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Mirage DSK-8
Service Bulletins

For Mirage serial numbers 10001 - 14731

These service bulletins refer to the original Mirage DSK-8 Sampler.

Service Bulletin #1 - June 1, 1985

Service Bulletin #2 - August 1, 1985

Service Bulletin #3 - September 1, 1985

Service Bulletin #4 - October 1, 1985

Service Bulletin #5 - October 1, 1985

Service Bulletin #7 - December 15, 1985

Service Bulletin #8 - December 15, 1985

Note: Service Bulletin #6 is the operating instructions for the diagnostic kit for DSK-8's and is not included in this compilation.

For Mirage serial numbers 14732 - 23500

Service Bulletin #9 - March 1, 1986

P/N 9360001001

Service Bulletin No. 1

June 1, 1985

1 Shugart Disk Drive Connector Service

When you have narrowed down the diagnosis to a disk drive problem on Mirages equipped with Shugart Model SA500 drives, perform the following check before returning the drive to Ensoniq.

1. Remove the drive from the Mirage as per the instructions in SECTION D-1 . . . 4 of the Mirage Service Manual.
2. Orient the drive as shown in FIGURE 2.
3. Check the internal connectors of the disk drive at positions J4 and J5 (the J5 connector is one wiring harness while the J4 connector contains 3 separate wiring harnesses).
4. If you find that any of the connectors are not fully seated or completely off the terminals, reinstall the connectors, making sure that they are fully seated.
5. Reinstall the disk drive according to the instructions in SECTION D-5. . . 8 of the Mirage Service Manual and test the unit.
6. If this procedure corrects the problem, then glue the connectors at J4 and J5 to the circuit board with hot glue.
7. If this procedure does not correct the problem, then the disk drive is bad. Remove the drive and return it to Ensoniq.

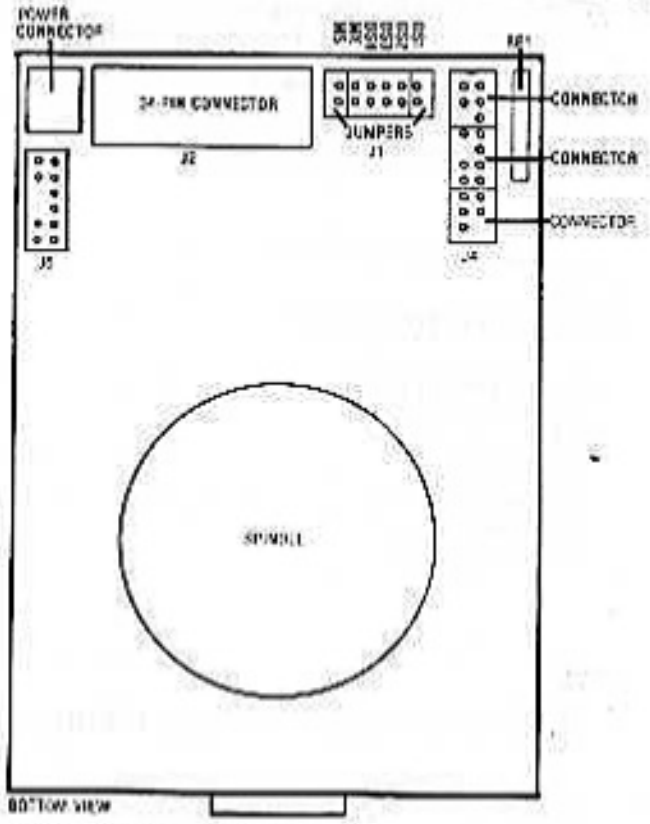

FIGURE 2 — SHUGART SA200 DISK DRIVE

2 Keypad Connector Service

Some Mirages between serial numbers 10500 and 10725 may experience bad or intermittent display segments and an audio hum or buzz in sync with the flashing "nd" display when the unit is first turned on. This problem is caused by wires protruding through the keypad connector grounding against the inside of the control panel. Insulating the area with electrical tape will cure the problem.

1. Remove all cables connected to the Mirage, including the power cable. Remove the five screws securing the control panel and raise the panel.
2. Disconnect the flat multi-conductor cable from the keypad assembly.
3. Place a piece of electrical tape on the inside of the control panel where the connector fastens to the keypad. You may notice scratches in the paint on the inside of the control panel at this location.
4. Reconnect the cable to the keypad assembly.
5. Close the lid and test the unit.

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3 60Hz Audio Hum Diagnosis

Some Mirages may experience a loud 60Hz audio hum that is not transformer related. This situation has been isolated to units with four orange-colored rubber washers insulating the main board from the cabinet at the audio in and out jacks, sync jack and footswitch jack. Correcting the problem requires removal of the main board and replacement of the audio output insulator with a metal star washer.

1. Follow the directions for replacing the Main Board in the Mirage Service Manual (Section I-1 . . . 4).
2. Remove the orange rubber insulator from the audio output jack. Replace the insulator with a metal star washer.
3. Follow the instructions for replacing the main board (Section I-5 . . . 9).

4 Fuse Holder Service

Some fuse holders installed in Mirages have connection terminals too small for the Fast-on connector on the bottom lug of the fuse holder. This may cause intermittent operation or failure to power-up.

1. Remove all cables from the Mirage, including the power cable. Remove the five screws securing the control panel and raise the panel.
2. Grasp the wire which connects to the bottom lug of the fuse holder. If a slight tug on the wire pulls the Fast-on off the terminal, use a pair of pliers to crimp the connector so that it fits securely.
3. Close the control panel and test the unit.

5 Power Supply Voltage Change

There has been a change in power supply voltage requirements for Mirage main boards from -12VDC to -8VDC. The new boards can be identified in the following manner.

1. Locate resistors R47 and R48. These components are located approximately 1 inch to the left of the audio input jack on the main board.
2. If R47 and R48 are identical 300 ohm resistors (orange-black-brown), then the board is a -12VDC unit.
3. If R48 is a 200 ohm resistor (red-black-brown), then the board is a -8VDC unit.
4. If the Mirage is determined to have a -8VDC board, use the following chart to determine the correct power supply voltage readings.

✻ NOTE: *This is the only variation in voltage from previous boards.*

POWER SUPPLY VOLTAGE MEASUREMENTS

	VOLTAGE VALUE	MEASURE BETWEEN TERMINAL NO.'S
	+5VDC ±5% (50mv AC ripple max.)	2 - 4 3 - 4 5 - 6 5 - 7 6 - 8 7 - 8
	+12VDC ±10% (100mv AC ripple max.)	1 - 2 1 - 3 5 - 9 8 - 9
✻	- 8VDC ±10% (100mv AC ripple max.)	5 - 10 8 - 10
	7.5VAC	11 - 13 12 - 13
	12VAC	14 - 15 14 - 16
	15VAC ±20%	11 - 12
	24VAC ±20%	15 - 16

Service Bulletin No. 2

August 1, 1985

Main Board/Power Supply Compatibility

When you have narrowed down the diagnosis to warrant replacing the main board, always check the power supply for a +12V DC-8V DC voltage value. (Refer to Service Bulletin #1, section 5 to determine the power supply voltage value.) If the power supply does not have this voltage, it must either be replaced with a new power supply or modified (by changing one of the voltage regulators) in the following manner.

1. Follow the directions for removing the power supply in the Mirage Service Manual (section A1...4).

2. Using a drill with a 9/64" drill bit, drill out the rivet on the regulator marked Q5 (see Figure 8). This is the only one with a nylon shoulder washer on those power supplies which have 5 voltage regulators labelled Q1, Q2, Q3, Q4, Q5. The rivet should be drilled out from the side with the nylon shoulder washer.

3. Desolder the leads of voltage regulator Q5 and remove the regulator and the thermal insulator.

4. Insert the new voltage regulator (7908) in Q5 along with the nylon shoulder washer, the thermal insulator, the screw, nut and lockwasher as shown in figure 8.

5. Tighten the screw on regulator Q5.

6. Solder the leads of regulator Q5 on the bottom of the power supply.

7. Inspect for solder joints.

8. Replace the power supply as per the directions in the Mirage Service Manual (A5...6) and allow to burn-in for a few hours.

Required Service Equipment

Drill with 9/64 Drill Bit (.140 metric)
Soldering Iron
Desoldering Tool
Screwdriver
Open End Wrench

Service Parts Required

7908 (-8V) Regulator
Hex nut - 4-40
Phillips Screw - 4-40x 3/8"
Lockwasher - #4 Split Lock
Nylon Shoulder - Washer
Thermal Insulator

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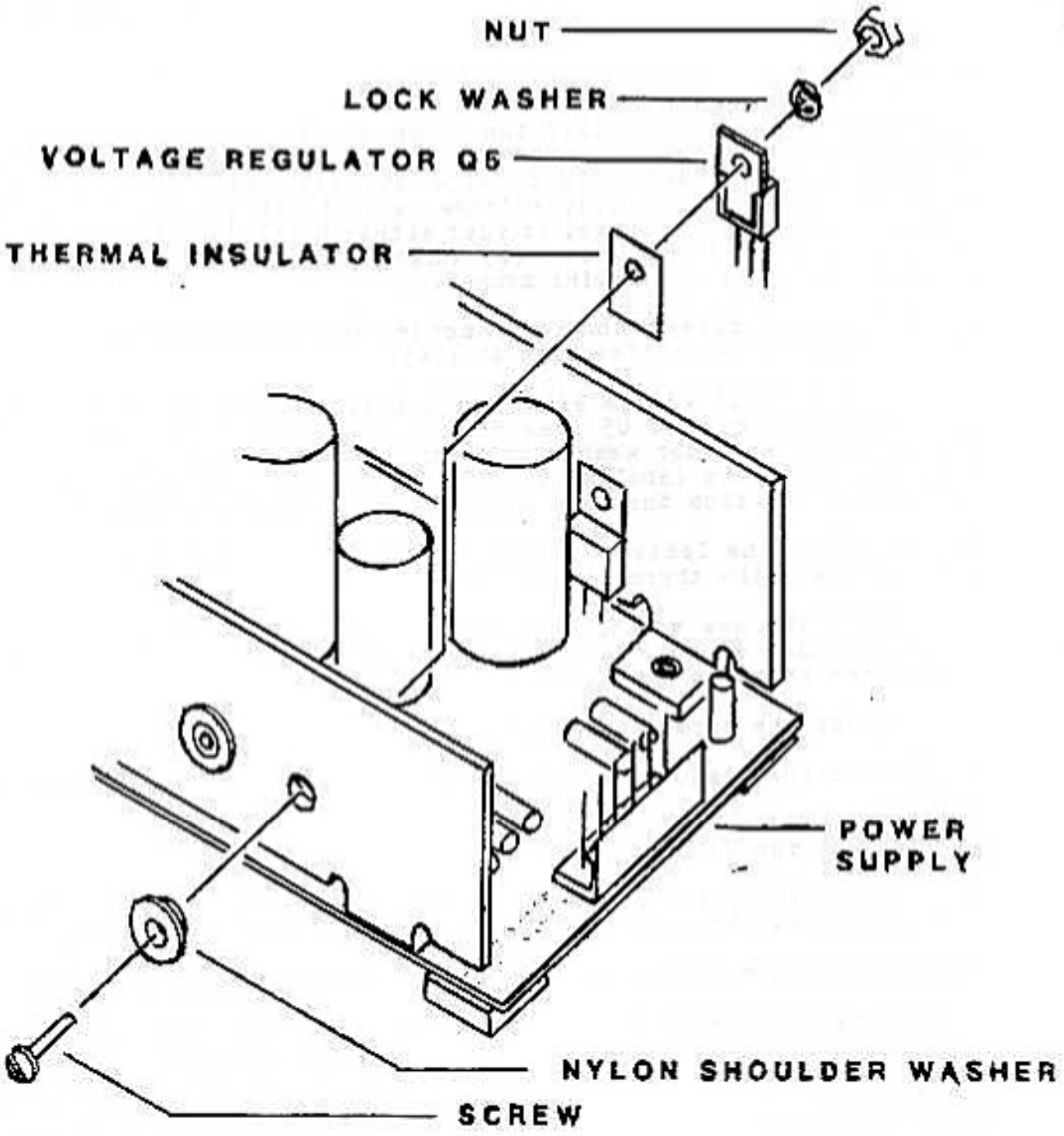
NUT
LOCK WASHER
VOLTAGE REGULATOR Q5
THERMAL INSULATOR
POWER SUPPLY
NYLON SHOULDER WASHER
SCREW

FIGURE 8

Service Bulletin No. 3

September 1, 1985

Epson/Shugart Disk Drive Compatability With Main Board

When you have narrowed down the diagnosis to warrant replacing the main board, always check to see which disk drive is being used. The Mirage uses both Epson and Shugart drives. These drives differ physically and in their compatability with the main board.

The description and main board compatability of the Epson and Shugart drives is as follows:

Epson: The disk eject button is located on the lower right of the drive front panel and the 4 pin power connector is located to the left of the ribbon cable at the rear of the drive. On the **main board** a jumper must be shorted at disk drive connector J1 (by shorting this jumper, pins 10 & 16 **will** be connected).

Shugart: The disk eject button is located in the center of the drive front panel and the 4 pin power connector is located to the right of the ribbon cable at the rear of the drive. On the **main board** a jumper must be cut at disk drive connector J1 (by cutting this jumper, pins 10 & 16 **will not** be connected).

When ordering Disk Drives always specify whether you need an Epson or Shugart.

Cutting the Disk Drive Selector Jumper

The jumper should be cut with a Xacto-Knife (or equivalent) as per instuctions in the blow-up of the Disk Drive selector jumper on the other side of this bulletin.

Chasis Configuration for Epson and Shugart Drives

Each chasis is specifically designed for either an Epson or Shugart drive. These drives are not interchangeable within the same chasis.

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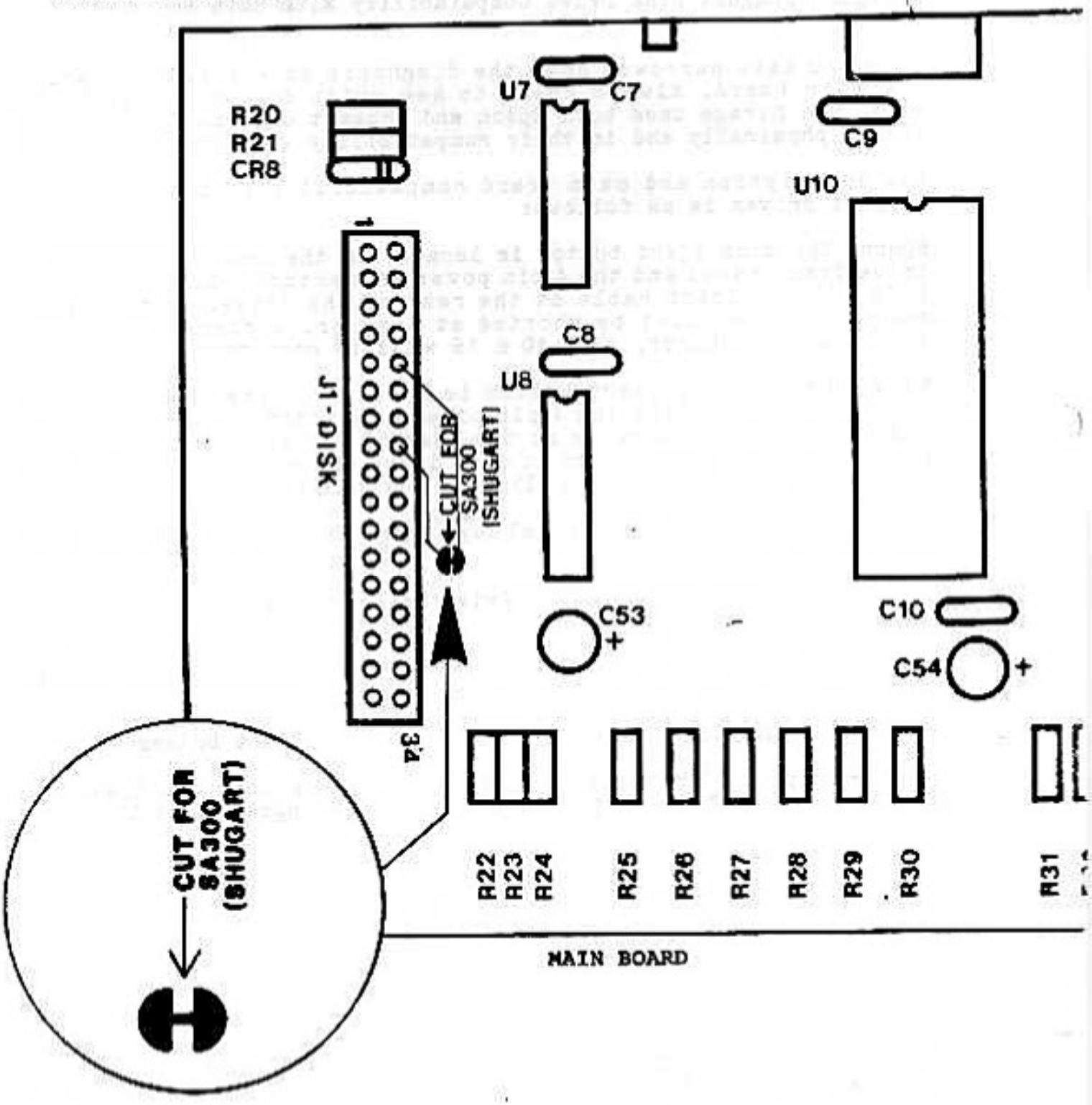
Make the cut on this thin trace that runs between the two pads for the disk drive selector jumper. If the trace is cut at both ends where they connect to each pad it can be peeled off the circuit board using a xacto knife (or equivalent type of knife). This will yield a clean jumper cut and will leave the solder pads intact for future reconnection.



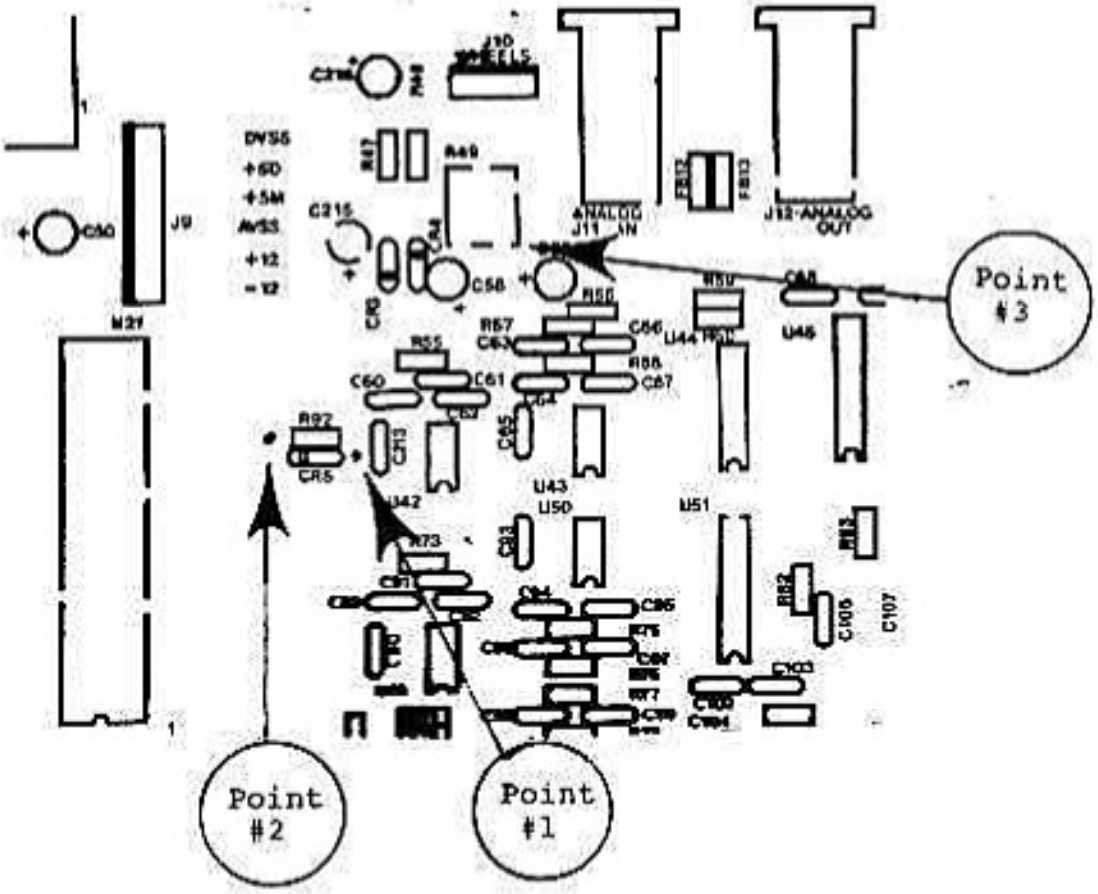
Service Bulletin No. 4

October 1, 1985

TRIMPOT ADJUSTMENT ON MAIN BOARD

When replacing the Mirage Main Board or the Mirage Power Supply, careful attention must be given to re-adjusting the trimpot located at R49 (Point #3) on the main board. This trimpot sets the volume reference voltage going into the "Q" chip (U21) and if it is not set properly, audio distortion is likely to occur. R49 is located in the upper right hand side of the board, to the left of the Analog-In jack (J11) and directly below the Pitch/Mod Wheel connector, (J10).

The voltage reference point can be accessed by placing the positive probe of your meter on the right lead of CR5, a diode located on the lower right of R92, (point #1). Place the negative probe to Ground, the left lead of R92 (point #2). Adjust the trimpot (point #3) until the meter reads 50 millivolts, or .050 VDC.



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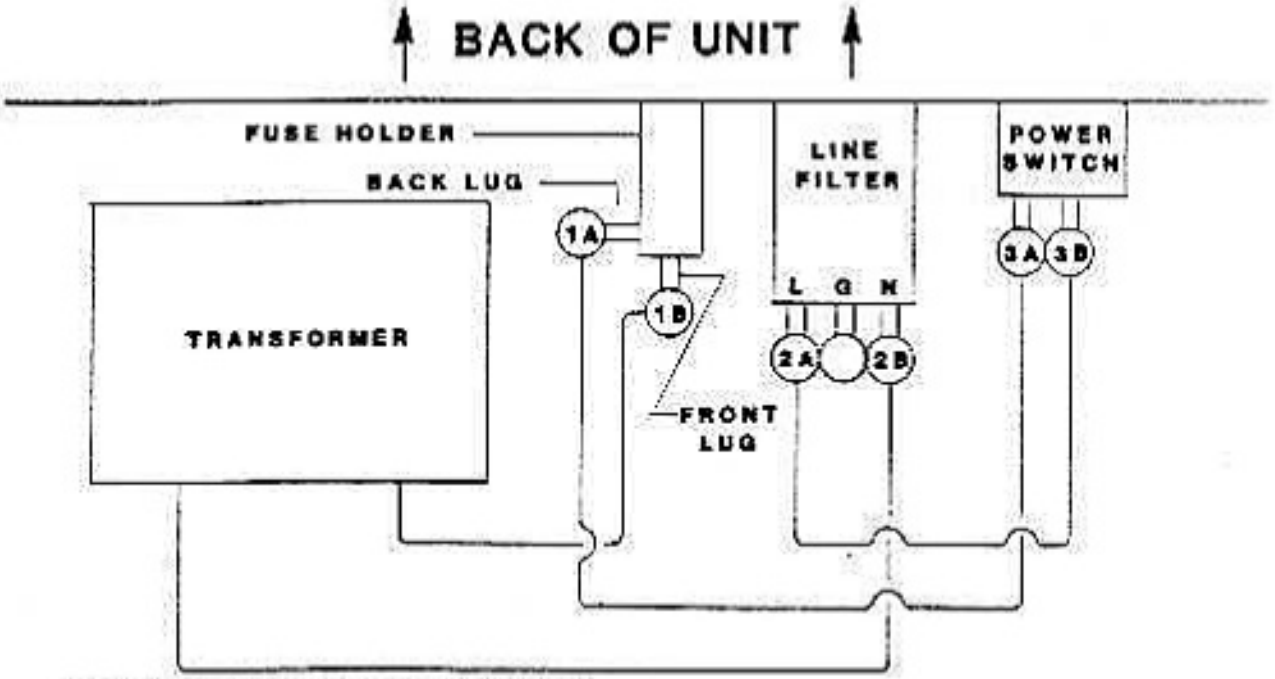
Service Bulletin No.5

October 1, 1985

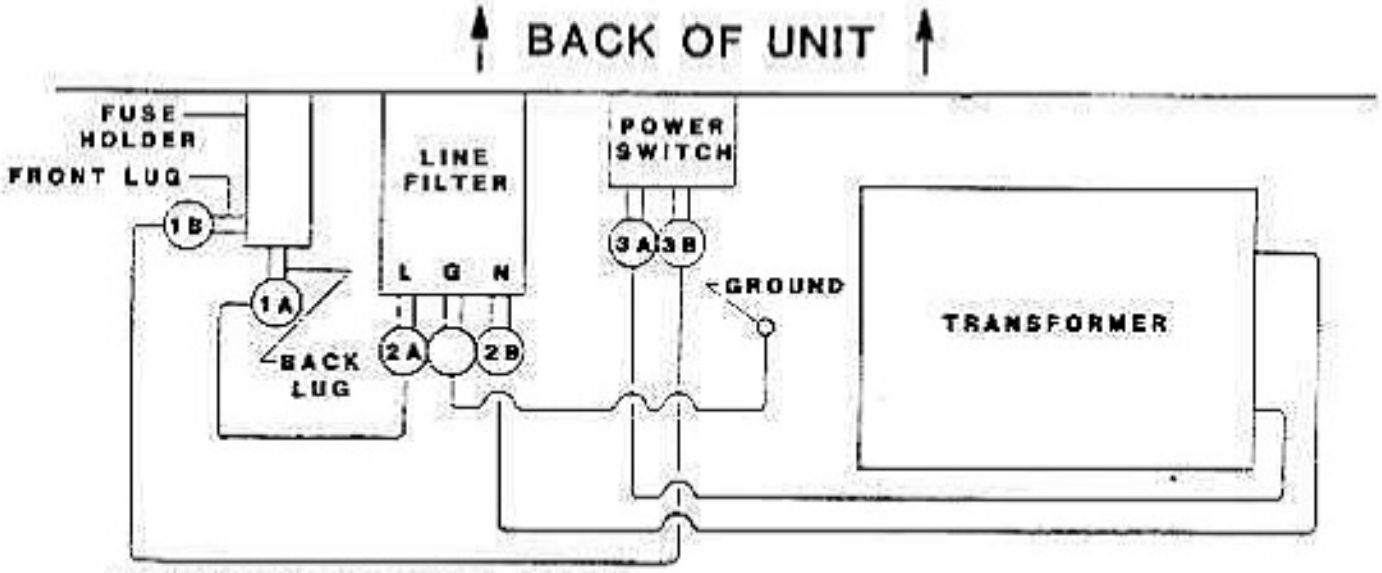
THIS BULLETIN CORRECTS FIGURES 3A AND 3B OF THE SERVICE MANUAL

3A



AC LINE VOLTAGE CHECK POINTS
WIRING FOR EARLY MODEL CASE (WHERE TRANSFORMER IS ON THE LEFT).

3B



AC LINE VOLTAGE CHECK POINTS
WIRING FOR LATE MODEL CASE (WHERE TRANSFORMER IS ON THE RIGHT).

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Service Bulletin No. 7

December 15, 1985

All Mirages (DSK-8) beginning with serial # 14731 will have a weighted action keyboard, a new case, noise reduction circuitry and redesigned module layout. Units prior to serial # 14731 can have the noise reduction circuitry installed with a Mirage Update Kit.

Ensoniq has also released a rack mount version of the Mirage called the Digital Multi Sampler (DMS-8). The working block diagrams in your Mirage Service Manual can still be used for reference as the electrical characteristics of the components in the DSK-8 and DMS-8 are the same. However, the following changes should be noted:

Power Supply: The new power supply is 6 3/4 x 1 13/16 inches, and has one heatsink to which all four voltage regulators are rivetted. It is electrically identical to the old power supply. The entire power supply assembly, (transformer, power supply, line filter, fuse holder, etc.) has been moved to the far left of the Mirage to make room for the weighted action keyboard. This power supply is being used in the Digital Multi Sampler.

* **Disk Drive:** The disk drive is no longer bolted directly to the case. Now the disk drive is suspended from the Pitch/Mod wheel panel. This panel must be removed for disk drive replacement. In the DMS-8 the Disk Drive is mounted to a platform that is bolted to the case. This platform must also be removed for disk drive replacement.

Keypad: The keypad now has color coded buttons and two of the buttons (load upper and lower) have been moved. An additional screw has been strategically placed for stability.

* **Main Board:** On the main board, you will notice that certain components have been eliminated, (the tower board, a few Op Amps and the trimpot at R49). The main board in the DMS-8 has three MIDI jacks instead of two and it is three inches shorter than the Mirage main board.

Keyboard: This new weighted action keyboard is not interchangeable with the keyboard used in Mirages prior to serial # 14731. When connecting the keyboard ribbon cable to the main board please note that there are 24 pins on the main board connector (J3) and 26 holes on the ribbon connector. The 2 extra holes should be towards the the top of the main board. After installing a new keyboard boot-up the system, check the audio and let the sequencer run for a while to burn in the unit.

* **Please pay special attention to differences between the modules in the DSK-8 and the DSM-8.**

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Service Bulletin No.8

December 15, 1985

Mirage Update

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Parts Ordering 1-800-441-1003

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Beginning with serial #14731, the Mirage Digital Sampling keyboard (DSK-8) will contain additional noise reduction circuitry. Update Kits can be installed in Mirages with serial numbers prior to #14731.

Determine which Update Kit to install using the following chart based on the serial # and specification information provided below.

Serial # Range		Specification	Install
00001-11251		+12V -12V Power Supply	Update #3
00001-11251		+12V -8V Power Supply	Update #1
11251-14731	* See Figure A	Boards marked Part # 4001001801 Rev C, E or F	Update #1
14000-14731		Boards Marked MG-28	Update #2

Update #1: * See Figure B

(1) 2732, 24 pin EPROM labeled "USA+"
(1) Sound Disk #1 with version 3 operating system
(1) MASOS disk with version 2.0 operating system
(8) 160 K, 5% resistors
(1) 2 ohm, 5% resistor
(1) 7.5 K, 5% resistor
(1) 2.49 K, 1% resistor
(2) .0047uf capacitors
This update will provide a higher signal to noise ratio (+12db) and an increased frequency response.

Update #2: * See Figure B

(1) 2764, 28 pin EPROM labeled "USA+"
(1) Sound Disk #1 with version 3 operating system
(1) MASOS disk with version 2.0 operating system
(8) 160 K, 5% resistors
(1) 2 ohm, 5% resistor
(1) 7.5 K, 5% resistor
(1) 2.49 K, 1% resistor
(2) .0047uf capacitors
This update will provide a higher signal to noise ratio (+12db) and an increased frequency response.

Update #3:

Install two .0047uf capacitors in parrallel with R67 and R69 as explained in instructions. Capacitors are available in lots of one hundred for $11.97. This update will provide a higher signal to noise ratio (+12db). Units requiring Update #3 already have the high frequency response provided by the resistor replacement of Kits #1 and #2.

INSTRUCTIONS

Disassembly: Board removal instuctions are provided in Section I of your Mirage Service Manual.

To perform Update #1 or #2:

1) Replace current resistors as follows:

Resistor Location	Remove	Install
R97	110K	160K
R104	110K	160K
R111	110K	160K
R118	110K	160K
R125	110K	160K
R132	110K	160K
R139	110K	160K
R146	110K	160K
R66	10K	2ohm
R93	15K	7.5K
R83	2.43K	2.49K

2) Install capacitors. (note: You may find that there are Mirages that already have this modification installed.)
   1) Take one (1) .0047uf capacitor and solder it in parrallel with R67.
   2) Take one (1) .0047uf capacitor and solder it in parrallel with R69.

3) Install new EPROM.
   1) Remove EPROM (U14) marked "USA 2.1, 2.0, or 1.5"
   2) Install new EPROM (U14) marked "USA+"

To perform Update #3:

Install capacitors: (note: Some Mirages already have this modification installed.)
1) Take one (1) .0047uf capacitor and solder it in parrallel with R67.
2) Take one (1) .0047uf capacitor and solder it in parrallel with R69.

Re-assembly: Re-install main board and re-assemble Mirage as per instructions in the Mirage Service Manual. Re-calibrate R49 (10K trimpot, See Service Bulletin #4). Boot-up Mirage, check the audio and let the sequencer run for a while to burn in the unit.

Note: This is not a warranty repair.

NOTE: Once MIRAGE UPDATES #1 or #2 have been performed, boot a sound disk or formatted disk containing version 3 operating system. Booting with anything lower than version 3, will cause the Mirage display to flash the error message .O.S, which means the wrong operating system is in the drive. When you remove the errant disk, the Mirage will go back into its normal "ND" routine until an operating system version 3 disk is inserted. A disk with this operating system is provided with MIRAGE UPDATE KITS #1 and #2.

Service Bulletin No. 9

March 1, 1986

Servicing New Style Keyboards
(Serial numbers greater than 14731)

A. When servicing a new style k' board refer to the following to prevent recurring contact spring problems.

Diagnosis: Notes that don't work and/or sound immediately upon boot-up.

Cause: The contact spring may come loose from the front retainer, causing it to rest on the lower contact bar.

Solution: While the spring is detached from the nylon retainer, tin the ball end of the spring with a small amount of solder. Carefully replace this end into the retainer. The solder will prevent the contact spring from working its way through the retainer. Fig 1, item 5.

Note: Before you reinstall the keyboard, you must perform the above procedure on all contact springs to receive the minimum warranty reimbursement of $33.00.

B. When replacing defective keys on new style keyboards refer to the following instructions.

1. Detach contact spring from nylon retainer. Fig 1, item 1 & 2.

2. Remove rear tension spring from keyboard frame. Fig 1, item 3.

3. Slide key forward, up and out. (When replacing black keys first remove the white keys on either side.

4. Seat new key on frame and install rear tension spring.

5. Adjust the height of the contact spring retainer so it is level with the rest of the retainers. This will ensure consistent velocity sensitivity across the keyboard. Fig 1, item 4.

6. Replace the contact spring into the retainer.

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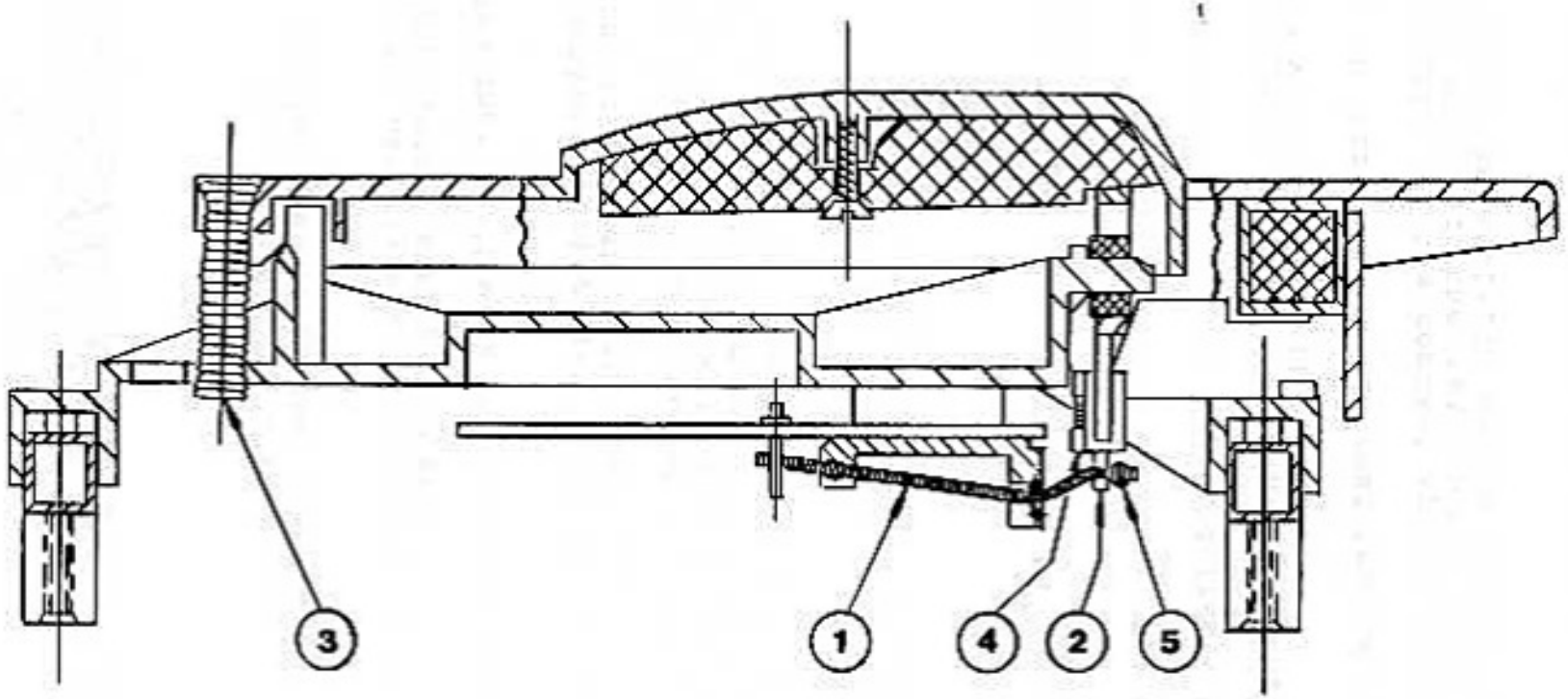
1) Contact Spring
2) Retainer
3) Tension Spring
4) Velocity Adjust Screw
5) Ball End To Be Tinned

FIGURE 1



ensoniq Keyboard Illustration
P/N 6120611101