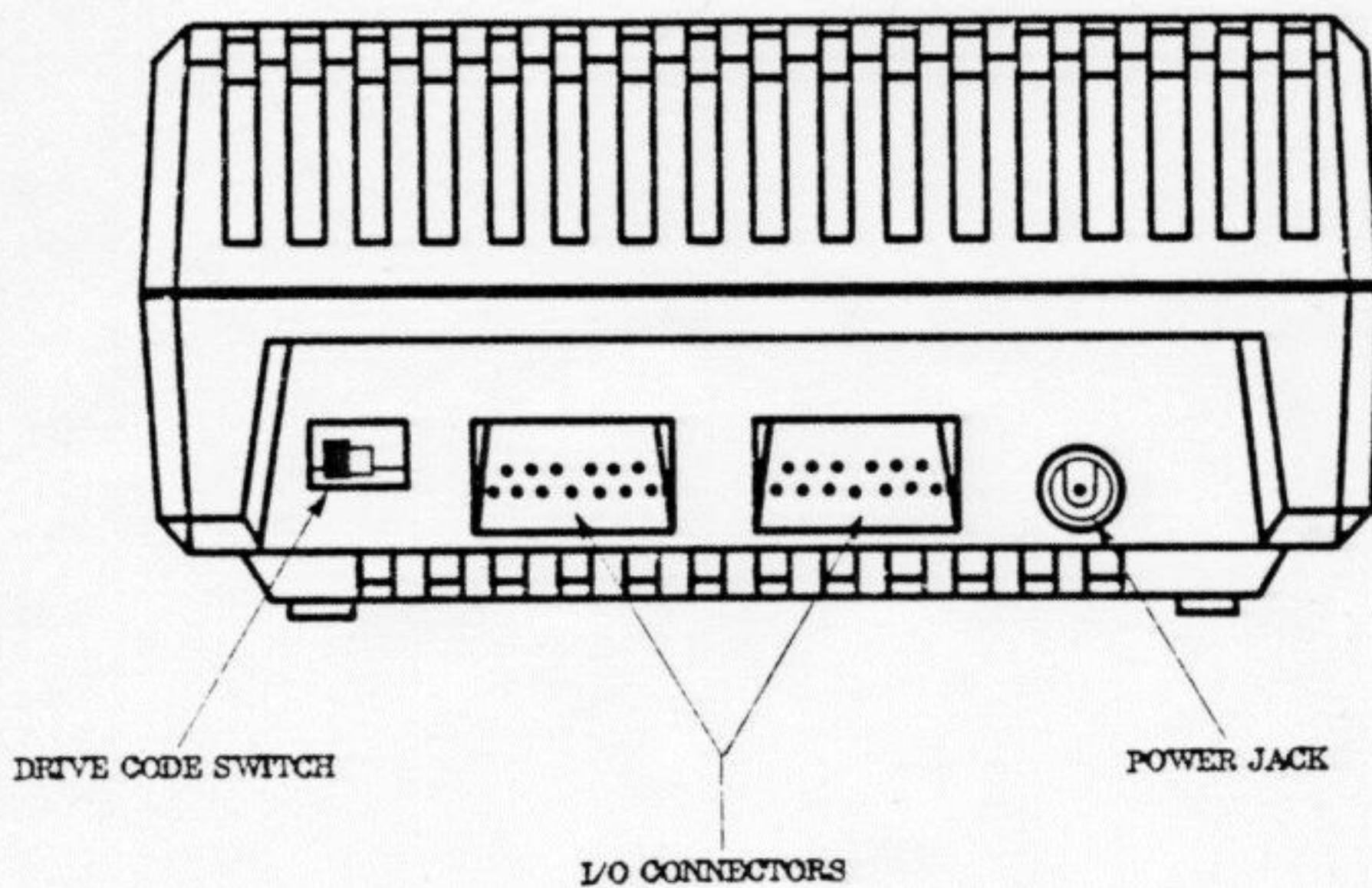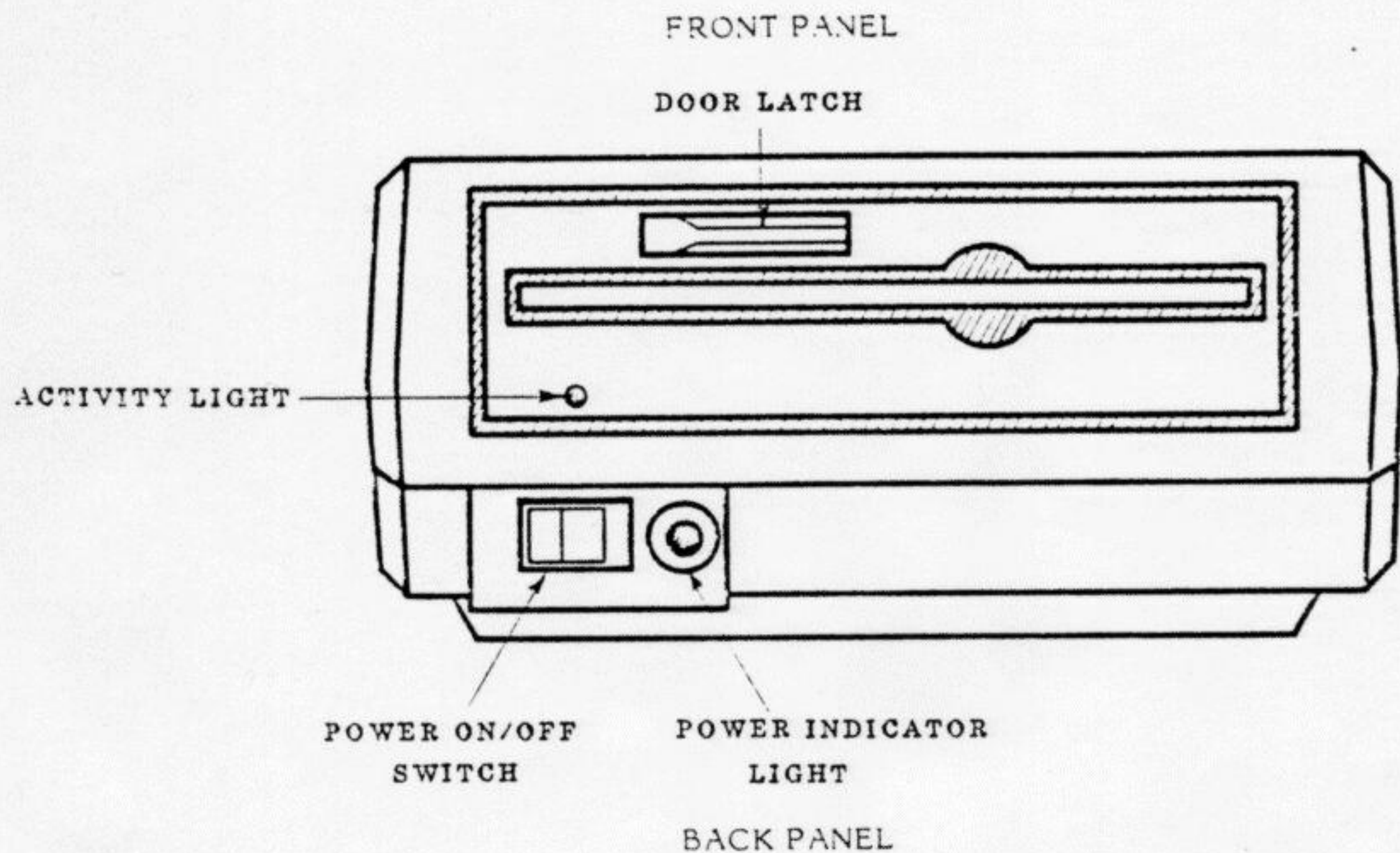
The Door Latch turns down to close the door after a diskette is inserted. The Activity Light then lights for a few seconds. The latch turns parallel to the diskette slot for removing the diskette.

Back Panel

The Input Output (I/O) connectors are identical jacks for the data cords from the computer console or other peripheral devices. Connections may be made in any order with either jack.

The Power Jack accepts the AC Power Adaptor.

The Drive Code Switch is a 4-position switch that tells the computer which drive it is communicating with.

Two switches (one black and one white) are visible in the rectangular opening on the drive rear panel. Using a pen or screwdriver, move the switches to the correct position on each drive being used.

Drive Code Number Diagram shows the correct positions of the Drive Code Switch to set the identification of the Drive (1 thru 4).

MECHANICAL THEORY

The 1050 unit is composed of an outer case which houses the Drive Mechanism, Drive Motor, Head Carriage Assembly, Stepper Motor, and PCB.

CASE

The 1050 outer case consists of three pieces of plastic. The lower cover secures the PCB and drive mechanism. The top cover protects these, as illustrated in Figure 1-4. The front bezel houses the Power and Activity lights, door latch, Power ON/OFF switch and diskette slot.
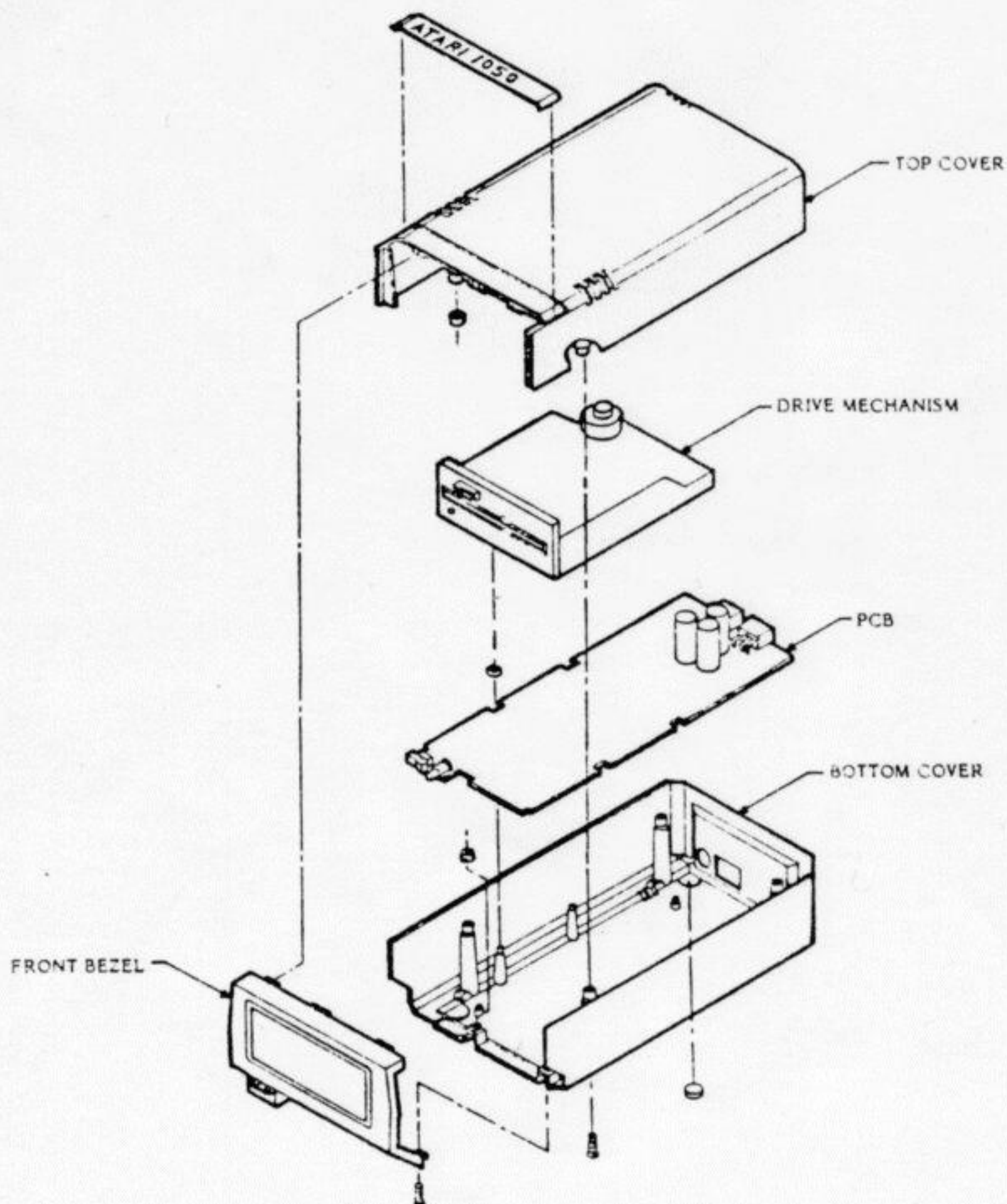

Figure 1-4. Exploded Diagram of the Disk Drive

Figure 1-4 illustrates the mechanical elements of the 1050 which are discussed in the following paragraphs.

DRIVE MECHANISM

The Drive Mechanism provides mechanical and electronic linkage to the diskette. It is the physical assembly containing the Head Carriage Assembly, Drive Motor, Stepper Motor, and Write Protect sensor, Track 00 sensor, and Diskette Enable switch.

HEAD CARRIAGE ASSEMBLY

The Head Carriage Assembly allows the head to be cycled across the diskette. It contains the Read/Write and Erase Head, the pressure pad and spring assembly.

DRIVE MOTOR

The Drive Motor is a DC motor which indirectly drives the diskette. It is attached by a drive belt to a flywheel which rotates the disk.

The DC motor includes an internal Tachometer, whose output is monitored in the Tach Feedback circuit. The Tach Feedback circuit senses changes in current and maintains a constant motor speed.

The Activity Light (LED) comes on whenever the motor turns on.

STEPPER MOTOR

The Stepper Motor positions the head over a desired track. It is a four-phase motor. Each change in phase rotates the Stepper Motor shaft. This circular motion is converted to linear motion by the positioning band/pulley assembly which links it to the head carriage.

The Stepper Logic is controlled by the PIA Chip. Four PIA signals act as the Stepper Motor's four-phase inputs. These lines in various combinations, drive the Stepper Motor to reposition the Head Carriage Assembly from track to track.

PCB ASSEMBLY

All of the digital and analog logic for the 1050 is contained on one PCB.

POWER SUPPLY

The Power Supply provides the following voltages for use in the system:

+5VDC (regulated), which provides the voltage for the logic and for the 2793-02 Floppy Disk Controller.

+12VDC (regulated), which feeds the Stepper Motor, Drive Motor, Zero Crossing Detector, Read/Write and Erase circuitry, and Tach feedback.

The 120VAC which comes into the system is stepped down to 9VAC by an external transformer (See Figure 1-6).

The 9VAC is applied to the bridge rectifier on the PCB when the Power ON/OFF switch is turned ON. An internal 2 amp fuse in the AC adaptor provides current limiting protection.
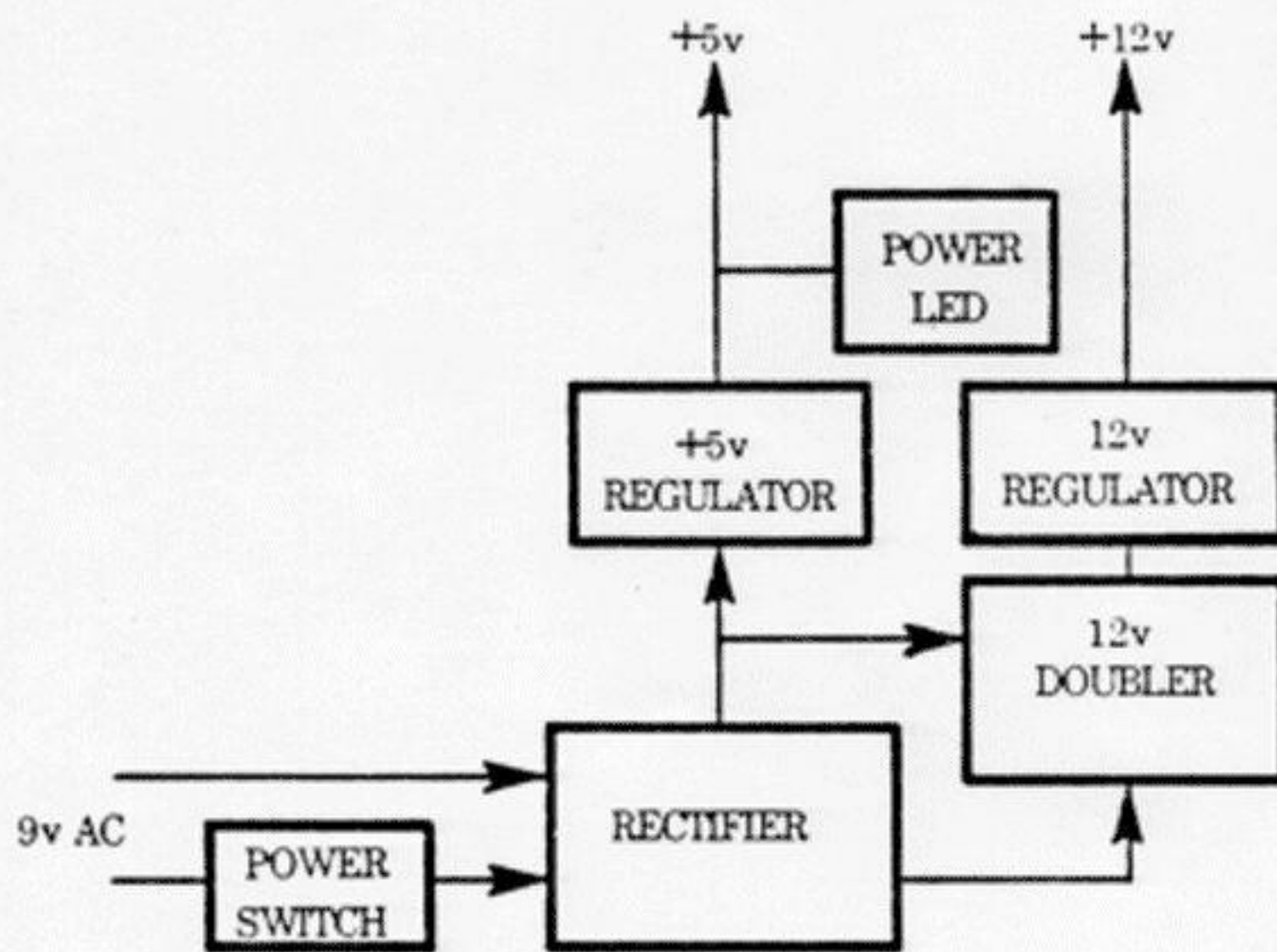
Figure 1-5. Power Supply Block Diagram

POWER-UP LOGIC

The Disk Drive's Power-up Logic resets the 6507 microprocessor, Stepper Motor logic, Peripheral Interface Adaptor (PIA) and Data Interface section (2793 FDC and Analog circuitry) whenever the drive is turned on. In addition, the power-up logic circuit locks the Data Output Buffer off during the short period when the drive is turned on. This prevents random pulses generated by the drive's circuitry (during the initialization period) from being sent to the console.

The RESET logic returns the electrical circuits to their starting conditions.

ELECTRONIC THEORY

The 1050 Disk Drive consists of eight major electronic elements. These include:

- o   Power-up Logic (discussed in the Power Supply section above)
- o   Clock
- o   6507 Microprocessor Unit (MPU)
- o   Read-Only Memory (ROM)
- o   Random Access Memory (RAM)
- o   6532 Peripheral Interface Adaptor (PIA)
- o   2793 Floppy Disk Controller (FDC)
- o   Read/Write and Erase Logic

A functional block diagram of the electronic elements of the 1050 Disk Drive follows (Figure 1-6), along with a discussion of each.
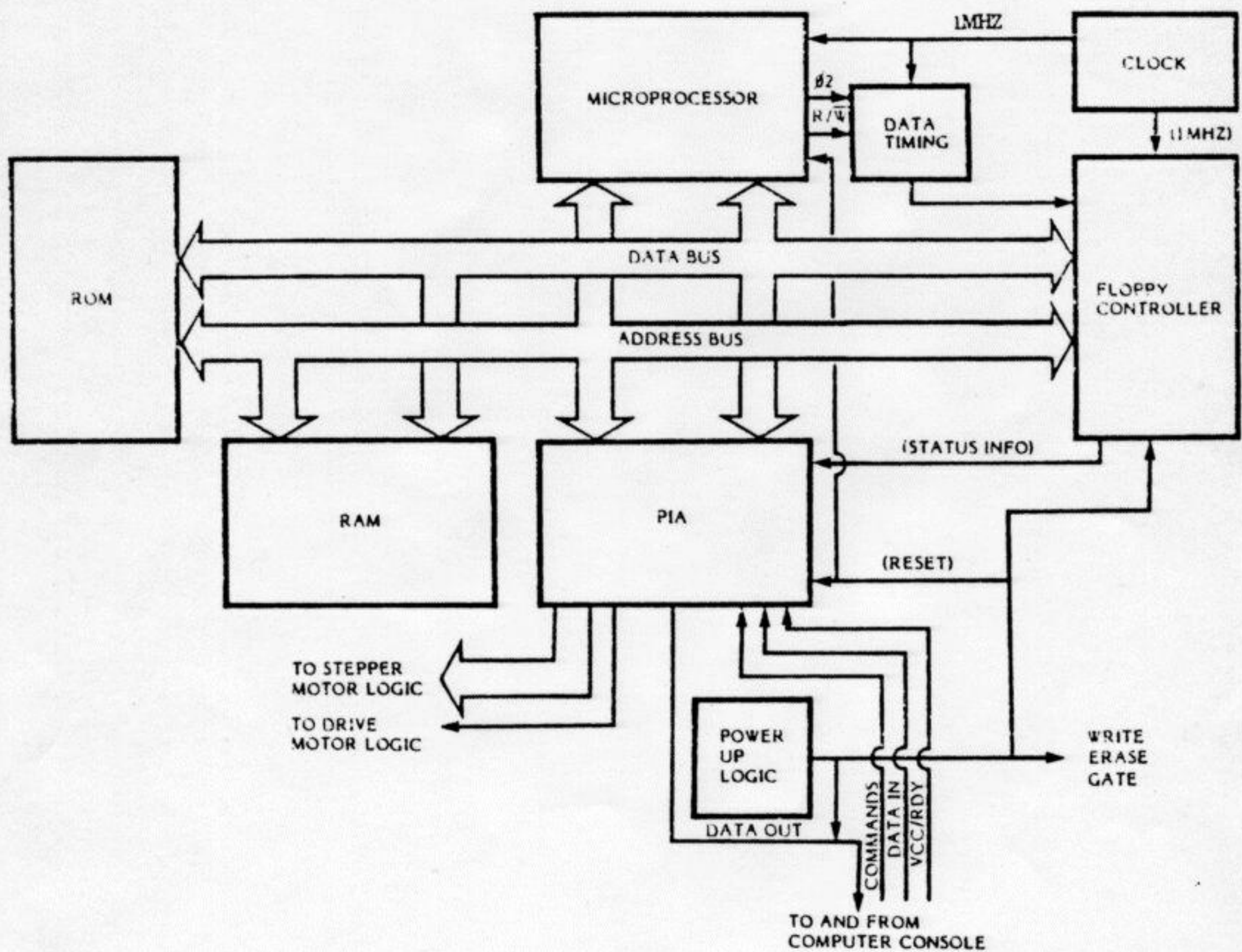
Figure 1-6. Disk Drive Electronic Units

SECTION 4

SYMPTOM CHECKLIST

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
DRIVE MOTOR AND SPEED PROBLEMS		
Drive motor doesn't rotate when latch is shut (no activity LED)	Defective diskette enable switch	Replace Diskette Enable switch assembly on drive mechanism.
	Intermittent or bad connection	Check that P1 is properly connected to J1
	Defective Diskette Enable circuit (U6)	Troubleshoot and replace defective component (See waveforms. p. 4-11)
	Defective component in motor control circuit (Q4, Q6, U5, VR2)	Troubleshoot and replace defective component (see waveforms, p. 4-8)
	Defective drive motor	Replace drive motor
Drive motor operates sporadically	Intermittent or bad connection	Check that P1 is properly connected to J1
	Defective component in motor control circuit (U5, VR2, Q4, Q6)	Troubleshoot and replace defective component (see waveforms, p. 4-8)
	Defective component in tachometer feedback circuit (U5, VR2, Q6)	Troubleshoot and replace defective component (see waveforms, p. 4-9)
	Open winding in drive motor tachometer	Replace drive motor
Drive motor speed too slow or too fast	Speed adjustment incorrect	Adjust speed POT (VR2) for speed of 208.3 ms
Speed not adjustable	Defective component in tachometer feedback circuit (VR2, U5, Q6)	Troubleshoot and replace defective component (see waveforms, p. 4-9)
	Open winding in drive motor tachometer	Replace drive motor

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION

DRIVE MOTOR AND SPEED PROBLEMS (Continued)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Drive motor speed unstable	Intermittent or bad connection	Check that P1 is properly connected to J1 (refer to Figure 3-1).
	Drive belt slipping	Replace drive mechanism
	Improper cone pressure on diskette	Replace drive mechanism
	Defective component in tach feedback circuit (U5, Q6, VR2)	Troubleshoot and replace defective component (see waveforms, p. 4-9)
	Drive motor bearings	Replace drive motor

STEPPER MOTOR PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Head positioner will not step	Bad connection at J15	Check for proper connection and polarity at J15 (refer to Figure 3-1).
	Defective component in stepper driver circuit (U2, U3, U7)	Troubleshoot and replace defective component (see waveforms, p. 4-10)
	Defective stepper motor	Replace drive mechanism
Skips or missteps to wrong tracks	Bad connection at J15	Check for proper connection and polarity at J15 (refer to Figure 3-1).
	Defective component in stepper driver circuit (U2, U3, U7)	Troubleshoot and replace defective component (see waveforms, p. 4-10)
	Band pully or head carriage binding	Replace drive mechanism
	Track 00 sensor defective needs adjustment Q5	Troubleshoot and replace or adjust defective component (see waveforms, p. 4-11)

DRIVE MECHANISM PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Diskette will not eject	Eject assembly binding or broken	Replace drive mechanism

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION

DRIVE MECHANISM PROBLEMS (Continued)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Drive will not pass track 00 sensor test	Track 00 sensor defective or needs adjustment	Troubleshoot and replace or adjust defective component
	Carriage stop missing or improperly set	Replace drive mechanism
	Defective component in track 00 sensor circuit (Q5, U13)	Troubleshoot and replace defective component (see waveforms, p. 4-11)
Intermittent Read/Write errors	Head load pad pressure	Replace drive mechanism
	Dirty Read/Write head	Clean head with 91% Isopropyl Alcohol
	Burned head	Replace drive mechanism
Diskette incompatibility	Radial track alignment	Adjust "Cats Eyes" alignment
	Head Azimuth alignment	Check head azimuth. If out of spec., replace drive mechanism.
	Drive belt slipping	Replace drive mechanism
	Speed improperly adjusted (VR2)	Check and adjust for proper speed on both drives

READ PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Soft Read errors (intermittent or non-permanent)	Defective Diskette	Try diskette on known-good drive
	Dirty Read/Write head	Clean head with 91% Isopropyl Alcohol
	Drive belt slipping	Replace drive mechanism
	Excessive noise in Read signal (U13, U18-20, U22-24)	Troubleshoot Read circuit (see waveforms, p. 4-12)

READ PROBLEMS (Continued)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
	Intermittent or marginal component in Read circuit (U13, U18-20, U22-24)	Troubleshoot and replace defective component (see waveforms, p. 4-12)
Fails to Read anything	Improper connection of J6	Check for correct polarity (refer to Figure 3-1).
	Failed component in read circuit (U13, U18-20, U22-24).	Troubleshoot and replace failed component (see waveforms, p. 4-12)
	Burned Head	Replace drive mechanism
	Speed adjustment incorrect	Adjust speed POT (VR2) to speed of 208.3ms
	Head load pad pressure	Replace drive mechanism
	Dirty Read/Write head	Clean head with 91% Isopropyl alcohol
	Burned head	Replace drive mechanism
	Radial track alignment	Adjust "Cats Eyes" alignment
	Head azimuth alignment	Check head azimuth. If out of spec., replace drive mechanism.

WRITE PROBLEMS

Fails to Write anything	Improper connection of J6	Check for correct polarity (refer to Figure 3-1)
	Dirty Read/Write head	Clean head with 91% Isopropyl Alcohol
	Defective Write protect circuit (U11, U13)	Troubleshoot and replace defective component (see waveforms, p. 4-13)
	Component failure in Write circuit (U13, U15-18, U21, Q1)	Troubleshoot and replace defective component (see waveforms, p. 4-14)
	Defective component in Erase circuit (U11, U15 U17)	Troubleshoot and replace defective component (see waveforms, p. 4-15)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
WRITE PROBLEMS (Continued)		
	Burned head	Replace drive mechanism
Error 144 during Write or format routine	Defective Write protect circuit (U11, U13)	Troubleshoot and replace defective component (See waveforms p. 4-13)
Writes garbled data	Defective component in Erase circuit (U11,U15 U17)	Troubleshoot and replace defective component (See waveforms p. 4-15)
	Component failure in Write circuit (U13, U15-18, U21, Q1)	Troubleshoot and replace defective component (see waveforms, p. 4-14)
	Dirty Read/Write head	Clean head with 91% Isopropyl Alcohol
Drive is always or never Write protected	Defective Write protect circuit (U11, U13)	Troubleshoot and replace defective component (see waveforms, p. 4-13)
	Defective Write protect photo sensor	Replace drive mechanism
POWER SUPPLY PROBLEMS		
No power or blows power	Defective bridge diodes	Replace all four diodes (CR17-CR20) (see waveforms, p. 4-16)
	Defective power adaptor	Replace power adaptor
No +5 volts at TP13	Defective 5V regulator	Replace Q7
Power LED not lit	Defective 5V regulator	Replce Q7
	Defective LED	Replace CR21
No +12 Volts at TP14	Defective 12V regulator	Replace Q8
	12 volt doubler circuit	Replace CR15 & CR16, or C71 (see waveforms, p. 4-16)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
DATA INTERFACE PROBLEMS		
No response to commands from computer	I/O cable or connections	Replace cable or tighten connections
	Command signal not getting to PIA (U7)	Trace signal through (U1) and replace if necessary (see waveforms, p. 4-17)
	Defective PIA	Replace U7
No data output from drive to computer	I/O cable or connections	Replace cable or tighten connections
	Data signal from PIA not getting to I/O connection	Trace signal through (U1) and replace if necessary (see waveforms, p. 4-17)
	Defective PIA	Replace U7
No data input from computer to drive	I/O cable or connections	Replace cable or tighten connections
	Data signal not getting to PIA (U7)	Trace signal through (U1) and replace, if necessary (see waveforms, p. 4-17)
No data input from computer to drive (continued)	Defective PIA	Replace U7
Drive doesn't reboot when computer is powered down and then up again	VCC Ready signal not getting to PIA	Trace signal through (U1) and replace, if necessary (see waveforms, p. 4-17)
	Defective PIA	Replace U7
DRIVE SELECT PROBLEMS		
Drive select test fails	Defective select switch	Replace S2
	Defective PIA	Replace U7

MOTOR CONTROL SIGNALS

3.2V
0V
Off   On
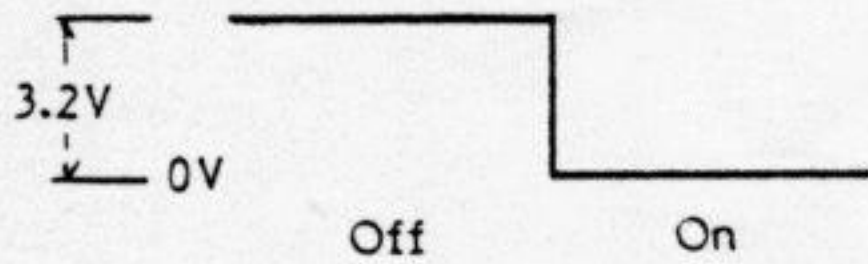
Pin 11 of U7
Schematics, Pg. 5-5

.75V
0V   .1V
On
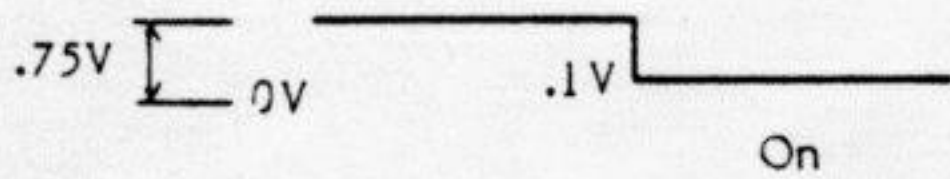
Base of Q4
Schematics, Pg. 5-7

3V
.15V
0V
Off   On
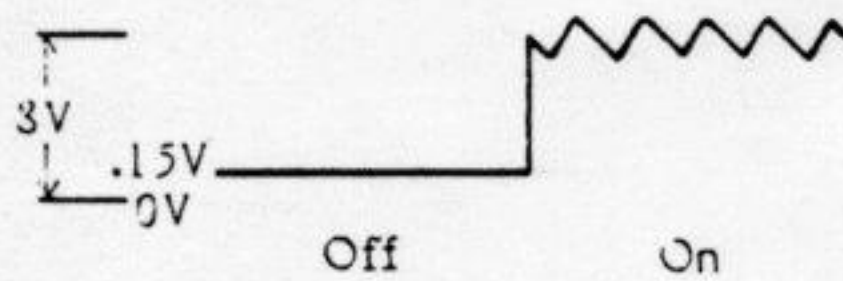
Collector of Q4
Schematics, Pg. 5-7

8V
0V
Off   On
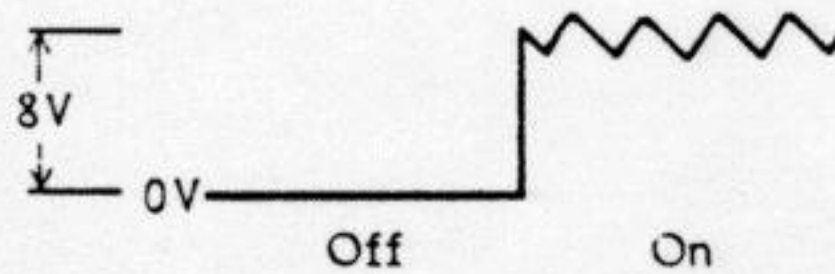
Emitter of Q6
Schematics, Pg. 5-7

1.7V
0V
Off   On
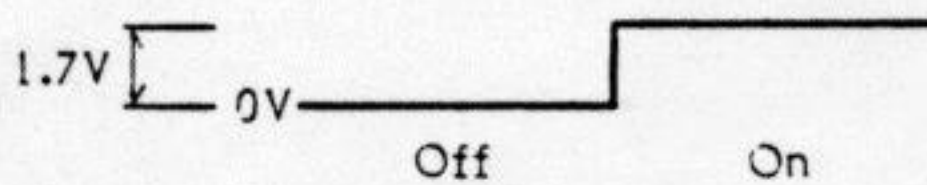
Pin 1 of J12
Schematics, Pg. 5-7

The collector of Q6 is a constant 12 volts.

CENTRAL PROCESSING UNIT PROBLEMS

If the other circuits have been checked and found good, one of the IC's in the CPU circuit is defective.

TYPE OF FAILURE	POSSIBLE CAUSES
Power-Up failures	PIA (U7)
Boot Errors	2793, FDC (U13)
Stepper motor failures	Microprocessor, 6507 (U9)
Drive motor failures	Custom ROM (U10)
I/O failures	RAM, 6810 (U8)
Drive code switch not recognized	74LS04, Inverter (U16)
	4 MHz Crystal (Y1)
	74LS74, D-type, edge-triggered, flip-flop (U1)
	555 Timer (U4)
	74LS00, Nand gate (U6), (U12)

NOTE: There is no relationship between the order of failures and possible causes.

TACH FEED BACK SIGNALS/SPEED ADJUST

4.8V

.2V

0V

-.8V

Motor Off   Motor On
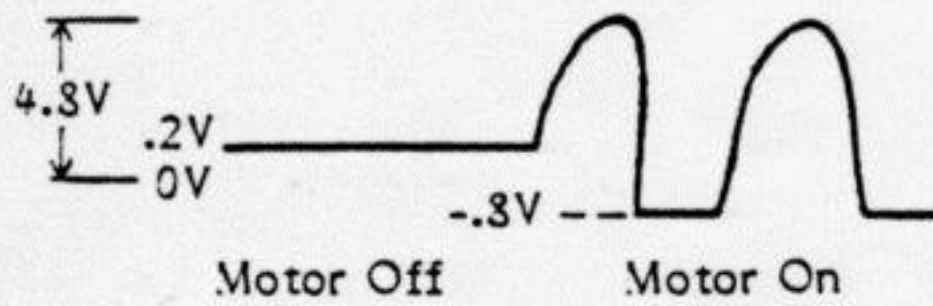
Pin 11 of U5
Schematics, Pg. 5-7

1.8V

0V

Off   On
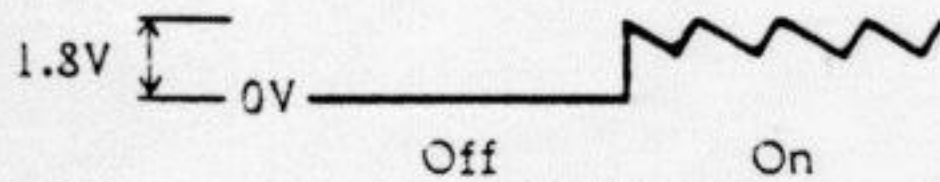
Pin 5 of U5
Schematics, Pg. 5-7

Pin 9 of U5 is a Constant 8 volts.

When speed pot VR2 is adjusted, the voltage on Pin 10 of U5 increases or decreases. This causes a corresponding increase or decrease in the frequency of the AC signal on the motor control lines, Pin 8 of U5 and Pins 11 and 5 of U5.

STEPPER DRIVE SIGNALS
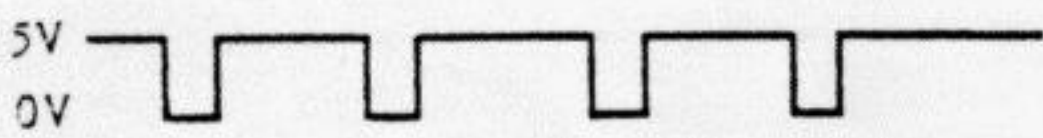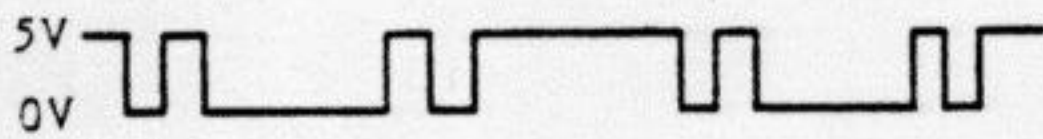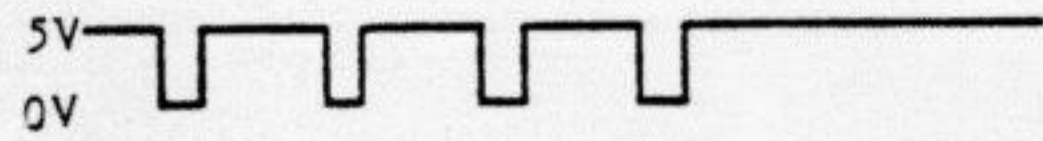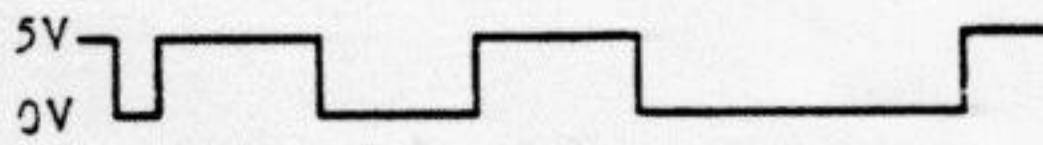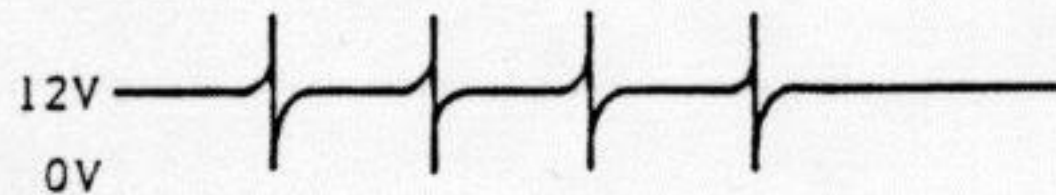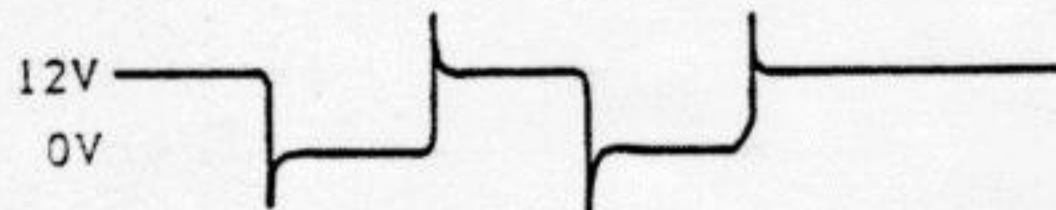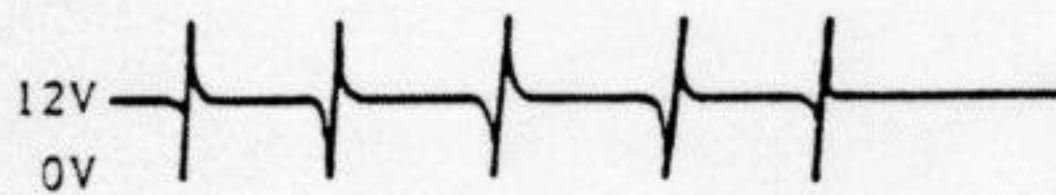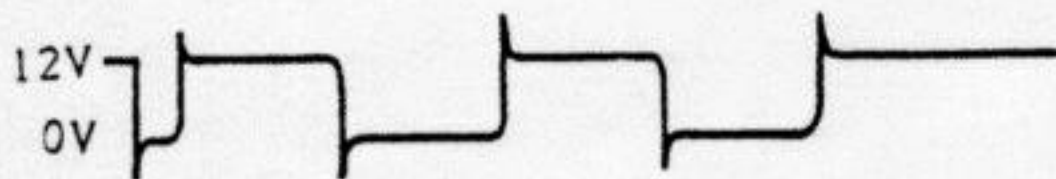
Pin 5 of U2 and U3 is + 12V DC.

DISKETTE ENABLE SIGNAL

Enabled

(IC U6)
Pin 10 = 0V
Pin 12 = 5V
Pin 8 = 4.5V

Disabled

(IC U6)
Pin 10 = 5V
Pin 12 = 0V
Pin 8 = 0V

Schematics, Pg. 5-7

TRACK 00 SIGNAL

.8V ⊥ 0V

Track 00   Not Track 00

Base of Q5
Schematics, Pg. 5-7

5V ⊥ 0V

Track 00   Not Track 00
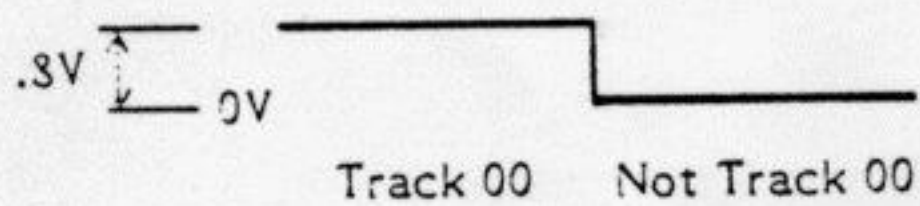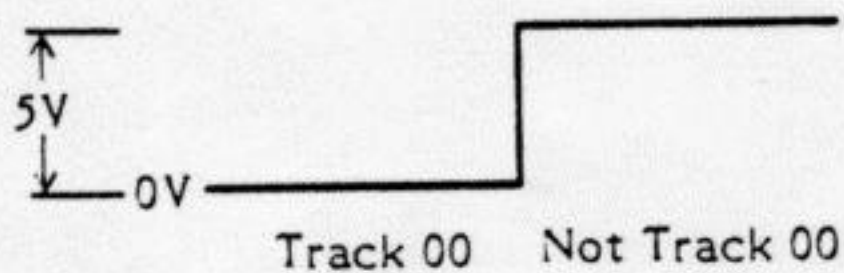
Collector of Q5
Schematics, Pg. 5-7

DATA - IN SIGNAL

.75V ⊥ 0V
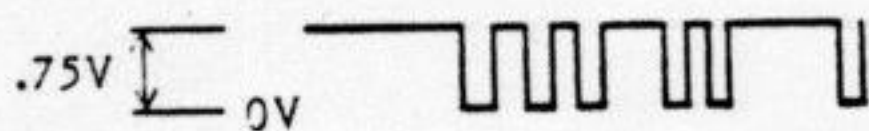
Pin 2 of U1
Schematics, Pg. 5-9

5V ⊥ 0V
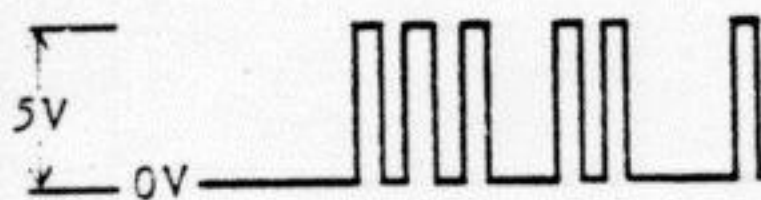
Pin 1 of U1
Schematics, Pg. 5-9

400 mv
to
600 mv

6.5V

16.6us
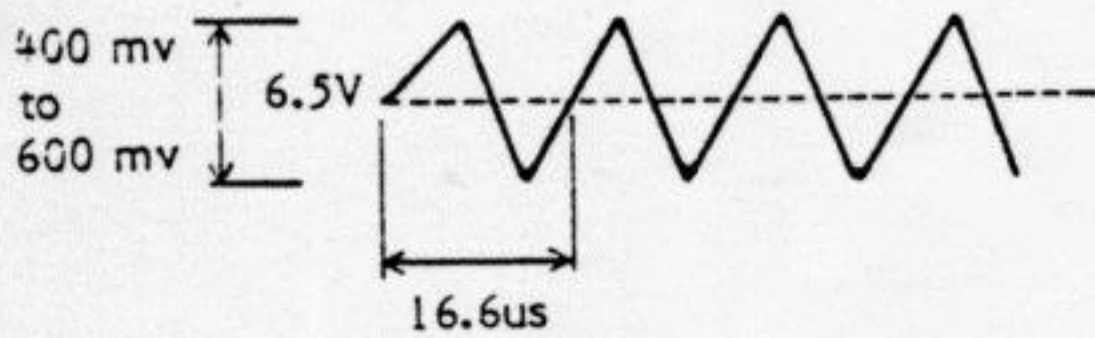
TP1 or TP2

Schematics, Pg. 5-3

1 V
to
1.8V

6.5V

8.3us
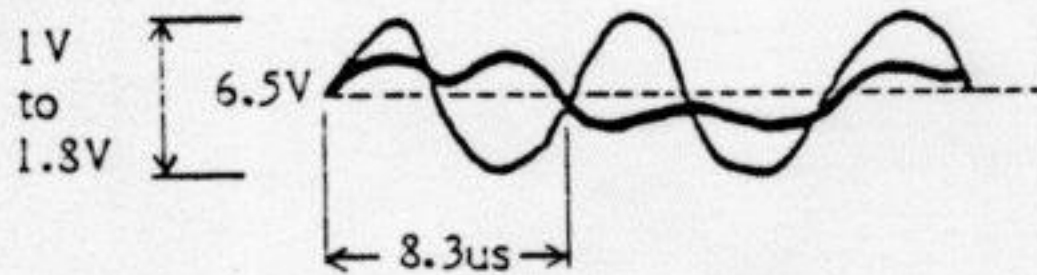
TP3 or TP4

Schematics, Pg. 5-3

5V 2V
0V

16.6us

TP5

Schematics, Pg. 5-3

30mv
0V

8.3us
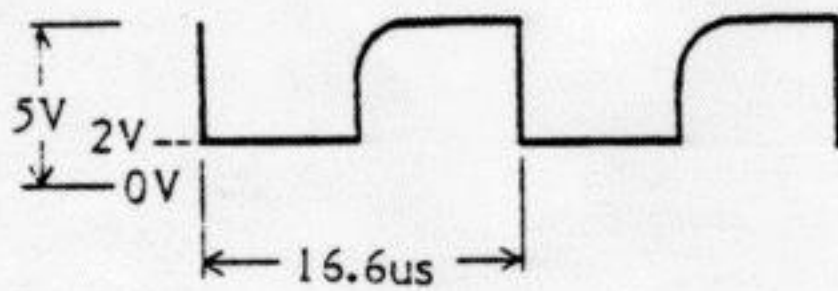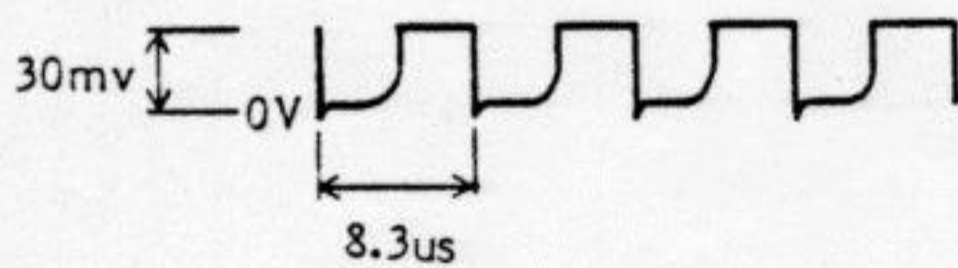
TP16

Schematics, Pg. 5-3

4.5V
0V

2us
.5us
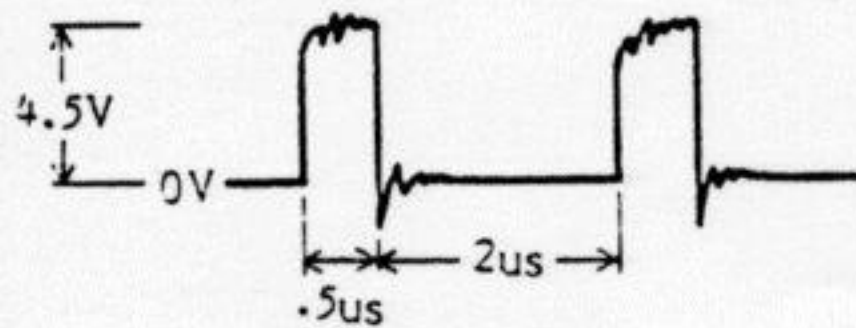
TP6

Schematics, Pg. 5-3

0V
-30mv

Pin 27 of U13

Schematics, Pg. 5-5

WRITE SIGNALS

3.3V .2V
0V
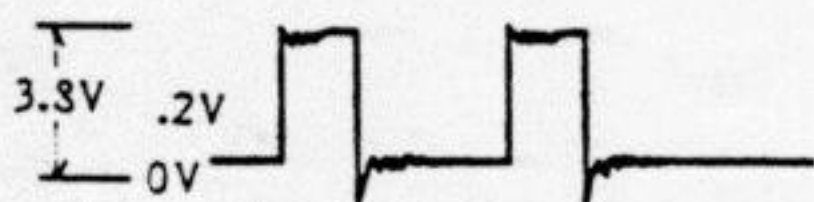
TP11
Schematics, Pg. 5-5

4V
0V
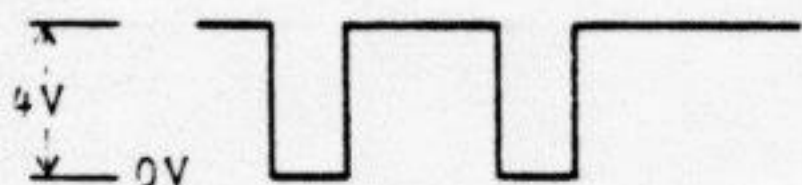
Pin 9 of U18
Schematics, Pg. 5-3

4V
0V
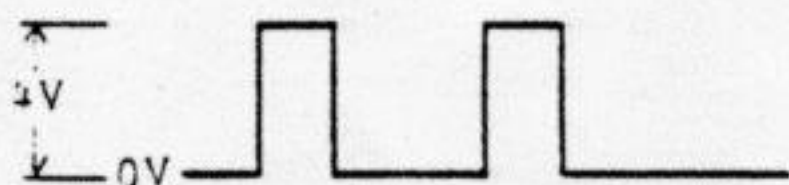
Pin 8 of U18
Schematics, Pg. 5-3
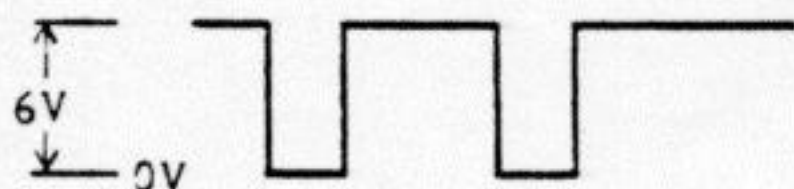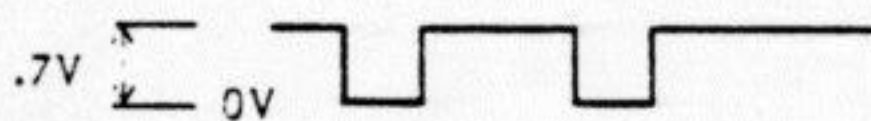
9V 10V

Pin 5 of U21

9V 10V
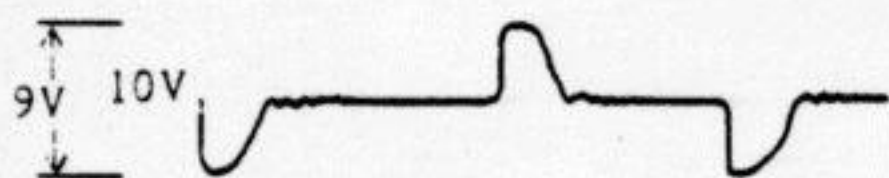
Pin 1 of U21
Schematics, Pg. 5-3
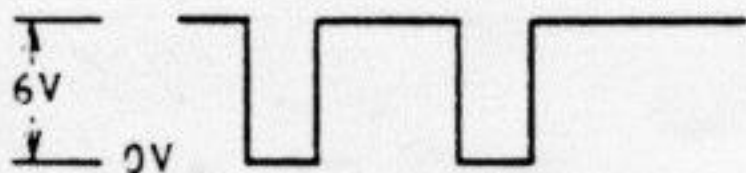
WRITE GATE SIGNALS

6V
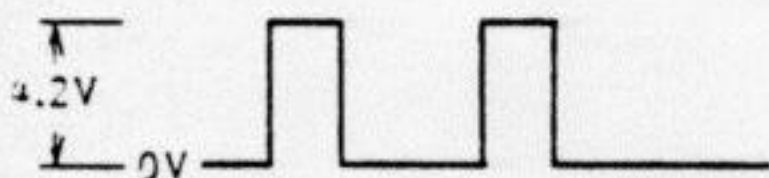0V

Pin 10 of U16
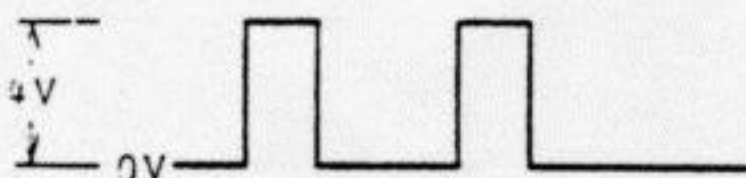Schematics, Pg. 5-5

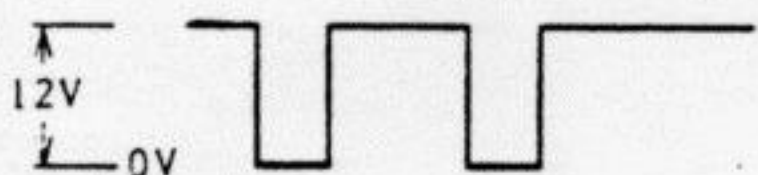.7V
0V

Pin 9 of U21
Schematics, Pg. 5-3

ERASE GATE SIGNAL

6V ⌐ 0V

Pin 10 of U16
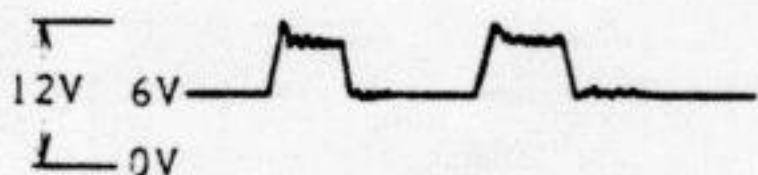Schematics, Pg. 5-5

4.2V ⌐ 0V

Pin 5 of U15
Schematics, Pg. 5-7

4V ⌐ 0V

Pin 13 of U15
Schematics, Pg. 5-7

12V ⌐ 0V

Pin 8 of U21
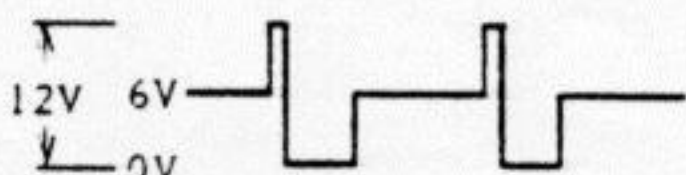Schematics, Pg. 5-3

12V 6V 0V

Collector of Q1
Schematics, Pg. 5-3

ERASE SIGNAL

6V ⌐ 0V
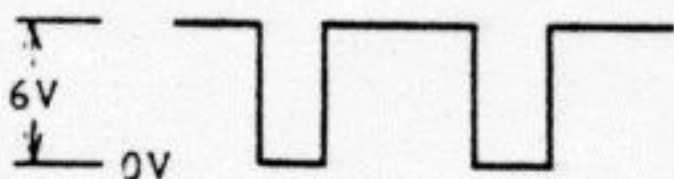
Pin 1 of U11
Schematics, Pg. 5-5

12V 6V 0V

Pin 10 or 12 of U17
Schematics, Pg. 5-3

CLOCK SIGNALS
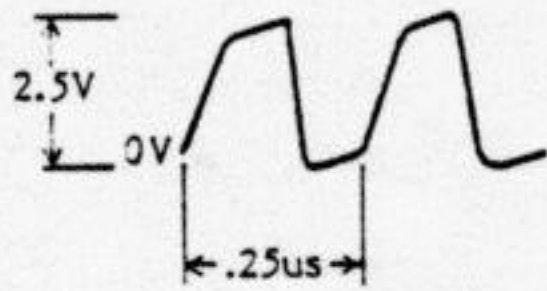
Pin 13 of U16
Schematics, Pg. 5-5

4 MHz Clock

Pin 5 of U14
Schematics, Pg. 5-5

1 MHz Clock

Pin 6 of U6
Schematics, Pg. 5-5

Phase 0 Clock

WRITE PROTECT SIGNAL

Not Write   Write
Protected   Protected

Pin 11 of U11
Schematics, Pg. 5-7

Not Write   Write
Protected   Protected

Goes High
During Write
Data Only
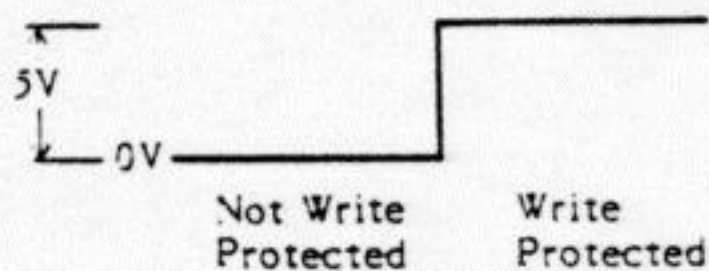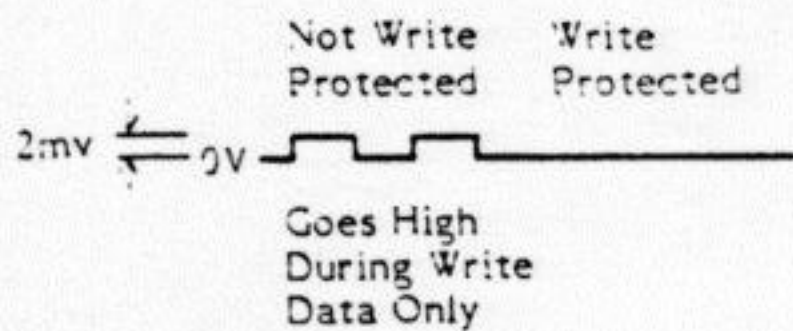
Pin 13 of U11
Schematics, Pg. 5-7

POWER SUPPLY SIGNALS (AC)
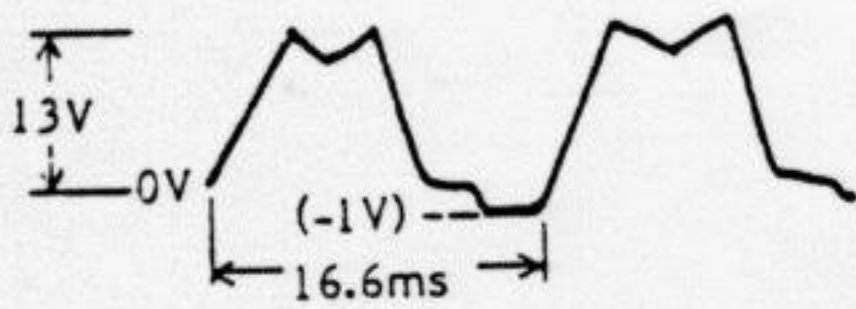
Cathode of CR20

13V

0V

(-1V) --

16.6ms

Cathode of CR19

11V

0V

(-1V) --

16.6ms

Cathode of CR18

12V

0V

8.3ms

Cathode of CR15

25V 12V

0V

Cathode of CR16

24V

0V

16.6ms
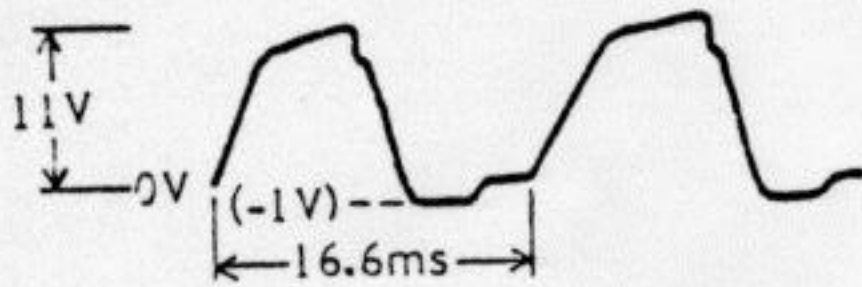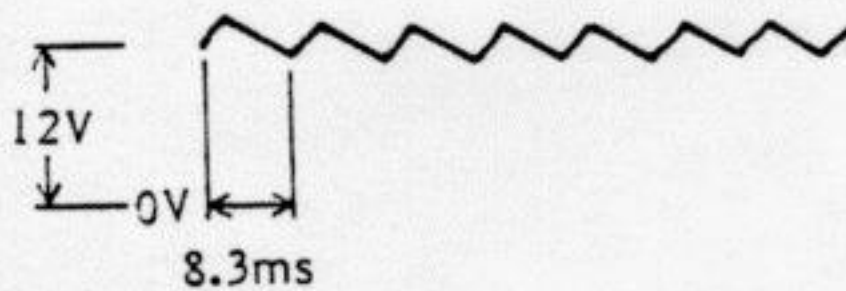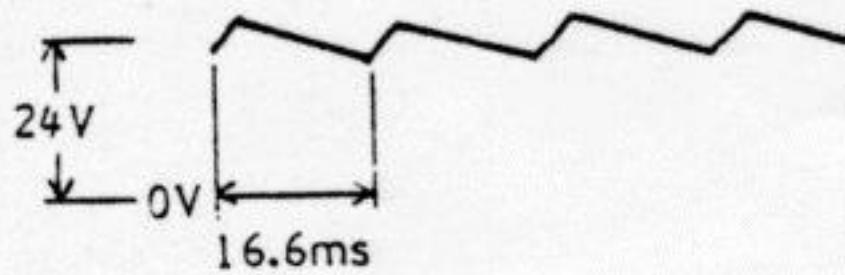
Anode of CR21 = 1.7V DC

TP 13 = +5V DC
TP 14 = +12V DC
TP 15 = Ground

DATA-OUT SIGNAL

.75V
0V
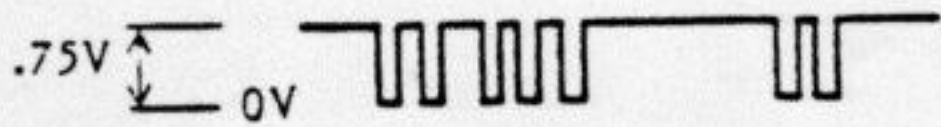
Pin 9 of U1
Schematics, Pg. 5-9

3V
0V

Pin 14 of U1
Schematics, Pg. 5-9

COMMAND SIGNAL

.75V
0V
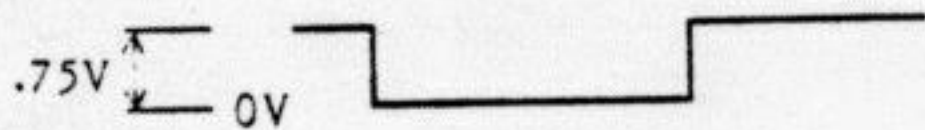
Pin 4 of U1
Schematics, Pg. 5-9

5V
0V
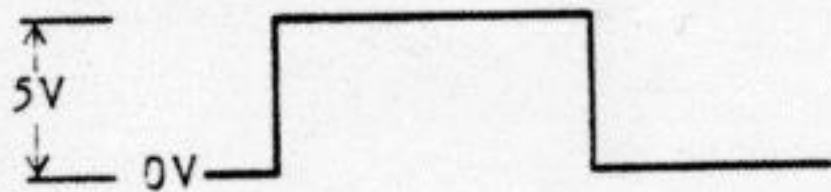
Pin 5 of U1
Schematics, Pg. 5-9

VCC READY SIGNAL

.75V
0V

Computer Off   Computer On
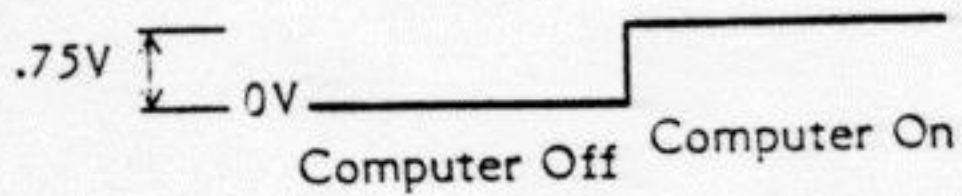
Pin 6 of U1
Schematics, Pg. 5-9

5V
0V

Off   On
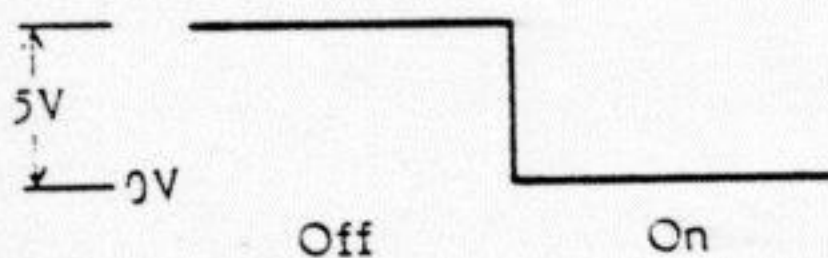
Pin 8 of U1
Schematics, Pg. 5-9

1050 Schematic
(Tandon) 1 of 4

NOTES:

3. ALL DIODES ARE IN4446.
2. ALL CAPACITORS ARE 80% - 20%.
1. ALL RESISTORS ARE 1/4W, 5%, ALL 1% ARE 1/8 W.

1050 Shematic
(Tandon) 2 of 4

Page 5-3

1050 Schematic
(Tandon) 3 of 4

Page 5.4

1050 Schematic
(Tandon) 4 of 4

Page 5-5
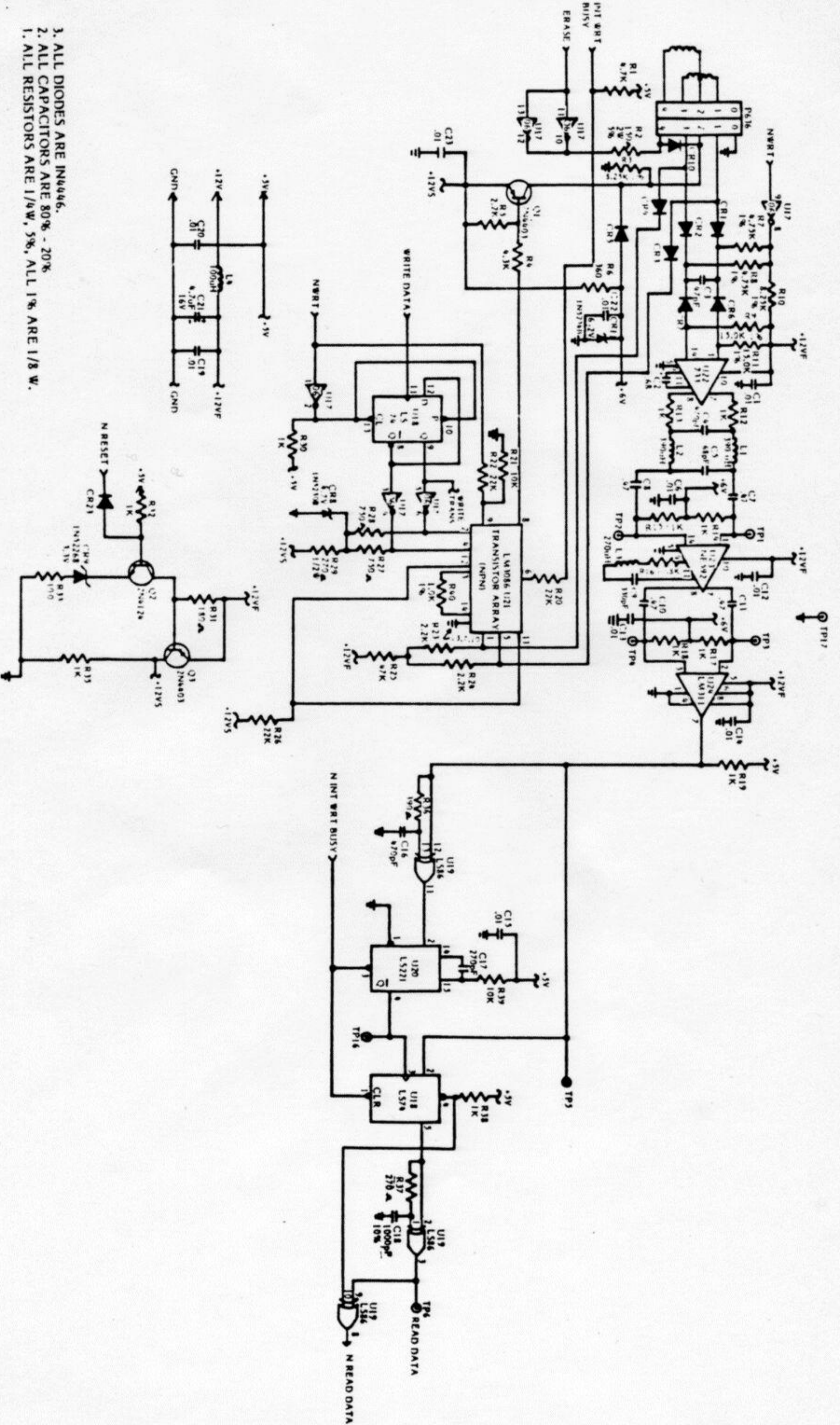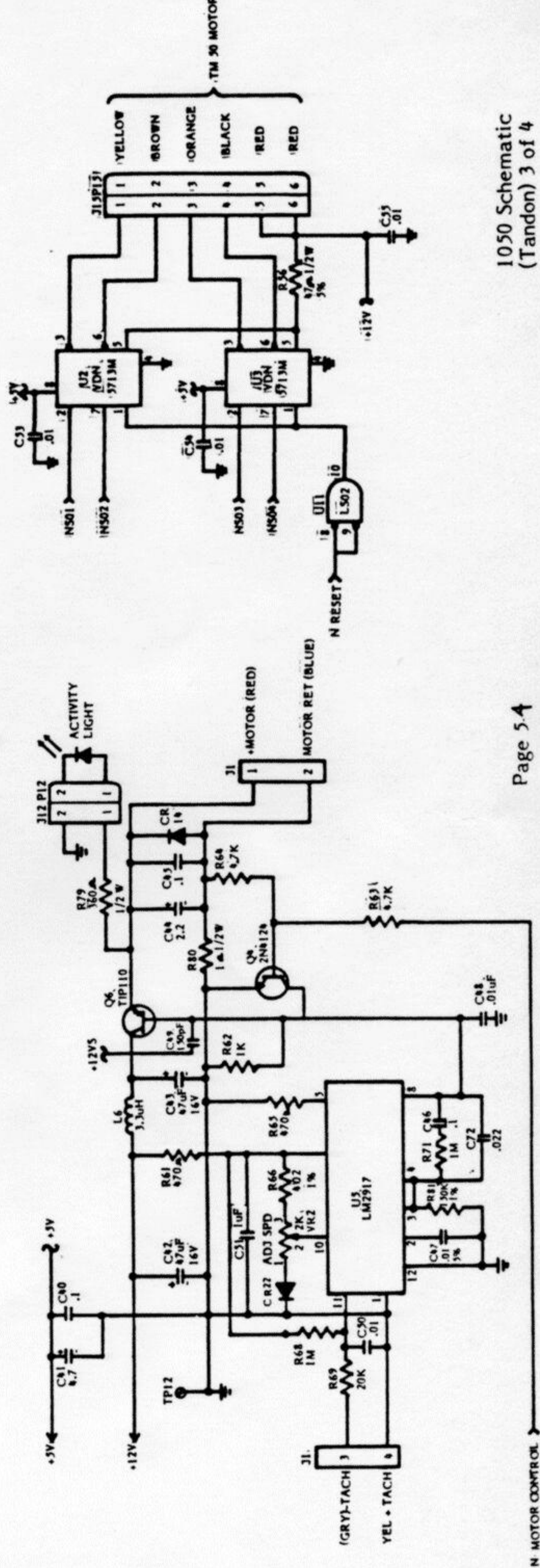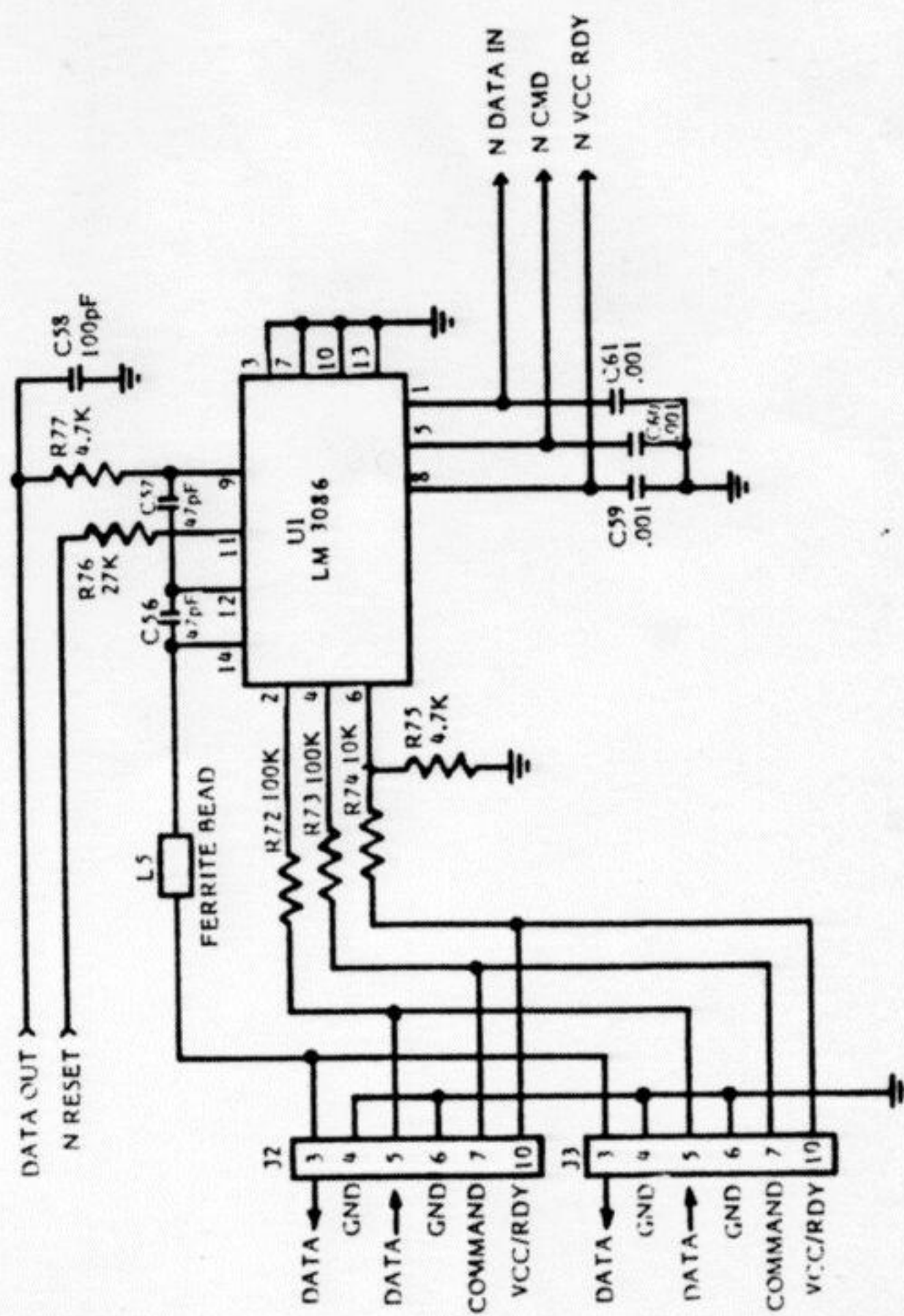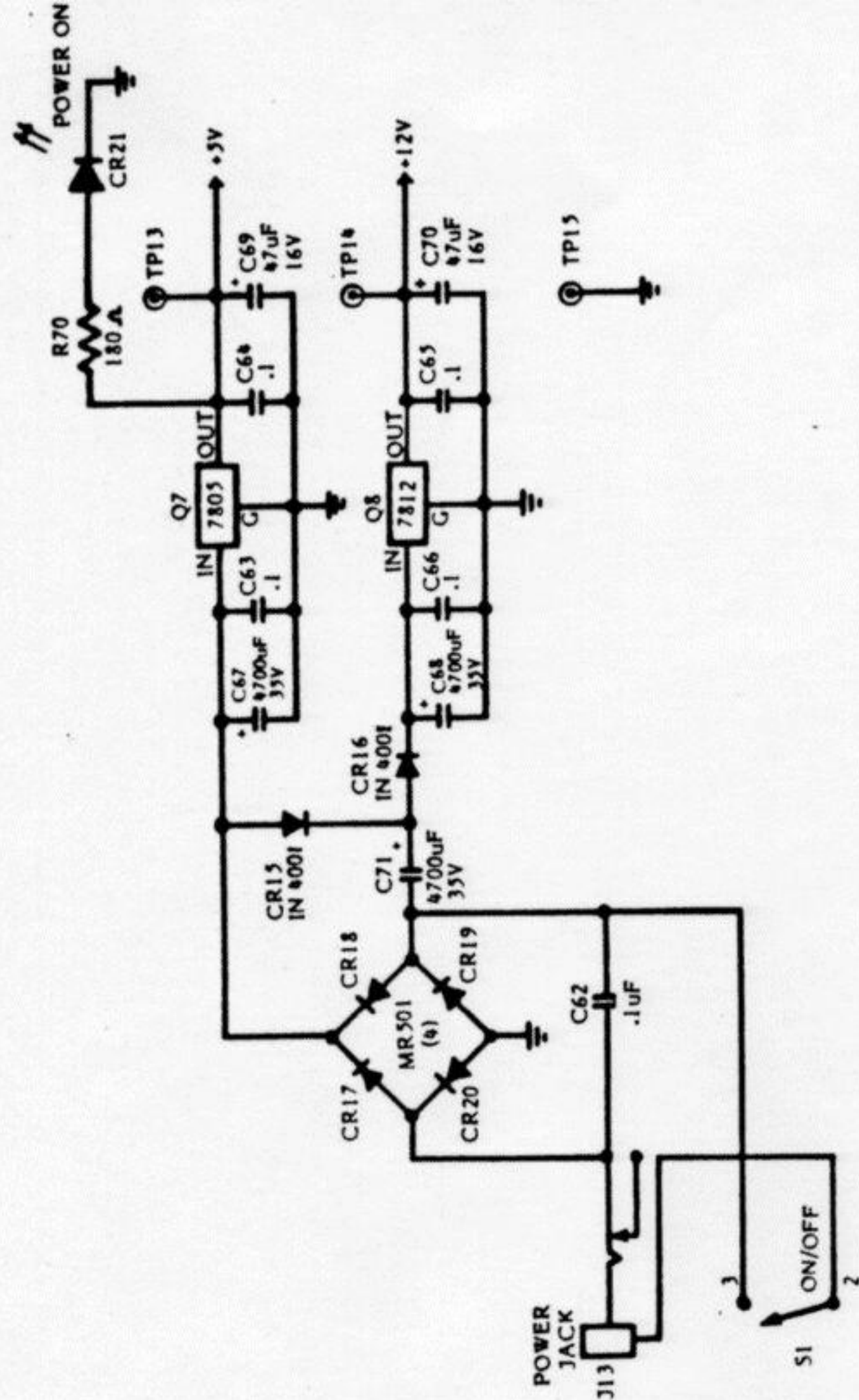
1050 PARTS LIST
(TANDON)

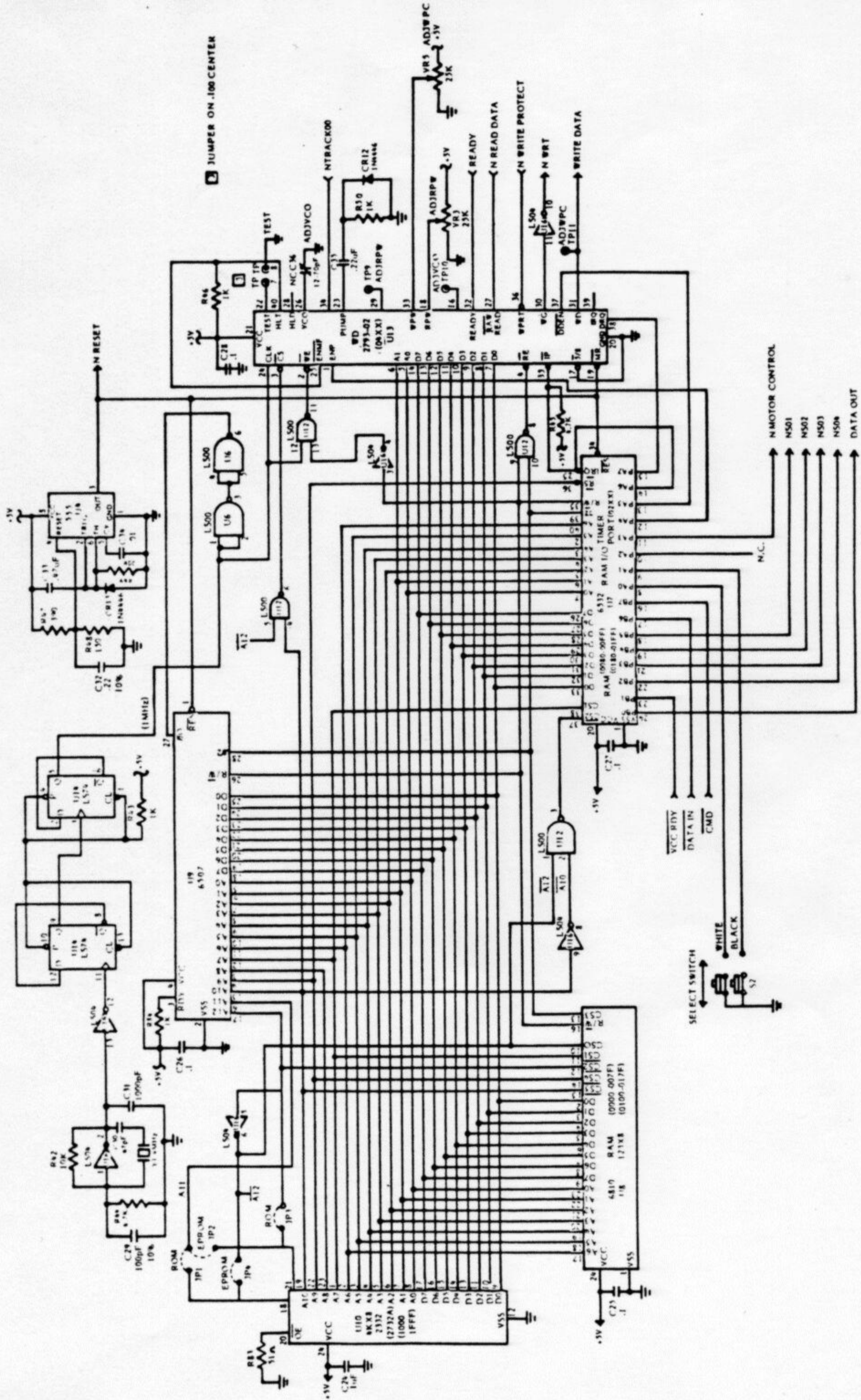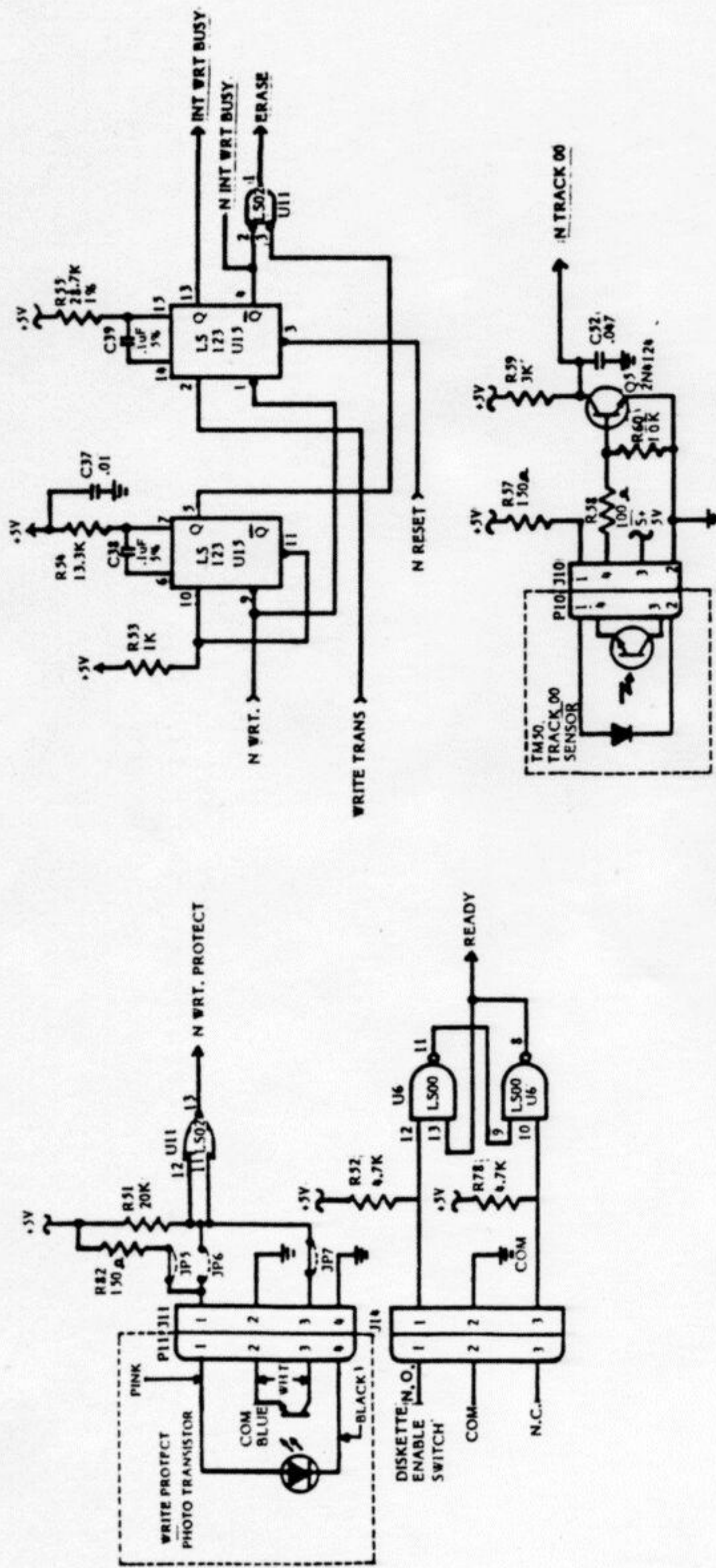| LOCATOR	DESCRIPTION	PART NUMBER
	TM50-1 Drive Mech (Tandon)	FA100514
	Enclosure, Top	FC100515
	Enclosure, Bottom	FC100516
	Front Bezel	FC100517
	Photo Sensor	FC100518
	Ready Sw. Assy.	FA100519
	Spindle Motor	FC100520
	1050 PCB Assy.	**FA100513**
L3	Inductor, 270uH	FC100521
L1,2	Inductor, 390uH	FC100522
R2	Resistor, 150 Ohm, 2W	FC100524
VR2	Pot, Cermet, 2K	FC100525
VR3,5	Pot, Cermet, 25K	FC100526
Q2,4,5	Transistor, 2N4124	FC100527
Q1,3	Transistor, 2N4403	FC100528
Q6	Transistor, TIP110	FC100529
CR1-7,10,12,13	Diode, 1N4446	FC100530
CR11	Zener, 1N5224B, 6.2V	FC100531
CR9	Zener, 1N5226B, 3.3V	FC100532
CR8	Zener, 1N5230B, 4.7V	FC100533
Y1	Crystal 4MHz	FC100534
U15	74LS123, I.C.	FC100535
U5	LM2917, I.C.	C017101
U2,3	75478, I.C.	FC100536
C36	Cap, Variable, 12-70pF	FC100543
U22	LM733, I.C.	FC100537
U23	NE592, I.C.	C017951
U24	LM311, I.C.	C014332
U17	SN7406, I.C.	FC100538
U19	74LS86, I.C.	37-74LS86
U20	74LS221, I.C.	FC100540
U14,18	74LS74, I.C.	C016045
U1,21	LM3086, I.C.	C016821
U6,U12	74LS00, I.C.	C014341
U11	74LS02, I.C.	C014340
U16	74LS04, I.C.	C017096
U4	LM555, I.C.	C019748
U10	ROM, Custom 2732, I.C.	FC100541
U8	RAM, 6810 (1MHz), I.C.	C014328
U9	MPU, 6507 (1MHz), I.C.	C010745
U13	FDC WD2793-02, I.C.	FC100542
U7	PIA, 6532, I.C.	C010750
CR17-20	Diode, MR501	C014398
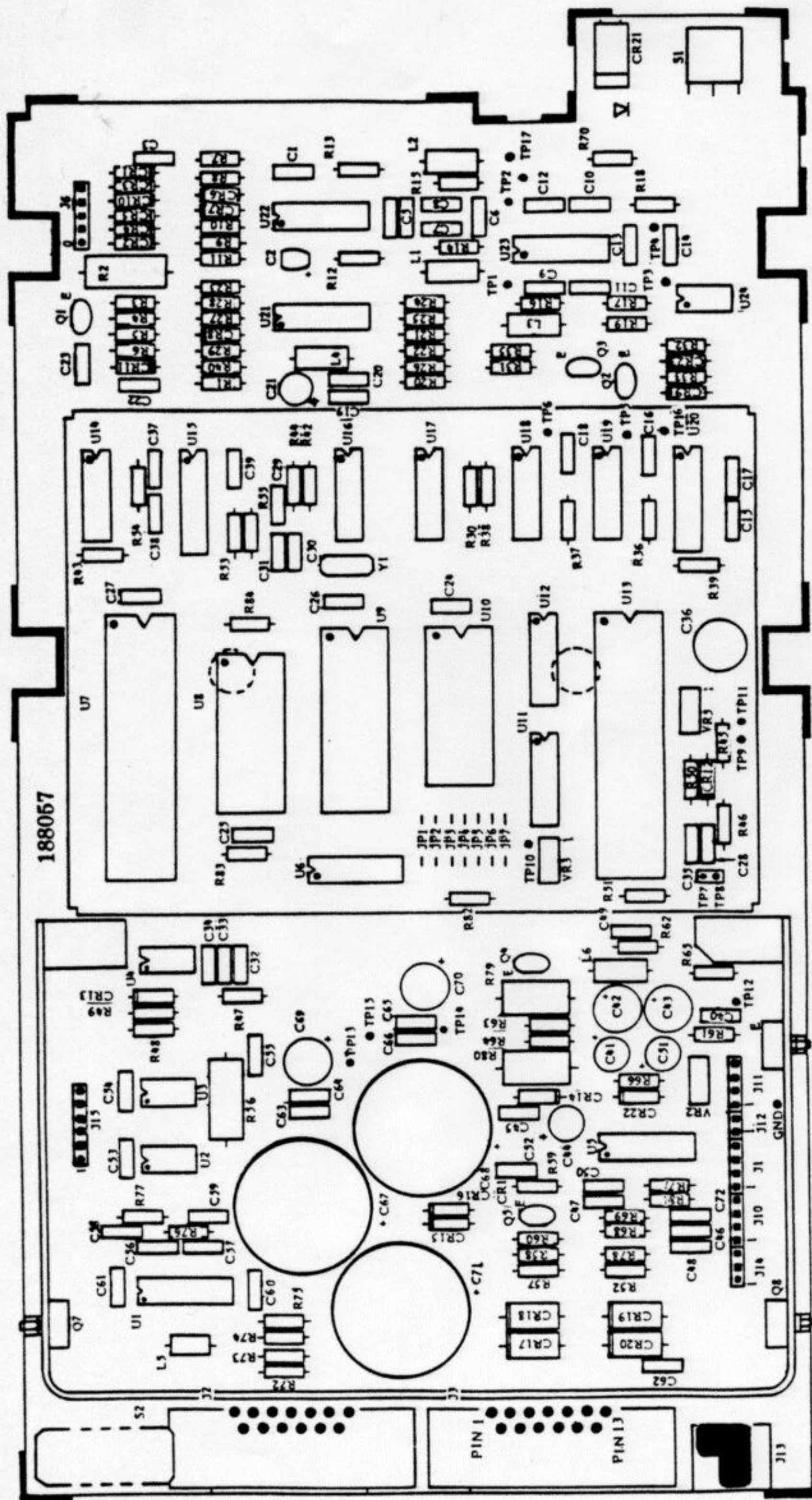
188057

1050 Silkscreen

JUMPER TABLE

Write Protect - Optical	EPROM ROM	
	JP2	JP1
JP5	JP4	JP3
JP7		

Functional Specification

Key Features

o Lower Cost than 810

o Fully compatible with 810 in single density (FM) mode.

o Double Density read/write operation using (MFM) encoding

o Fully compatible with existing Atari disk operating system

o Fully support the Atari SIO interface and protocol

o Support new high level macro command requested by next generation Atari disk operating system

Disk Drive Specification

	Single Density (Read/Write)	Double Density (Read/Write)
Tracks Per Surface	40	40
Tracks Per Inch	48	48
Recording Density (Track 39, Max)	2,878 BPI	5,757 BPI
Flux Density (Track 39, Max)	5,757 FCI	5,757 FCI
Encoding Method	FM	MFM
Capacity		
Unformatted		
Per Track	3,382 Bytes	6,510 Bytes
Per Surface	135,280 Bytes	260,400 Bytes
Formatted		
Sectors/Track	18	26
Bytes/Per Sector	128 Bytes	128 Bytes
Bytes/Per Track	18 X 128 Bytes	26 X 128 Bytes
Bytes/Per Surface	92,160 Bytes	133,120 Bytes
Transfer Rate	125,000 BPS	250,000 BPS

	Single Density (Read/Write)	Double Density (Read/Write)
Read/Write Head	1	1
Write Protect Sensor	YES	YES
Track 00 Sensor	YES	YES
Rotational Speed	288 RPM	288 RPM
Rotational Speed Accuracy	+ - 3%	+ - 3%
Average Latency	110 MS	110 MS
Access Time		
Track to Track (MAX)	40 MS	40 MS
Head Settling (MAX)	30 MS	30 MS
Motor Start (MAX)	1000 MS	1000 MS

Media Requirements

Single Density

Soft Sectored, per Atari Specification (#C016884)

Double Density

Soft Sectored, per Atari Specification (#C016890)

Physical and Dimensional Specification

Drive outside dimension (Exclusive of front panel)

HEIGHT	1.70 Inches (Max)
WIDTH	6.00 Inches (MAX)
LENGTH	8.00 Inches (MAX)
WEIGHT	6 Pounds (Max)

Electrical Specification

Drive Read/Write Electronics

Head Voltage at 1F amplitude   10 MV (Max) at Track 00

Head Voltage at 2F Amplitude   3 MV (MIN) at Track 39

*These data values should be obtainable from various diskette vendors.

Power Consumption

AC Power Adapter (North American Version)

Consult the Atari 31 VA AC Power Adapter Specification (#C017945)

AC Power Adapter (International Version) TBD

System Electronics

Including Drive Electronics, Controller Electronics and Power Supply Electronics

Input Voltage	8.52V AC +-12% @ 60 +-3Hz
Power Consumption	
Standby	15 Watts (MAX)
Operating	30 Watts (MAX)
Start Up	50 Watts (MAX)

ATARI

Consumer Product Service
Manager of Technical Support
TECH TIP

TT
HCD
number **21**

MODEL: Atari 1050 Disk Drive

DATE: September 30, 1983

SUBJECT:

Consumers may experience problems booting some non-Atari software due to protection schemes used.

DESCRIPTION:

Some third party software programs will either not boot or not run on the 1050 Disk Drive. These same programs will boot on an 810 disk drive.

PROBLEM:

The first 1700 units released to the field have a revision "E" or "F" EPROM installed. This revision of the firmware returns a different error status than the 810 disk drive when certain types of protection schemes are used on the diskette.

SOLUTION:

Disassemble the 1050 disk drive and check for Rev. "E" or "F" EPROM at location U10. Replace this EPROM with a FC100541 Rev. 1 on the PCBA. Reassemble and perform a functional test of the unit, consisting of the following, until the 1050 service manual is released.

Boot a DOS 2.0 Master Diskette

Format a scratch diskette and write "DOS" files to it

ADDITIONAL INFORMATION:

*** The Rev. "E" or "F" EPROM must be returned to Atari for reburning at FC100541, Rev. 1. ***

After removing the EPROM from the PCBA place it in the static free container the Rev. "J" EPROM was received in and return to Atari.

PROBLEM REPORTING:

If you have questions or require further explanation concerning this Tech Tip, contact your ATARI Tech-line Specialists:

Inside California
(800)672-1466

Outside California
(800) 538-1535