KORG
DSS-MSRK
MEMORY/SCSI RETROFIT

for the Korg DSS-1 Sampling Synthesizer

SERVICE /
INSTALLATION
MANUAL

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DSS-MSRK MEMORY / SCSI RETROFIT KIT

SERVICE / INSTALLATION MANUAL
Version 2   3/25/88

INTRODUCTION

The Korg DSS-MSRK Memory/SCSI Retrofit Kit for the Korg DSS-1 Sampling Synthesizer is an authorized field-installed option for all versions of the Korg DSS-1 which increases its internal PCM memory from 256K to 512K words. Further memory can be added in 256K blocks up to 2 megawords. The Retrofit also adds a SCSI (Small Computer System Interface) port, and supports up to eight external hard disk drives.

Since the installation procedure for the DSS-1 Memory Retrofit involves major modifications to existing DSS-1 PC boards, Korg USA is offering a unique PC Board Preparation Service, using the following procedure:

*   Service Center removes three PC boards from the DSS-1, and sends them to KORG USA.

*   KORG USA modifies PC boards, adds the Retrofit PC board, then returns tested PC board assembly to Service Center.

*   Service Center reinstalls Retrofit PC board assembly into the DSS-1, and completes the Retrofit installation.

Note: AS THE PC BOARD MODIFICATIONS FOR THIS RETROFIT REQUIRE CONSIDERABLE SKILL, TIME AND EFFORT, THE USE OF KORG USA'S PC BOARD PREPARATION SERVICE IS HIGHLY RECOMMENDED FOR ALL SERVICE CENTERS.

Estimated installation time is 1 hour if Korg USA board prep service is used, and 2-3 hours or more if the Service Center does the PC board modifications. The amount of time necessary will normally decrease as the technician becomes familiar with the procedure.

Note: To install the Memory Retrofit, you will need a copy of the Korg DSS-1 Service Manual, for reference.
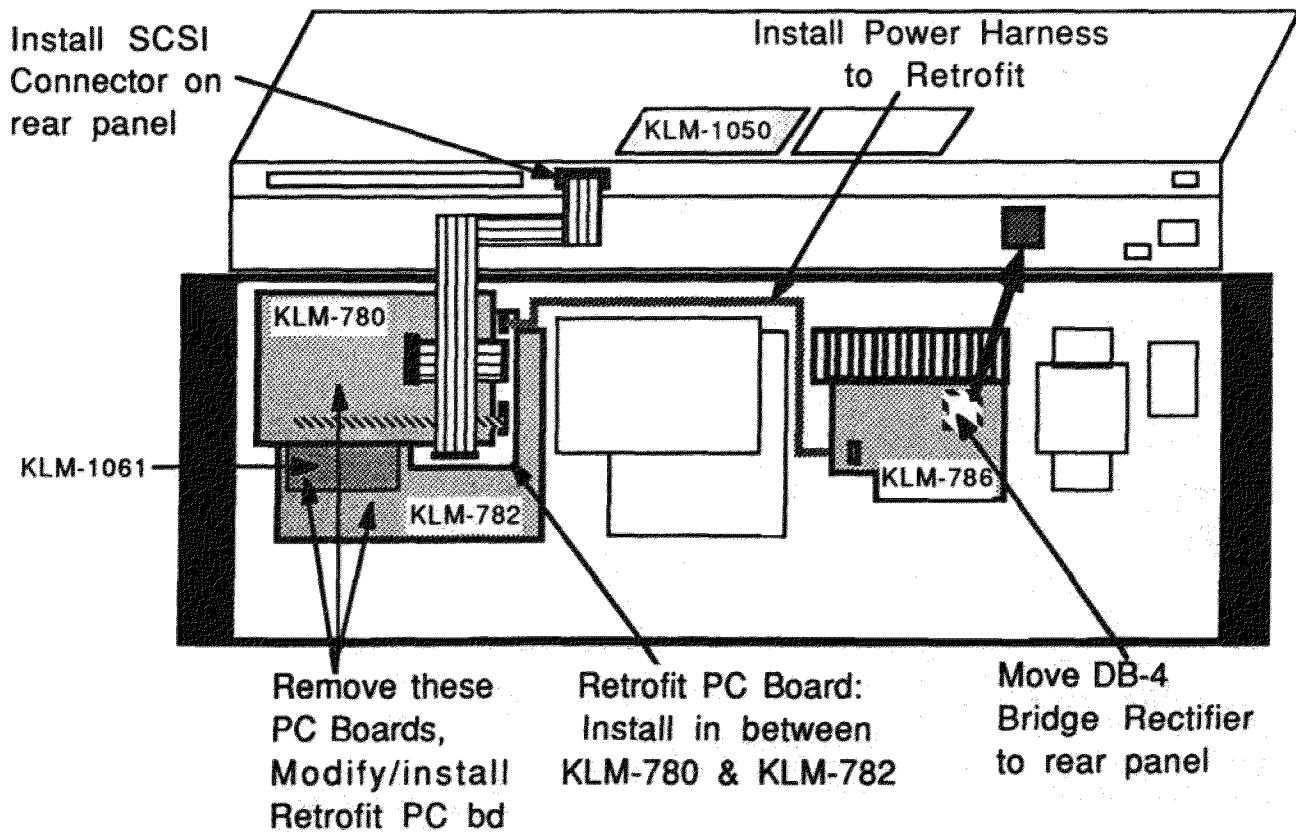
Note: THE DSS-1 RETROFIT REQUIRES THE INSTALLATION OF A 25-PIN SCSI CONNECTOR ON THE REAR PANEL, WHICH REQUIRES PANEL DRILLING AND THE USE OF A CHASSIS PUNCH.

WARNING !!

This kit must be installed by an authorized Korg Service facility. Installation by non-authorized persons voids all warrantees.

SUMMARY OF INSTALLATION PROCEDURE

Install SCSI Connector on rear panel

Install Power Harness to Retrofit

KLM-1050

KLM-780

KLM-1061

KLM-782

KLM-786

Remove these PC Boards, Modify/install Retrofit PC bd

Retrofit PC Board: Install in between KLM-780 & KLM-782

Move DB-4 Bridge Rectifier to rear panel

DSS-1 Overall

Diagram 1

I PRELIMINARY PROCEDURES - (Remove 3 pc boards)

> **IMPORTANT**: MAKE SURE THE UNMODIFIED DSS-1 IS IN PROPER WORKING ORDER **BEFORE** REMOVING ANY PC BOARDS AND/OR INSTALLING THE RETROFIT!   In the event that non-working PC boards are received by Korg USA, the Service Center will be charged for board repair/replacement at Korg USA's standard rates.

1.   Remove 6 screws securing front panel to unit (2 on side of each end block plus 2 on rear panel) and swing cover back on its hinges.

2.   Remove 2 rear corner screws on KLM-780 PC board (left rear corner of DSS-1), unplug connector 8A on right side of board, then release 3 clips on front of board, allowing it to swing back on rear hinges.

3   Disconnect and remove:

- joystick/disk drive assembly (remove 3 connectors & 7 screws directly under assembly -- do **not** remove screws under left end block).

- keyboard (6 screws, 4 connectors)

    Note: Labeling the keyboard connectors will speed reassembly.

4.   Referring to structural diagram on page 10 of the DSS-1 Service Manual, remove KLM-780 and KLM-782/KLM-1061 pc boards from DSS-1, as follows:

   a.   Unplug all connectors to KLM-780 (top pc board).
   b.   On KLM-782, unplug CN14 (orange-brown power connector), CN15 (shielded grey audio connector) and CN16A (orange/yellow connector going to KLM-781).
   c.   Unplug CN51A and CN52A from KLM-1061 (grey connectors on front side of PC board).
   d.   Remove 3 screws holding metal bracket on rear of PC boards; remove screw in center of KLM-782;
   e.   Remove left rear standoff on KLM-782 to free ground wires.
   f.   Slide PC board assembly back and out.

   Note: KLM-1061 PC board (attached on top of KLM-782) should be left in place since no modifications are performed to it.

> AT THIS POINT, THE THREE REMOVED PC BOARDS SHOULD BE FORWARDED TO KORG USA FOR MODIFICATION / INSTALLATION OF THE DSS-MSRK RETROFIT PC BOARD. A FULLY TESTED **FOUR** PC BOARD ASSEMBLY WILL BE RETURNED TO THE SERVICE CENTER WITHIN FIVE (5) WORKING DAYS, READY FOR RE- INSTALLATION INTO THE DSS-1.

IF THE SERVICE CENTER ELECTS TO MAKE BOARD MODIFICATIONS THEMSELVES, CARRY OUT INSTRUCTIONS IN THE APPENDIX A SECTION IN THIS MANUAL.

Continuing Instructions (after receipt of kit)

5.   Unpack the DSS-MSRK Retrofit kit and locate following parts:

    a-1.   1   4 PC board assembly, consisting of KLM-780, KLM-782/KLM-1061, and DSS-MSRK Retrofit PC board

                          OR

    a-2.   1   DSS-MSRK Retrofit PC board
           4   ICs (3 EPROMS plus 8K byte static RAM)
           1   12 conductor harness
           2   16 conductor ribbon cables (plug on one end)
           1   40 conductor ribbon cable (plugs on both ends)
           1   40 pin IC socket (attached to 40 pin ribbon cable)

    b.   1   25-pin SCSI assembly (with ribbon cable & finish plate)
    c.   1   4 conductor power harness
    d.   4   wires for bridge rectifier (w/ heat shrink tubing)
    e.   1   kit of miscellaneous hardware / jumper wire, etc.
    f.   1   Service / Installation Manual
    g.   1   Owners Manual
    h.   1   3.5" "Turbo" formatted disk w/ 512K system (for loading sounds into retrofitted DSS-1)

Note: **a-1**   is included if Korg USA PC board Prep Service is used.
          a-2   is included if Service Center is to perform PC board modifications.

II.   POWER SUPPLY MODIFICATIONS

The DSS-1's internal power supply is modified by moving a pc board mounted bridge rectifier to the rear panel in order to increase its power capacity, and installing a 4-wire power connector for the DSS-MSRK Retrofit board ,

1.   Remove <u>right hand</u> screw (seen from back) holding serial number plate on back panel. Drill out hole to 1/8 inch. MAKE SURE NO BURRS REMAIN ON INSIDE OF REAR PANEL. The rectifier must lay flush on rear panel for maximum heat transfer.

2.   Remove six screws holding KLM-786 power supply board, and turn pc board over, exposing solder side. (Connectors may be left in place.)

3.   Referring to KLM-786 diagram on page 31 in DSS-1 Service Manual, locate and remove DB4 bridge rectifier (closest to rear, with aluminum heat sink) by desoldering four leads. Clean solder holes using vacuum device or solder wick.

4.   Remove heat sink from DB4 rectifier, and clip leads to 1/2 inch. Solder the 4 extension wires provided with kit to rectifier leads, noting color coding in diagrams 2 & 3 on next page. Cover solder joints with heat shrink tubing provided.

5.   Run rectifier leads to <u>component</u> side of KLM-786 and solder wire ends to DB4 connection holes, as per diagram 2 on next page. Tie wrap extension leads.

DB-4 (mounted on rear panel)

(front edge)

CN-4A

to
DSS-
MSRK
J-5

DB-4

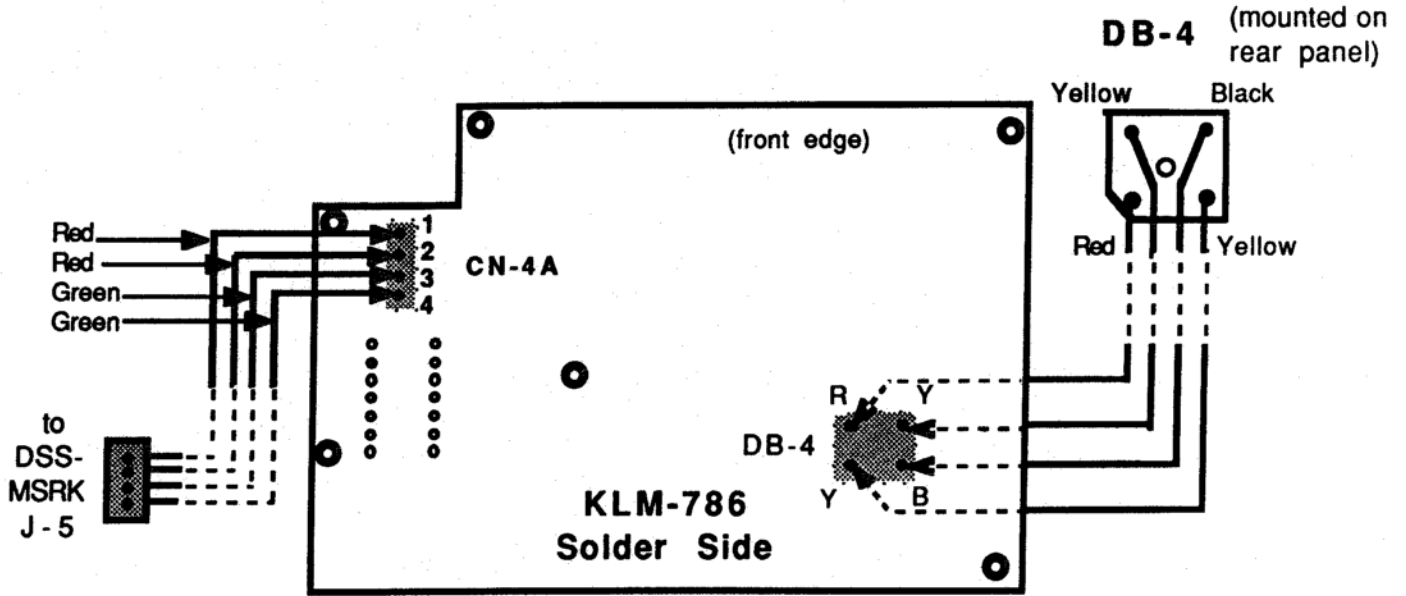**KLM-786
Solder Side**

Diagram 2

6. Locate 4 conductor power harness supplied with kit, and solder wire ends onto <u>solder</u> side of KLM-786 PC board at connector CN4A, as per diagram 2 above:

       -red wires (+5 volts) - pins 1,2   (closest to front edge of pc board)
       -green wires (ground) - pins 3,4

7. Recheck all connections carefully, then refasten KLM-786 pc board back into DSS-1. Dress power harness along rear of DSS-1 towards left rear corner.

8. Apply heat sink compound to top of rectifier, and install onto inside rear panel of DSS-1, using #4 screw, nut and fiber washer, as per diagram 3 below.
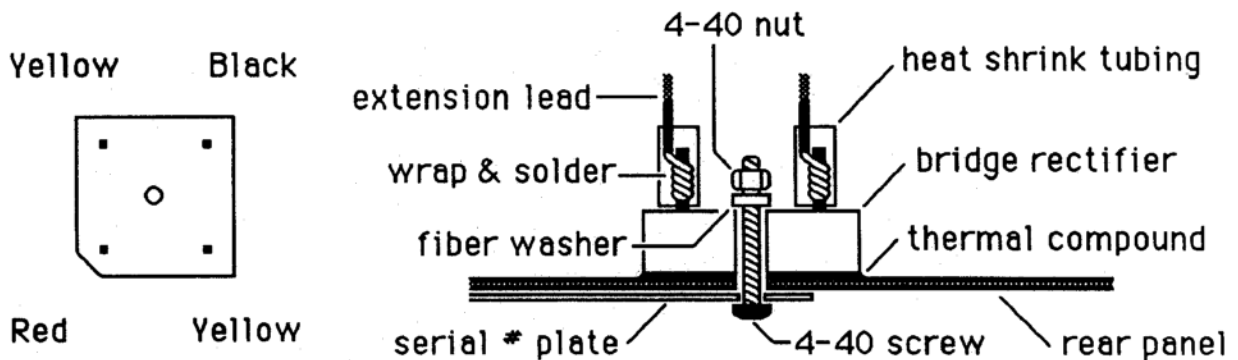

Yellow   Black

Red   Yellow

4-40 nut

extension lead

heat shrink tubing

wrap & solder

bridge rectifier

fiber washer

thermal compound

serial # plate

4-40 screw

rear panel

Diagram 3

III.   SCSI PORT INSTALLATION

The Retrofit includes a 25-pin SCSI port on the rear panel, for hookup to one or more hard disk drives. This plug is a standard DB25 connector, similar to that used by computer "RS-232" connectors.

1.   Unplug and remove left KLM-1050 DDL PC board (closest to MIDI jacks).

2.   Attach SCSI finish plate at point B to rear panel using the lefthand MIDI jacks screw (see diagram 4 below). Align plate level to rear panel as shown, and mark hole "A" location with center punch. Remove SCSI finish plate and drill out hole "A" to 3/32" (.093").

3.   Cut out SCSI template provided in this manual and tape to rear panel using holes "A" & "B" as guides. Transfer four points "C" to rear panel with center punch. Remove template from rear panel. Drill out points C using 1/8" drill, then enlarge using appropriate size drill for chassis punch. Punch 4 holes in rear panel using 3/4" chassis punch. BE SURE TO REMOVE ALL METALS FILINGS FROM DSS-1 INTERIOR.

4.   Install SCSI finish plate, D-Connector/ribbon cable to rear panel using provided mounting hardware, as per diagram 4 below.

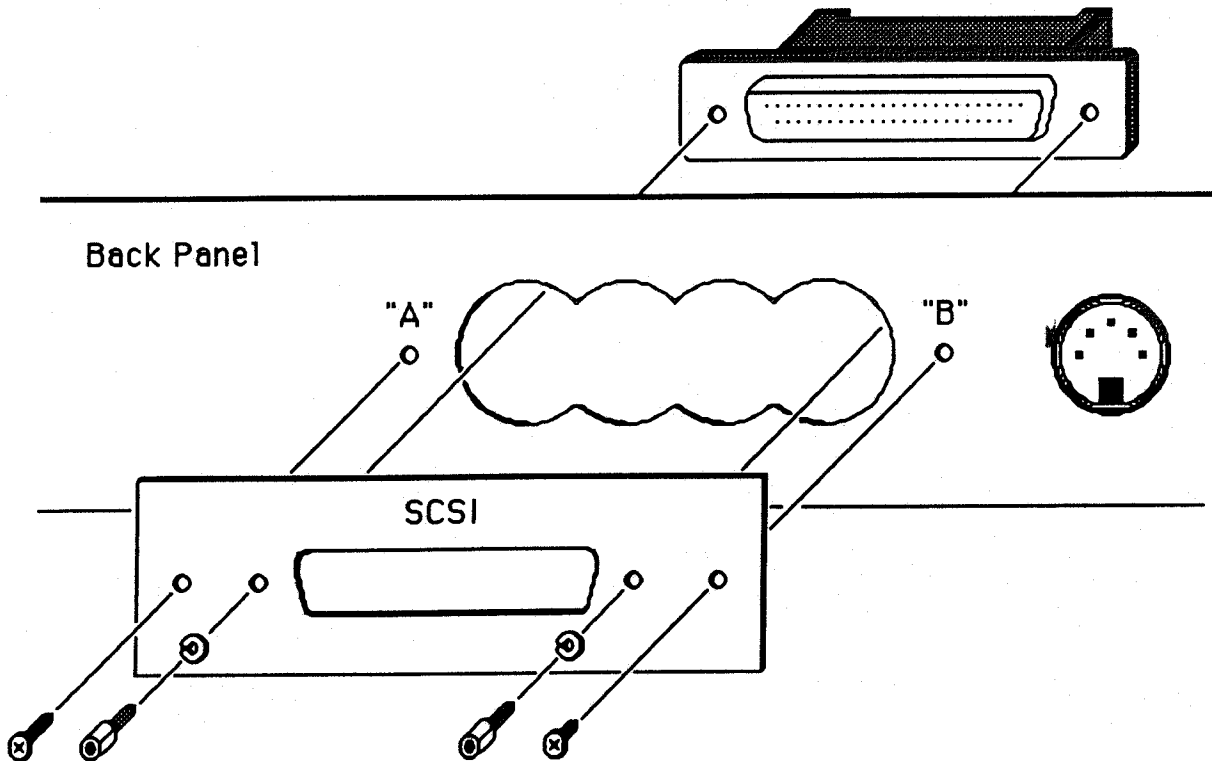5.   Re-install and reconnect previously removed KLM-1050.

Diagram 4

IV. REASSEMBLING DSS-1

1.   Referring to structural diagram on page 10 in DSS-1 Service Manual (and on next page), position front end of KLM-782 (bottom pc board of modified Retrofit PC board assembly) into groove of mounting strip (check to be sure bypass capacitors along front edge of board clear mounting strip).

Install two short pc board mounting strips provided with kit on rear corners of KLM-782 (short piece on rear left corner). Bend and insert the two solder lugs (found attached to the shield between the Retrofit PCB and KLM-782) between the chassis and the mounting strips, and fasten down with wood screws.
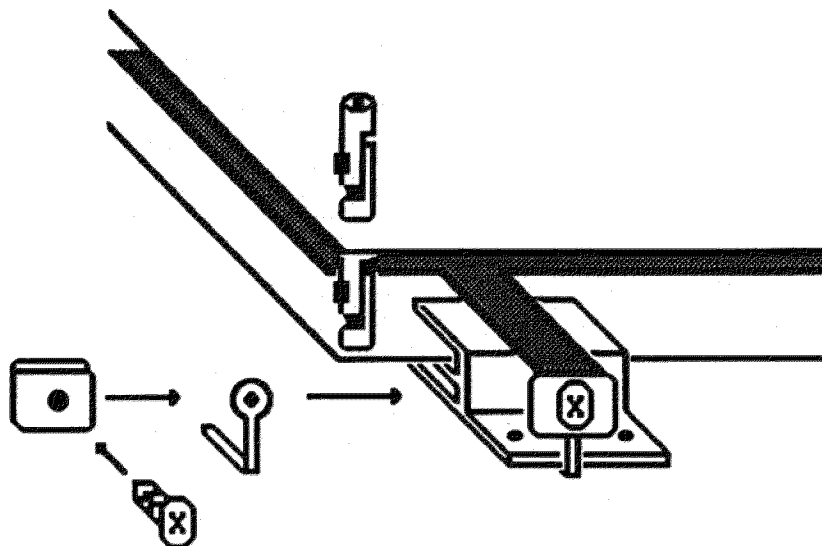
2.   Connect 2 green ground wires from KLM-782 to the DSS-1's left end block bracket and KLM-781 left rear metal mounting bracket, respectively.

3.   Reconnect all previously removed DSS-1 connectors to KLM-780, KLM-782 and KLM-1061.

4.   Extend the SCSI connector ribbon cable toward front of DSS-1, twist the cable 1/2 turn, and insert plug with key UP into J4 on front of DSS-MSRK board.

5.   Connect remaining connections to DSS-MSRK board:

-    J5 - 4 conductor power harness (P5)
-    J3 - 40 conductor ribbon cable from KLM-780 (P3)
-    J6 - 12 conductor harness from KLM-780 (P6)

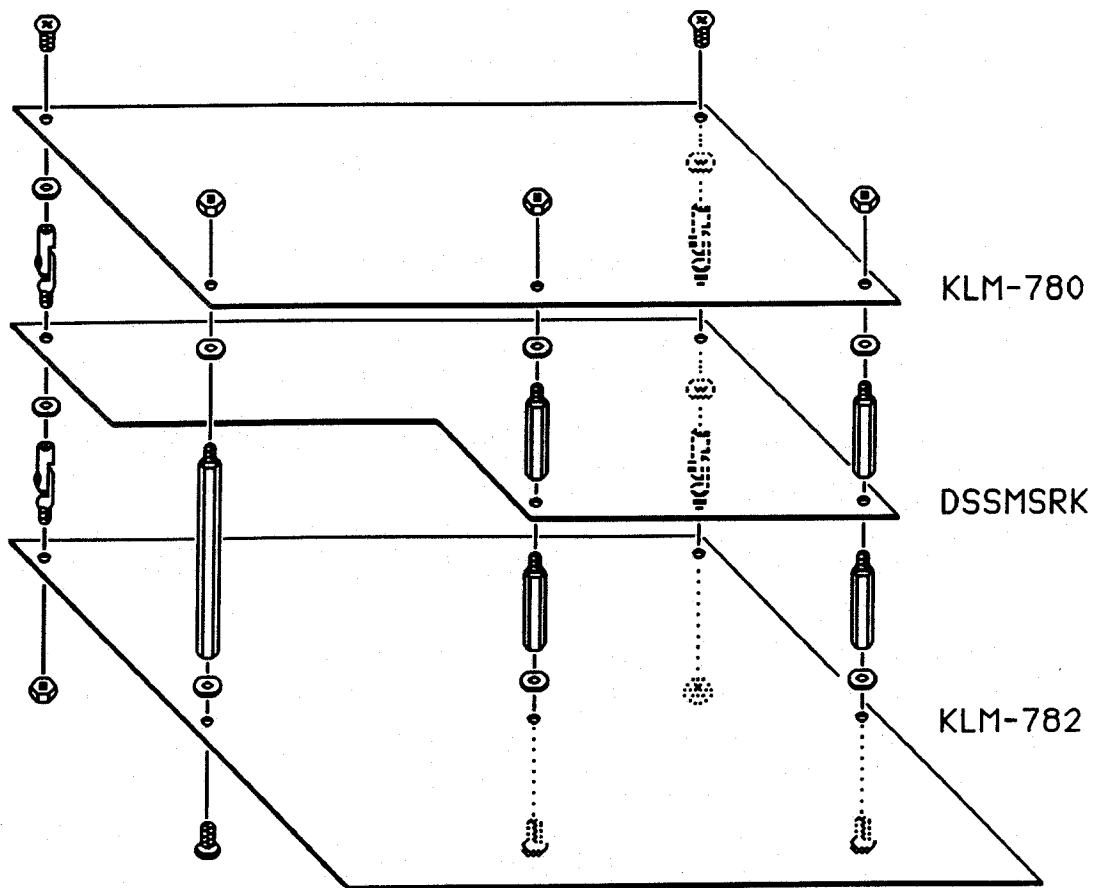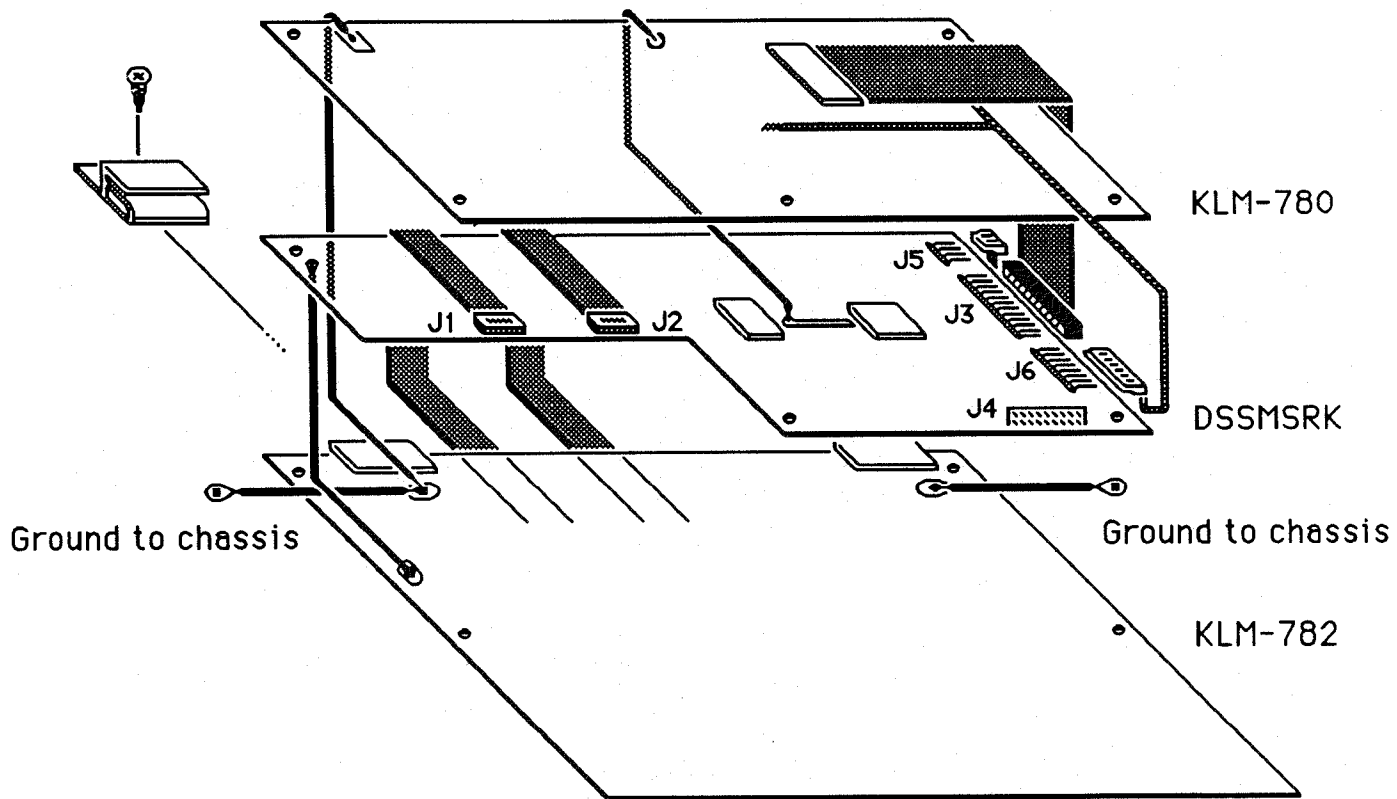NOTE: Do NOT fasten down DSS-MSRK & KLM-780 pc boards to their front standoffs yet.

7

KLM-780

J5

J1   J2

J3

J6

J4

DSSMSRK

Ground to chassis

Ground to chassis

KLM-782

KLM-780

DSSMSRK

KLM-782

Diagram 5

8

V. TESTING COMPLETED RETROFIT

1. DOUBLE CHECK ALL CONNECTIONS, PARTICULARLY TO KLM-786 POWER SUPPLY. A mistake here can ruin several PC boards in the DSS-1 and the Retrofit.

2. After checking all connections, re-install joystick/disk drive and keyboard assemblies.

3. Using ohmmeter, measure resistance from J5 pins 1 and 4 on DSS-MSRK to chassis ground (should not read "zero").

4. If all checks out, connect AC, and turn on DSS-1. DSS-1 "sign on" message should appear in LCD, followed by SYSTEM mode. Test unit for proper operation, overheating, etc. Check voltages at KLM-786 for proper range.

5. Perform memory test by turning off DSS-1, holding down data entry A's "up" and "down" buttons while turning power on. (See page 37 in DSS-1 Service Manual.)

   Note: The memory test will "fail" on any memory banks not installed in the Retrofit.

6. Load provided sound disk into DSS-1; select different programs / play keyboard, etc.

7. If all tests are OK, fasten down front side of DSS-MSRK and KLM-780 pc boards using supplied additional standoffs, fiber washers and nuts (refer to diagram 5, page 8), then refasten front cover. Turn on power and recheck proper operation (load disk, play keyboard, etc.).

THIS COMPLETES INSTALLATION OF THE DSS-1 RETROFIT

VI.   ADDING MEMORY ICs

The DSS-1 Memory Retrofit comes standard with 256K words of additional dynamic RAM memory (yielding 512K total). Up to six additional 256K word banks of memory can be added to the Retrofit PC board by installing three M5M44C256P ICs per bank, either at installation time or subsequently. The total memory capacity of the DSS Memory Retrofit is 2 megawords of 12 bit memory (21 ICs total).

The diagram below shows how additional memory should be added to the DSS-MSRK Retrofit board. Note carefully the location and orientation of the ICs.

	512K	- U1, U8, U15 (STD)

DSS-MSRK

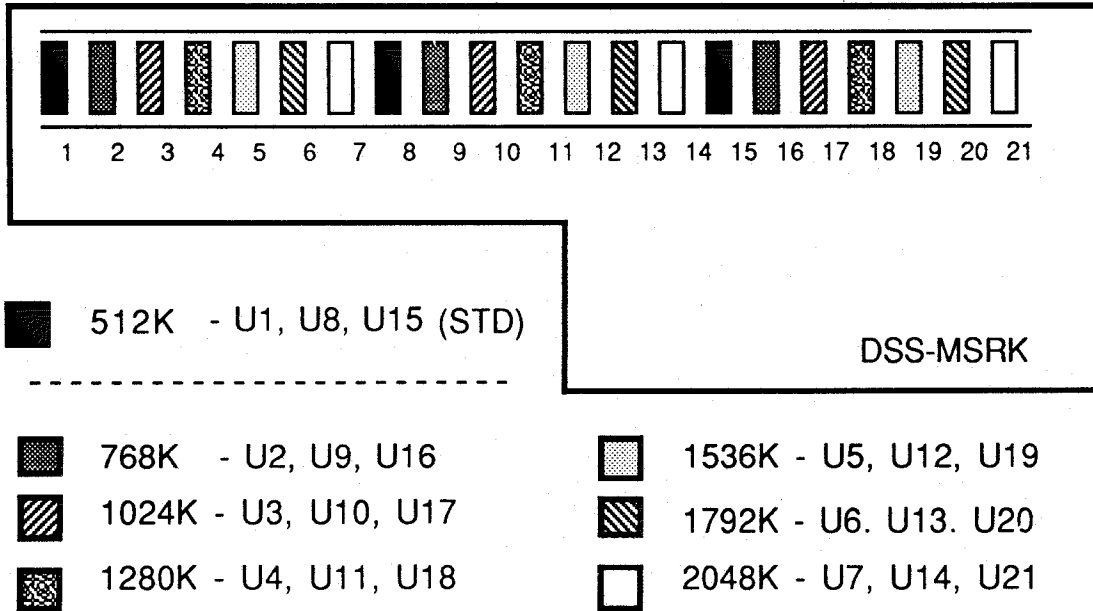|	768K	- U2, U9, U16		1536K	- U5, U12, U19
	1024K	- U3, U10, U17		1792K	- U6. U13. U20
	1280K	- U4, U11, U18		2048K	- U7, U14, U21

Diagram 6

10

PRINCIPLES OF OPERATION

The general method used to implement the DSS-1 Memory/SCSI Retrofit is to add new circuitry to the instrument with provisions for up to 1.75 megawords (2,752,512 bytes) of additional PCM memory, plus a SCSI driver and connector for connecting up to 8 hard disk drives. In addition to the hardware changes, the entire DSS operating system was reprogrammed for current and additional functions.

To make these changes possible, a new pc board with up 1-3/4 megawords of dynamic RAM, custom Gate Array IC, EPROM-based Operating System software, SCSI driver circuitry and necessary interface circuitry is installed into the DSS-1. The DSS-1's original 8085 microprocessor is removed and replaced by a more powerful 16 bit V-40 microprocessor. Since this microprocessor runs significantly faster, several additional benefits are realized:

- Increased 3.5" disk speed (up to double speed) and improved storage capacity.

- DMA (Direct Memory Access) option for hard disk drives.

- More rapid internal operations, especially internal data processing operations (Sample Mix, Reverse, Link, etc.).

The 8085 microprocessor and the original 2764 EPROM are removed from their original sockets. The Retrofit includes the new V-40 microprocessor, a new 8K static RAM chip, the SCSI circuitry and necessary driver circuitry for the extended memory.

The DSS-1 +5 volt power supply is increased by increasing the heat sink capabilities of the bridge rectifier. In spite of the increased power load posed by the retrofit, the original DSS power supply runs well within rated capacity.

APPENDIX A - DSS-1 PC BOARD PREPARATION

> OVER 66 CUTS, JUMPERS AND HARNESS CONNECTIONS ARE REQUIRED FOR MODIFYING THE DSS-1 PC
> BOARDS. THIS PROCEDURE REQUIRES CONSIDERABLE SKILL, CARE AND TIME. FOR THESE REASONS,
> KORG USA STRONGLY RECOMMENDS THAT SERVICE CENTERS UTILIZE KORG USA's SPECIAL PC BOARD
> PREPARATION SERVICE. PLEASE CONSULT WITH KORG USA's SERVICE DEPARTMENT FOR DETAILS.

A. KLM-780 COMPONENT-SIDE MODIFICATIONS

KLM-780 ("CPU" board) is modified extensively in preparation for the Memory Retrofit. The original
8085 microprocessor and 3 EPROM ICs are removed. Thirteen trace "cuts" are performed, then seven
wire "jumpers" and a 12 conductor harness are installed on this board.

1.   If not already done, disassemble and remove all mounting brackets, plastic hinges and standoffs
      from KLM-780 and KLM-782, and separate boards. Save the foil shield and the 2 metal clips
      and screws from the rear of KLM-780. These parts will be needed during reassembly.
      DO NOT disassemble or remove KLM-1061 from KLM-782.

2.   Referring to KLM-780 diagram on next page (and on page 29 in DSS-1 Service Manual), locate
      and remove 8085 microprocessor (IC 21), being careful to not damage PC board site.
      Recommended procedure is to cut out body of IC using diagonal cutters, then desolder/remove IC
      leads separately. Clean PC board holes thoroughly using vacuum device.

3.   Remove 40 pin DIP socket from 40-pin ribbon cable; install socket at IC 21 location.

4.   Remove 2764 EPROM (IC 12). Replace with D4364C-15 8Kx8 static RAM provided in kit.

5.   Remove 2 EPROMs (IC 18-19) from sockets. Replace with 27256 EPROMs labelled "11??00"
      & "11??01" referring to diagram 7, next page. (Note: "??" refers to different version
      numbers.). SAVE OLD EPROMs FOR RETURN TO KORG USA IN ORDER TO RECEIVE CREDIT.

6.   Perform six trace cuts to component side of KLM-780, referring to diagram 7, next page.
      Note: Underlining indicates that the cut will be made near that pad.

      1) IC6-2   to   IC21-32   4) IC15-7   to   IC31-4
      2) IC6-3   to   IC21-31   5) IC27-11 to   IC31-12
      3) IC6-16   to   IC17-2   6) IC30-11 to   IC31-11

7.   Locate 12 conductor harness (P-6). Install wire ends to component side of KLM-780,
      referring to diagram 7, next page.

       1) P6-1   to   IC6-14   brown
       2) P6-2   to   IC15-13   red
       3) P6-3   to   IC15-12   orange
       4) P6-4   to   IC28-9   yellow
       5) P6-5   to   IC6-2   green
       6) P6-6   to   IC6-3   blue
       7) P6-7   to   IC6-15   violet
       8) P6-8   to   IC15-7   grey
       9) P6-9   to   IC6-16   white
      10) P6-10   to   IC24-1   black
      11) P6-11   to   IC28-13   white/brown
      12) P6-12   to   IC28-14   white/black

Diagram 7

13

White
Violet
Brown
Blue
Green

IC 6
IC 9

3
2
1

Orange
Red

IC 15

IC 12
D4364-15

Grey

IC 18
11?200

4

IC 19
11?201

IC 21

IC 24

Black

IC 28
Yellow
White/Brown
White/Black

5

IC 31

6

-//- = cut
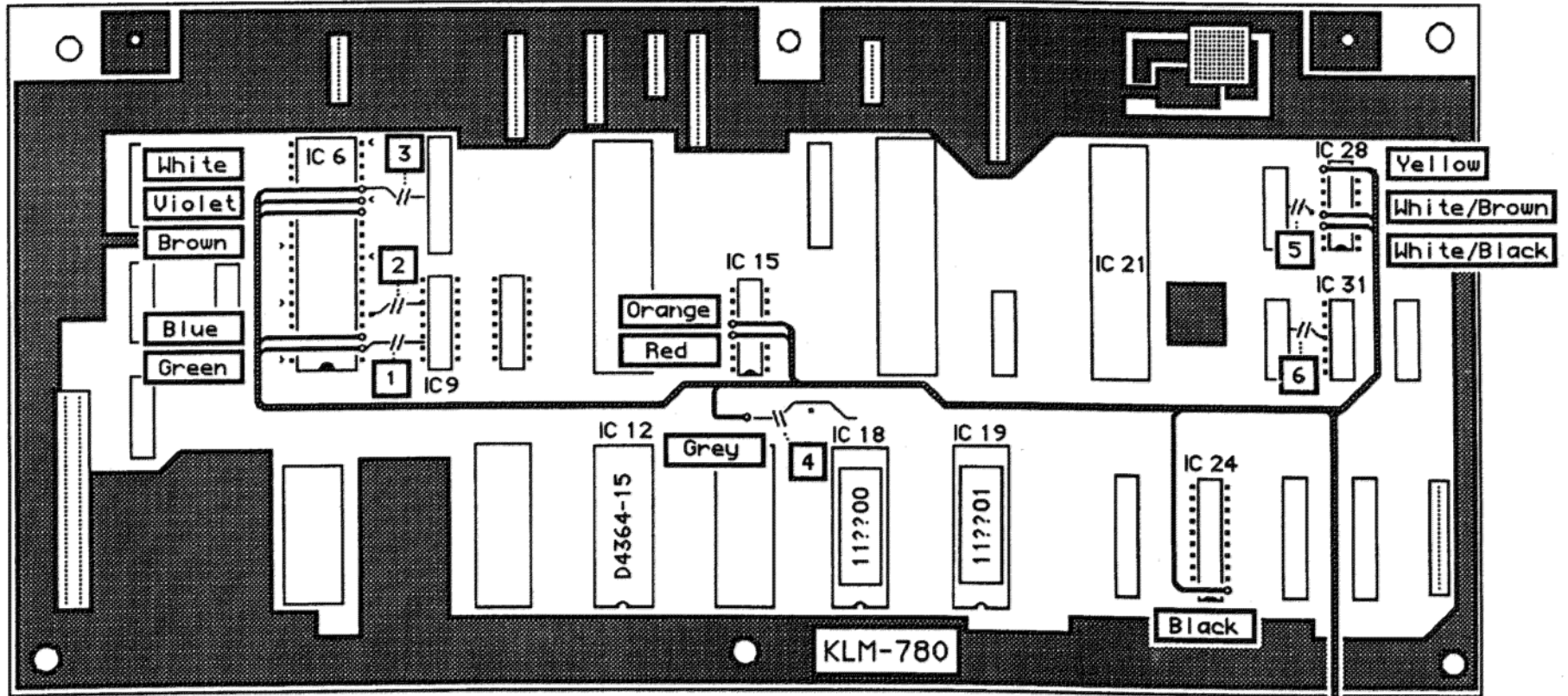
☐ = cut number from list

Component Side

to DSSMSRK J6

KLM-780

B. KLM-780 SOLDER-SIDE MODIFICATIONS

8.   Perform seven trace cuts to <u>solder</u> side of KLM-780 PC board, referring to following list and diagram 8 on next page.

   Note: <u>Underlining</u> indicates that the cut will be made near that pad.

7) IC6-15	to	+5V
8) IC7-11	to	+5V
9) IC21-32	to	<u>IC24-1</u>
10) IC15-13	to	IC31-13
11) IC30-8	to	IC31-1
12) IC19-20	to	IC31-8
13) IC28-1	to	ground

9.   Install seven jumpers to <u>solder</u> side of KLM-780 using supplied jumper wire, referring to diagram 8 on next page.

1) IC7-11	to	IC17-2		
2) IC19-20	to	IC28-11		
3) IC21-26	to	IC31-13		
4) IC28-1	to	IC28-12	to	IC31-1
5) IC28-7	to	IC31-12		
6) IC28-8	to	IC28-15		
7) IC31-4	to	IC31-11		

10.   Connect pins 1, 2, 4, 11, 29, 33, 34, and 38 of IC21 (40 pin socket) to ground.

   CHECK ALL MODIFICATIONS TO KLM-780 PRIOR TO COMPLETING THIS STEP.

C. DSSMSRK MODIFICATIONS

1.   If not already done, connect pins 2, 4, 5, 8, 13, 15, 22, and 23 of J3 on retrofit PCB to ground.
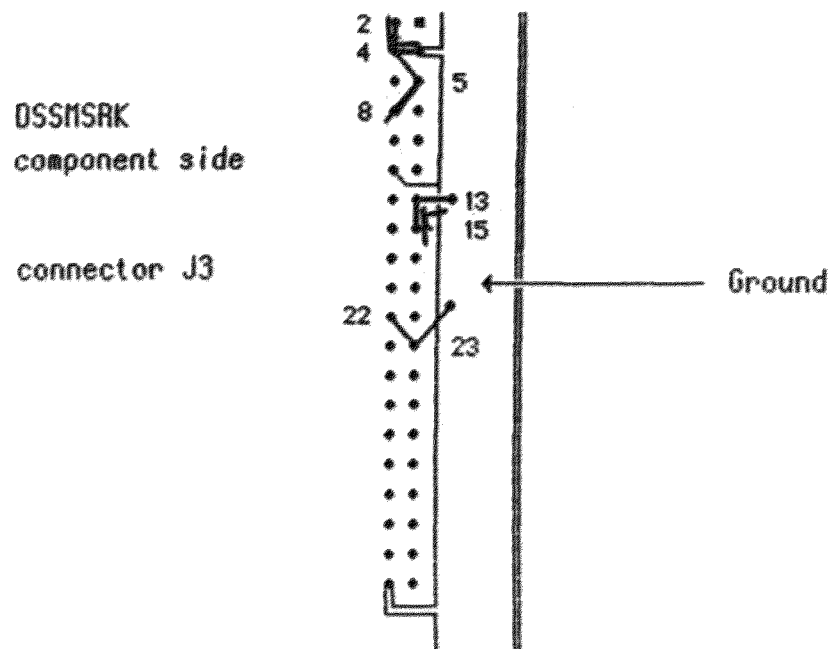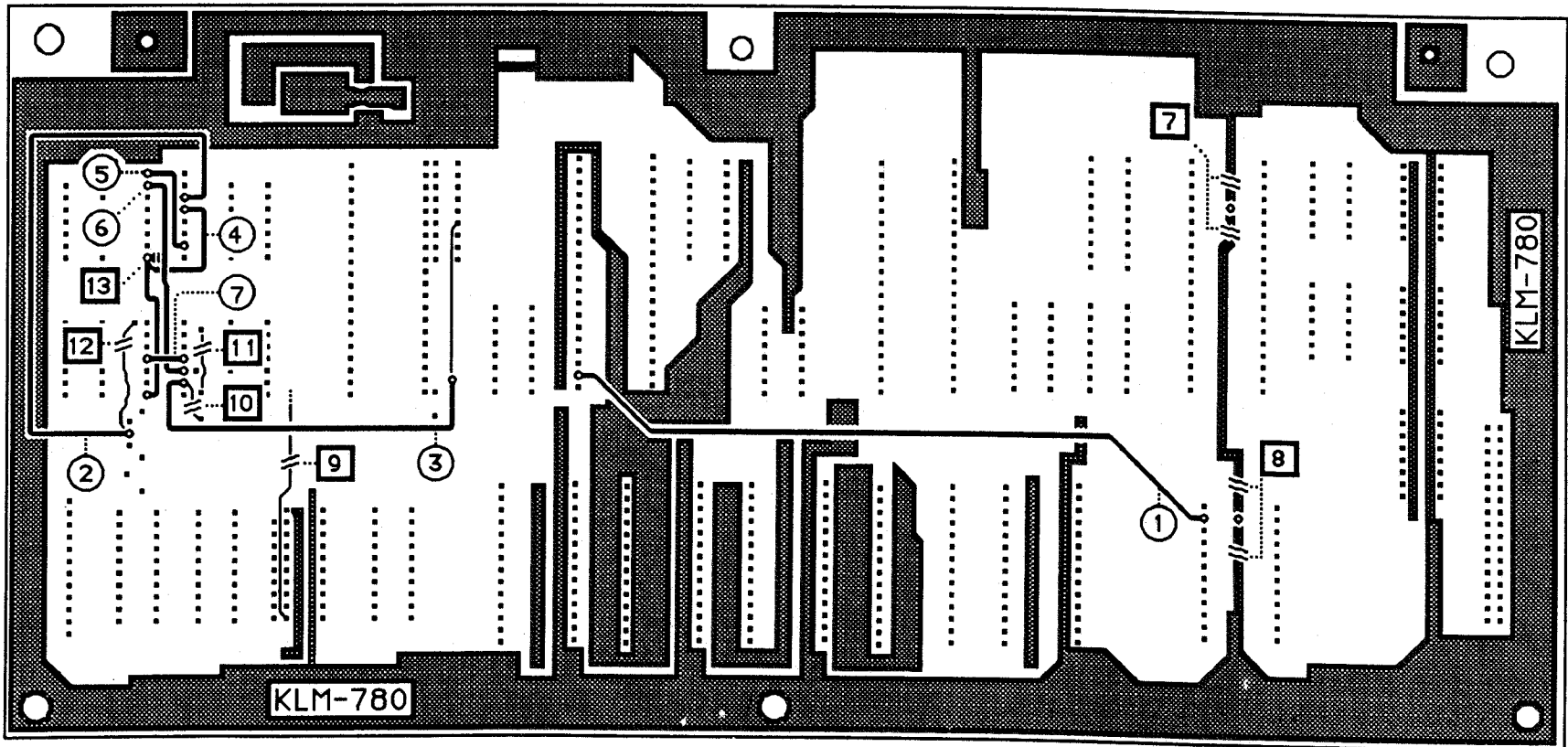

DSSMSRK
component side

connector J3

14

Diagram 8

15

KLM-780

KLM-780

KLM-780
Solder Side

-//- = trace cut

▢ = cut number from list

◯ = jump number from list

C.   KLM-782 MODIFICATIONS

Two trace cuts are made to this board, followed by installation of two 16 conductor ribbon cables.

1. Locate and remove two resistor-like ground jumpers located in rear corners of component side of KLM-782, referring to diagram 9 on next page..

2. Locate the two 16 conductor multi-colored ribbon cables (P1, P2). Lay cables on flat surface with plug ends extending away from you and PINS FACING DOWN. (Blue edge on left, brown edge on right.)

3. Prepare ribbon cables as follows:

    a. Carefully separate both cables between the white and grey wires (8 wires on either side) approximately 4".

    b. Peel back individual wires on right side of cable (grey to brown) about 1", and strip/tin wire ends.

    c. Peel back individual wires on left side of cable to 4", and strip/tin wire ends.

5. Position KLM-782 solder side up so that front edge of PC board is towards you. Cut 2 traces as indicated in KLM-782 detailed diagram (diagram 10, page 19).

    1) IC11-40   to   ICs 25-36 pin 3
    2) IC11-32   to   ICs 25-36 pin 7

6. Lay ribbon cables on right side of PC board, with plugs extending away from you and over rear edge as per diagram 9, next page.

    Note: To speed installation, and to keep cables from being punctured by IC leads, we recommend fastening ribbon cables to bottom of PC boards using double sided foam tape, as per diagram 9, next page.

Remove Jumper
(Component Side)

P-2   P-1

Plug Ends
(Pins DOWN)

Remove Jumper
(Component Side)

16-Conductor
Ribbon Cables

Blue

Brown

Double
sided
Tape

KLM-782
(Solder Side)

Shaded area
detailed in
Diagram 10
(2 pages
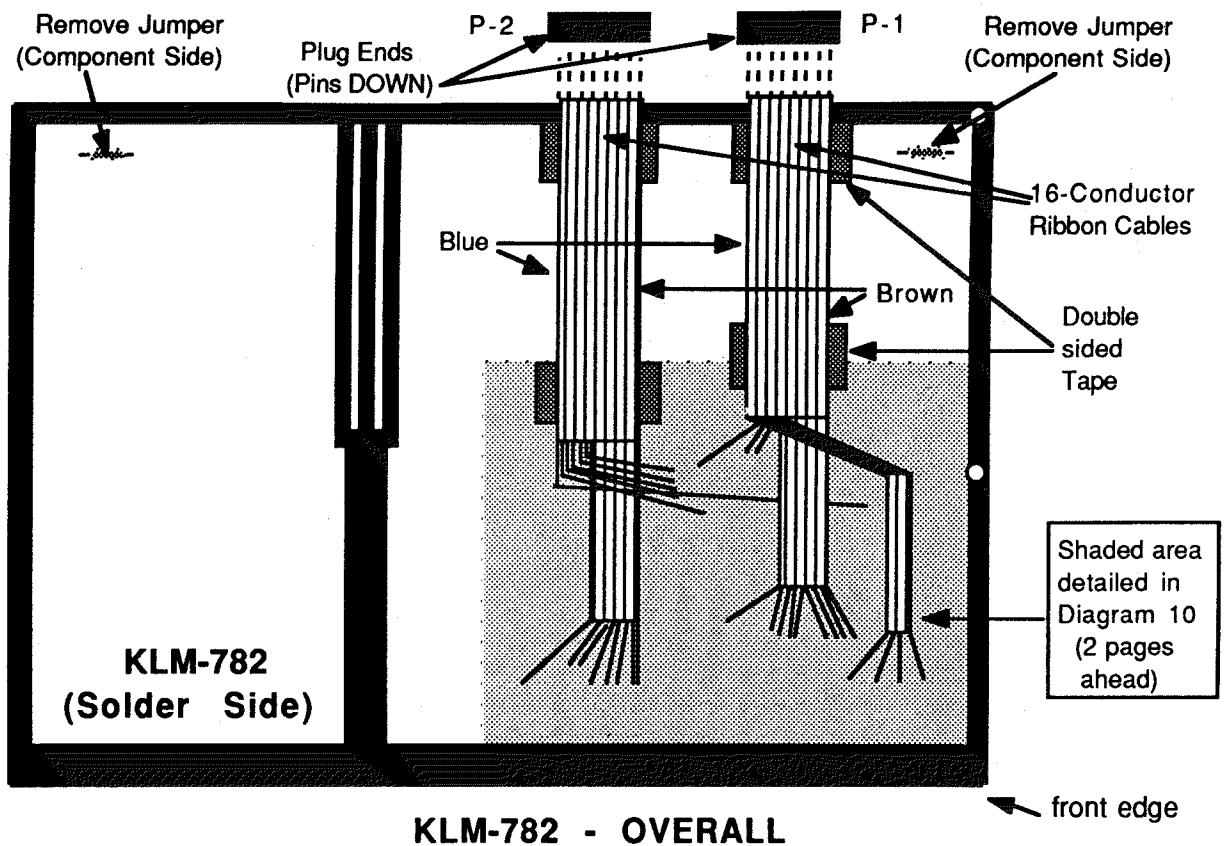ahead)

front edge

KLM-782 - OVERALL

Diagram 9

17

7. Solder wires to PC board plated thru holes, as indicated in KLM-782 detailed diagram (diagram 10, next page).

Note: Clear plated thru holes first, for easier wire insertion. When soldering, use as little heat as possible to avoid melting insulation.

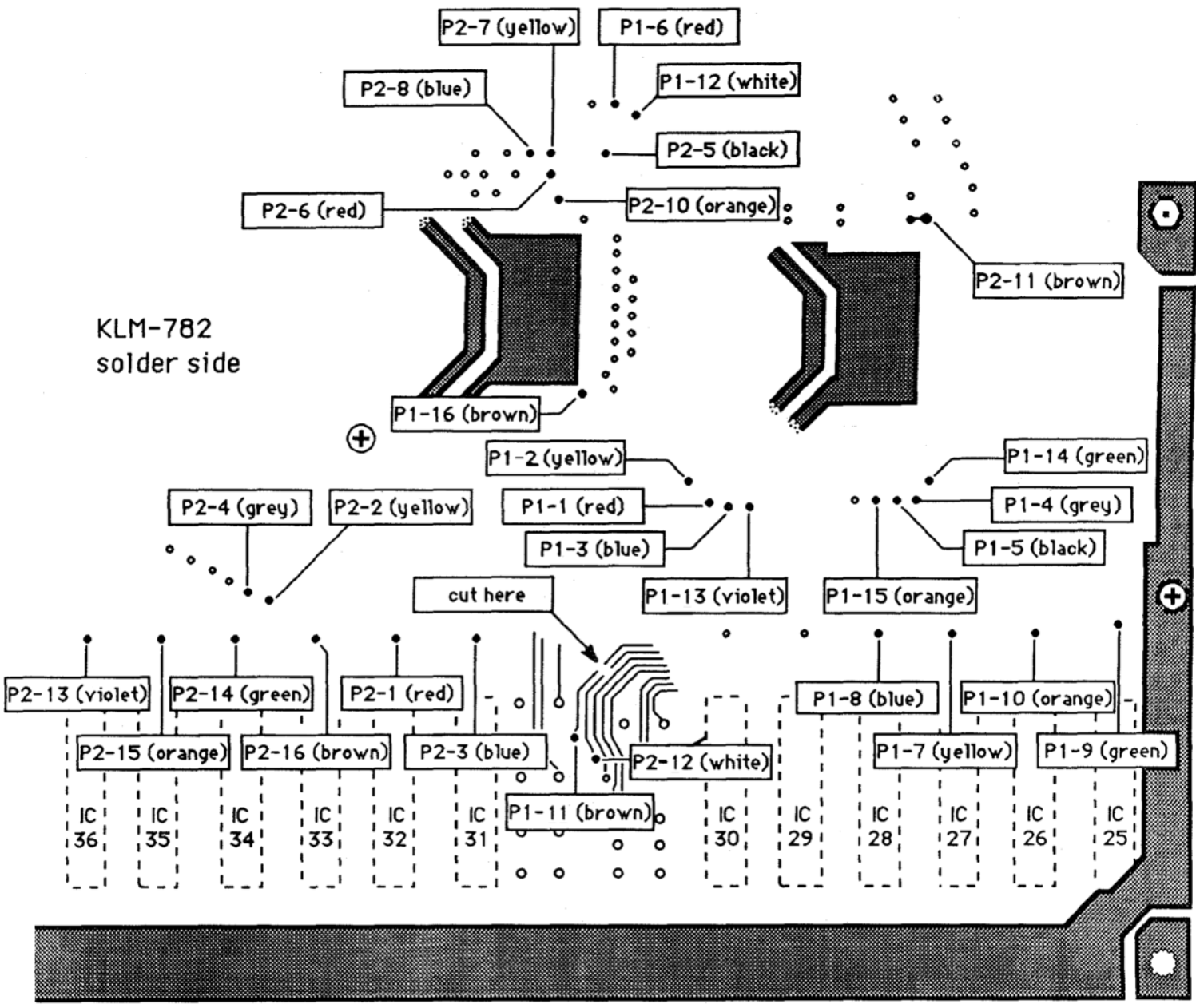NOTE THAT WIRE ORDER BELOW IS FROM RIGHT TO LEFT ON RIBBON CABLES.

KLM 782 solder side - P1 harness connections

1)	P1-16	to	R11	brown-1
2)	P1-1	to	R9	red-1
3)	P1-15	to	R13	orange-1
4)	P1-2	to	R14	yellow-1
5)	P1-14	to	R7	green-1
6)	P1-3	to	R8	blue-1
7)	P1-13	to	R6	violet-1
8)	P1-4	to	R12	grey-1
9)	P/1-12	to	IC11-39	white-1
10)	P1-5	to	R10	black-1
11)	P1-11	to	ICs 25-36 pin 3	brown-2
12)	P1-6	to	IC11-40	red-2
13)	P1-10	to	IC26-2	orange-2
14)	P/1-7	to	IC27-2	yellow-2
15)	P1-9	to	IC25-2	green-2
16)	P1-8	to	IC28-2	blue-2

KLM 782 solder side - P2 harness connections

1)	P2-16	to	IC33-2	brown-1
2)	P2-1	to	IC32-2	red-1
3)	P2-15	to	IC35-2	orange-1
4)	P2-2	to	IC30-2	yellow-1
5)	P2-14	to	IC34-2	green-1
6)	P2-3	to	IC31-2	blue-1
7)	P2-13	to	IC36-2	violet-1
8)	P2-4	to	IC29-2	grey-1
9)	P2-12	to	ICs 25-36 pin 7	white-1
10)	P2-5	to	IC11-32	black-1
11)	P2-11	to	IC11-26	brown-2
12)	P2-6	to	IC11-28	red-2
13)	P2-10	to	IC11-27	orange-2
14)	P2-7	to	IC11-29	yellow-2
15)	P2-9	is	not connected	green-2
16)	P2-8	to	IC11-30	blue-2

8. CAREFULLY RECHECK ALL CONNECTIONS TO THIS PC BOARD PRIOR TO COMPLETING THIS STEP.

P2-7 (yellow) P1-6 (red)

P2-8 (blue) P1-12 (white)

P2-5 (black)

P2-6 (red) P2-10 (orange)

KLM-782
solder side

P2-11 (brown)

P1-16 (brown)

P1-2 (yellow) P1-14 (green)

P2-4 (grey) P2-2 (yellow) P1-1 (red) P1-4 (grey)

P1-3 (blue) P1-5 (black)

cut here P1-13 (violet) P1-15 (orange)

P2-13 (violet) P2-14 (green) P2-1 (red) P1-8 (blue) P1-10 (orange)

P2-15 (orange) P2-16 (brown) P2-3 (blue) P2-12 (white) P1-7 (yellow) P1-9 (green)

P1-11 (brown)

IC 36 IC 35 IC 34 IC 33 IC 32 IC 31 IC 30 IC 29 IC 28 IC 27 IC 26 IC 25

Diagram 10

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D. ASSEMBLE RETROFIT PC BOARDS

1.   Referring to DSS-MSRK Layout diagram (diagram 12), install "11??03" EPROM ("??" is version number) at location U30 on DSS-MSRK pc board, noting IC orientation.

2.   Add any additional memory ICs to DSS-MSRK as required, following instructions in Section VI of this manual.

3.   Assemble modified KLM-780 and KLM-782/1061 boards with DSS-MSRK Retrofit board, as indicated in diagram 11, next page. Install provided swivel mounting hardware to rear pc board mounting holes

4.   Install 1 tall and 2 short standoffs to KLM-782 (bottom pc board), using provided fiber washers and nuts. (Do NOT fasten down middle and top pc boards to standoffs yet.)

5.   Solder ground wires from DSS-MSRK Retrofit board to KLM-782 ground plane, KLM-780 and KLM-782, and KLM-780 and the Retrofit PCB as shown in diagram 11.

6.   Route 16 conductor ribbon cables from bottom of KLM-782 over top of DSS-MSRK pc board and plug cables plugs into J1 and J2 . (Do not make J3 and J6 connections yet.)

7.   Cut the foil shield as shown in Diagram 12. Attach the two solder lugs provided with the kit using the clips and screws previously removed from KLM-780 as shown in Diagram 12. Place the shield between KLM-782 and the Retrofit PCB. Bend down any capacitors on KLM-782 that would press the shield against the Retrofit PCB.

- - - - - - - -

THIS COMPLETES MODIFICATION OF DSS-1 PC BOARDS.

Refer to Section IV in this manual for
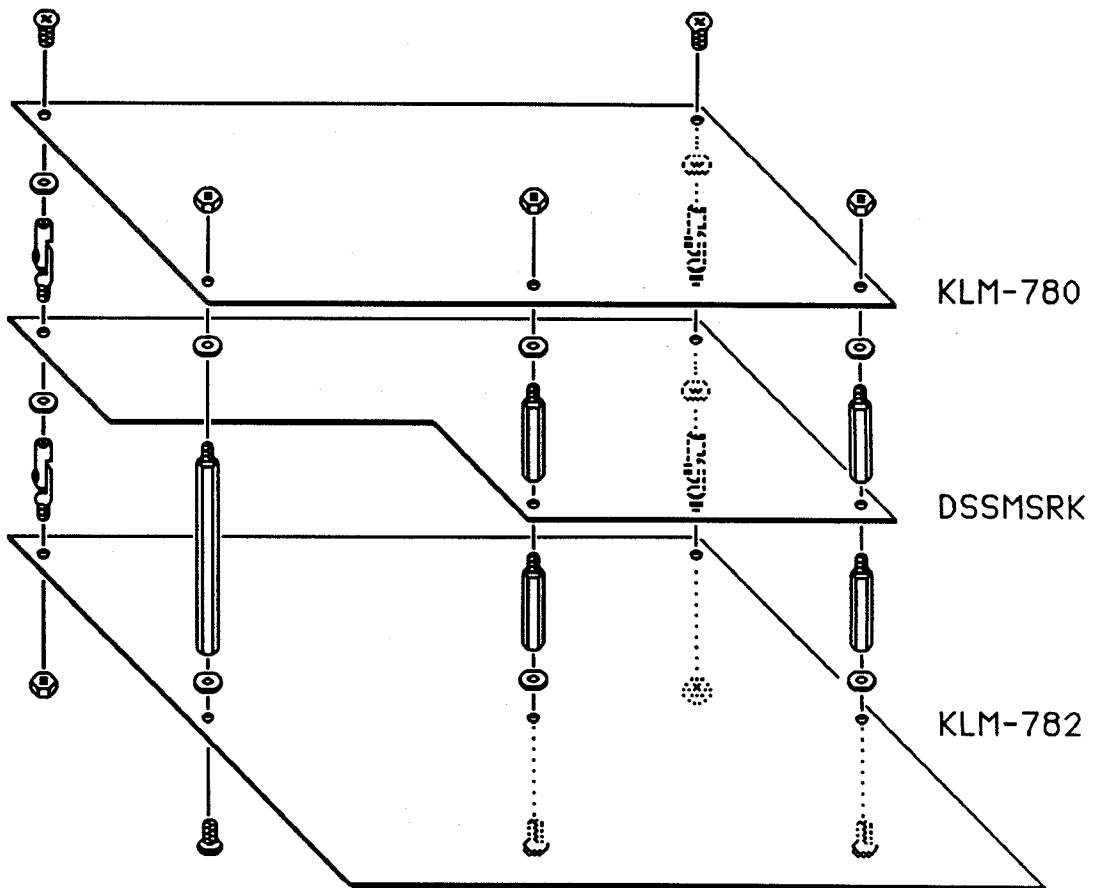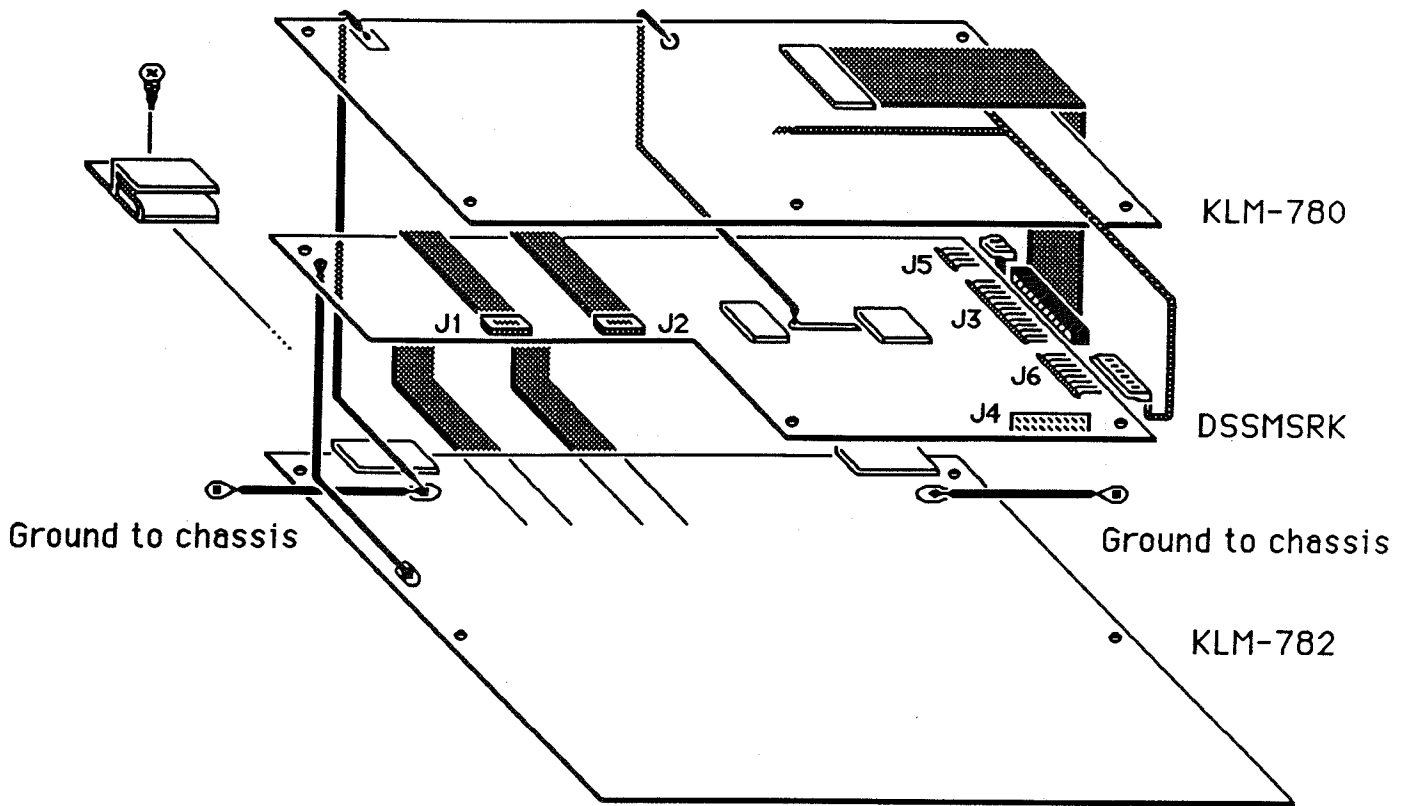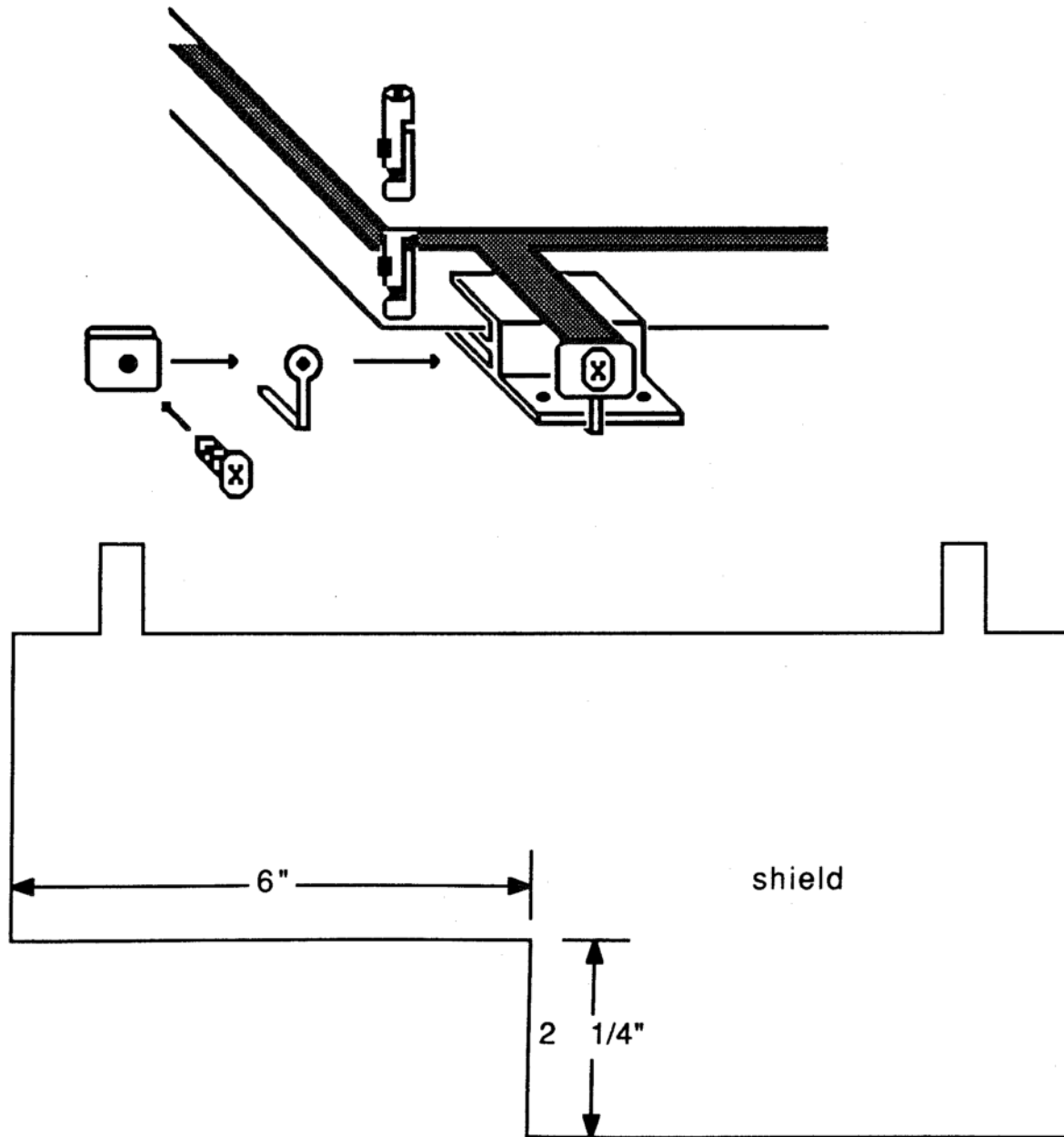re-installing pc board assembly back into DSS-1

KLM-780

J5
J3
J6
J1   J2
J4

DSSMSRK

Ground to chassis   Ground to chassis

KLM-782

KLM-780

DSSMSRK

KLM-782

Diagram 11

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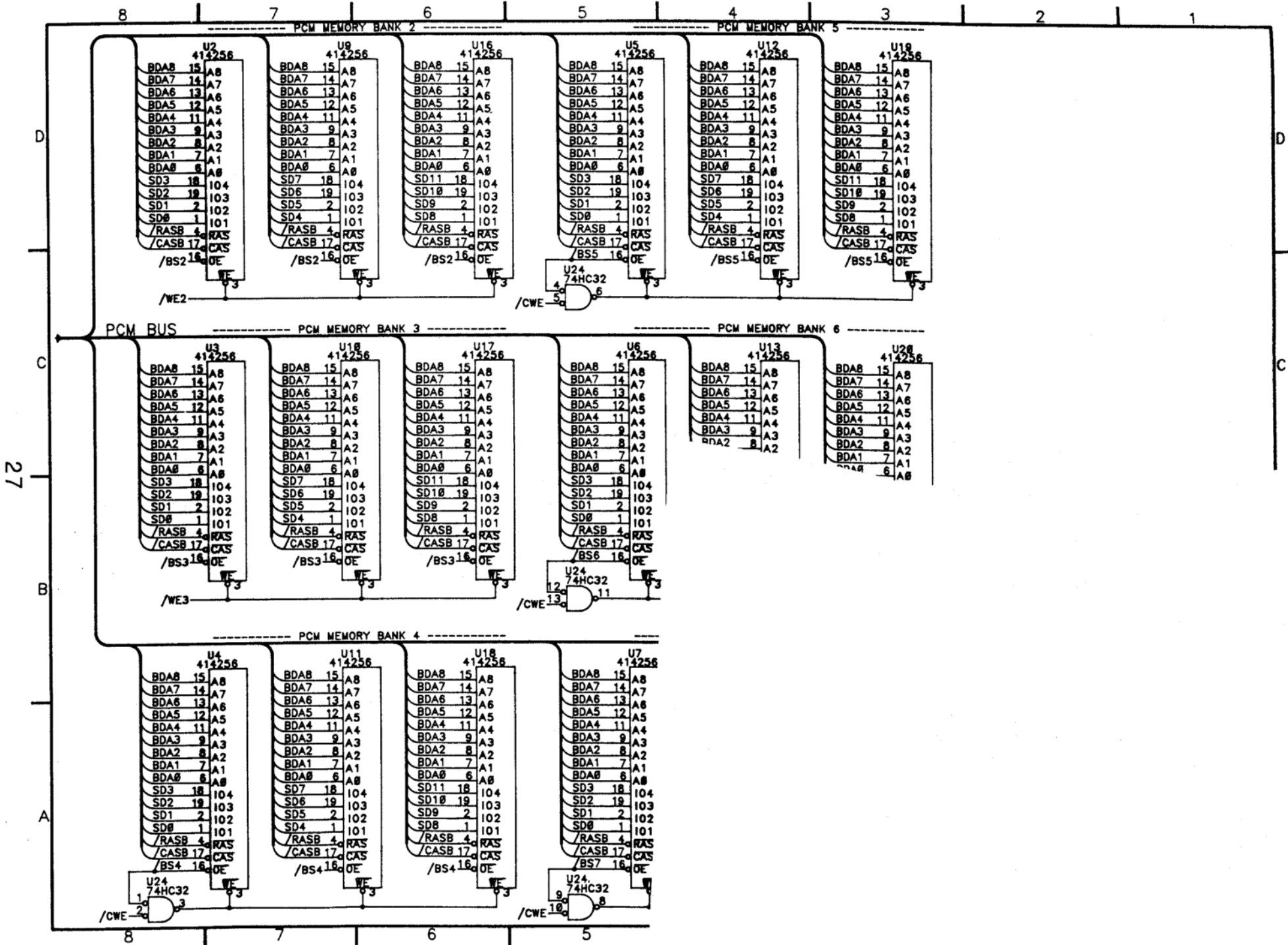6"

shield

2   1/4"
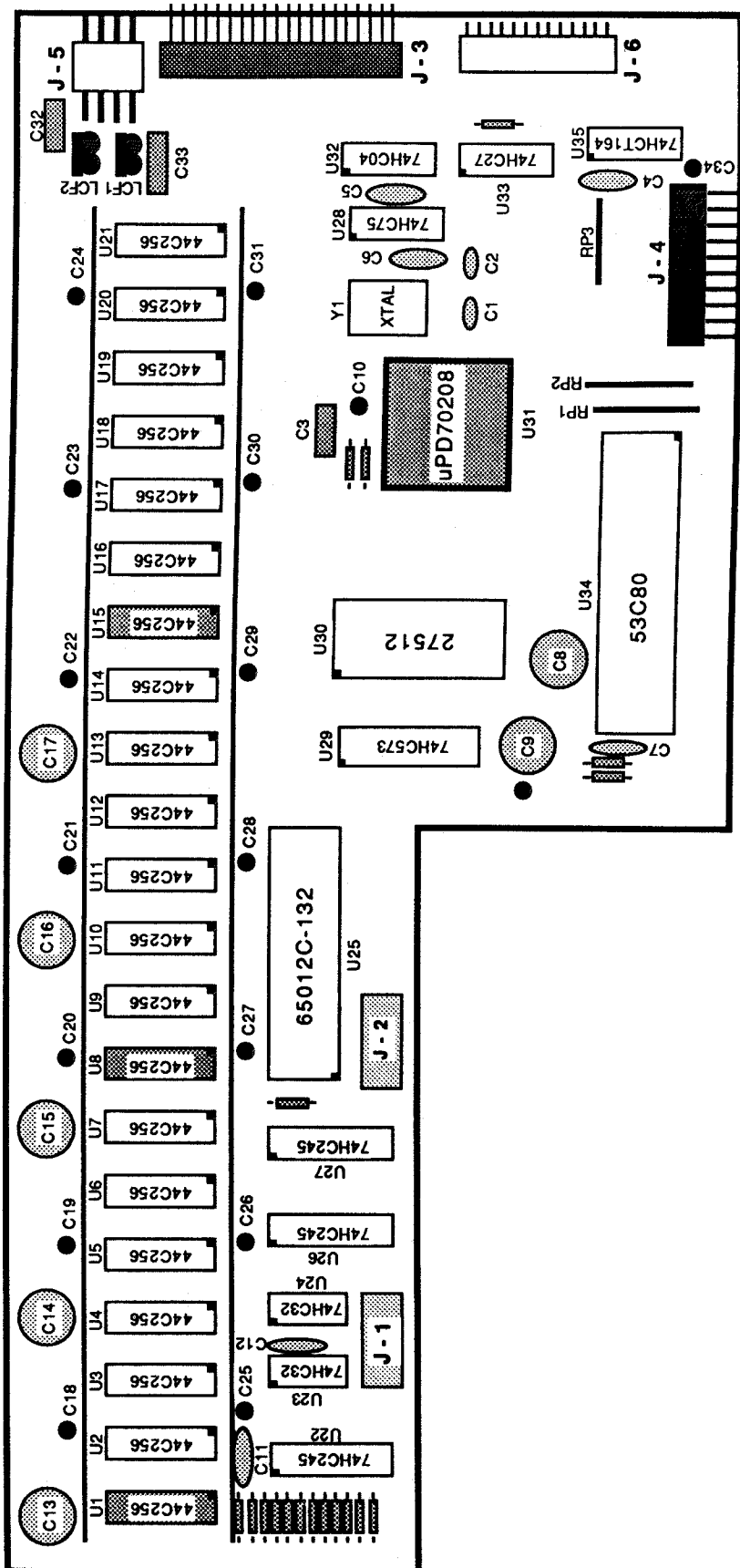
Diagram 12

Diagram 12
DSSMSRK PC Board Layout

PARTS LIST

Item	Qty	Ref Des.	Description
1	14	C4-12, C31-35	capacitor, .1μF
2	2	C1, C2	capacitor, 15pF
3	14	C17-C30	capacitor, 1 μF 6.3V
4	2	C15-C16	capacitor, 100μF 6.3V
5	1	C3	capacitor, 10μF 6.3V
6	1	Y1	crystal, 16 mHz
7	1	D1	diode 1N4148
8	2	LCF1, LCF2	EMI filter
9	11	R1-R11	resistor, 33 Ω
10	4	R12,R14-R16	resistor, 10K Ω
11	1	R13	resistor, 100K Ω
12	3	RP1-RP3	resistor, SIP terminator
13	1	U30	IC 27512
14	2		IC 27256
15	3	U1,U8,U15	IC M5M44C256P-15 Ram
16	1		IC μPD4364C-15 Ram
17	1	U34	IC 53C80
18	1	U32	IC 74HC04
19	1	U33	IC 74HC27
20	2	U23-U24	IC 74HC32
21	1	U28	IC 74HC75
21	1	U35	IC 74HCT164
22	3	U22,U26-U27	IC 74HC245
23	1	U29	IC 74HC573
24	1	U25	IC μPD65012C-132
25	1	U31	IC μPD70208
26	1	J5	header, 4 pin
27	1	J6	header, 12 pin
28	1	J4	header, 26 pin
29	1	J3	header, 40 pin
30	2	J1,J2	socket, DIP 16 pin .300 ctr
31	21		socket, DIP 20 pin .300 ctr
32	1		socket, DIP 28 pin .600 ctr
33	1		socket, DIP 40 pin .600 ctr
34	1		socket, DIP 48 pin .600 ctr
35	1		socket, PLCC 68 pin
36	1		PCB
37	2	P1, P2	cable assy., 16 conductor ribbon
38	1	P3	cable assy., 40 conductor ribbon
39	1	P4	cable assy., 26 conductor ribbon
40	1	P5	harness assy. , 4 conductor
41	1	P6	harness assy., 12 conductor
42	2		ground straps
43	2	B1,B2	bussbar
44	1		set PCB mounting hardware
45	1		owners manual
46	1		installation manual
47	1		SCSI finish plate with mounting kit

KORG USA
89 FROST ST. WESTBURY, NY

DSS1 RETROFIT

D		DSSMSRK	REV C

DATE: SEPT. 13, 1987   SHEET 1 OF 3

MANUFACTURING APPROVAL   DATE

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BULK CAPS FOR RAM UPPER BUS BAR

C18 1UF, C19 1UF, C20 1UF, C21 1UF, C22 1UF, C23 1UF, C24 1UF
C13 .1, C14 .1, C15 .1, C16 .1, C17 .1

----------- PCM MEMORY BANK 1 ----------- PCM BUS

U26 74HC245
U27 74HC245
U22 74HC245
U1 414256
U8 414256
U15 414256
U25 UPD65012C-132
U32 74HC04
U23 74HC32

NOTE:
POWER AND GROUND DISTRIBUTED
TO PCM MEMORY CIRCUIT VIA UPPER
AND LOWER BUS BARS.

R12 10K
R1 33, R2 33, R3 33, R4 33, R5 33, R6 33, R7 33, R8 33, R9 33, R10 33, R11 33

/RASB, /CASB, BDA0, BDA1, BDA2, BDA3, BDA4, BDA5, BDA6, BDA7, BDA8

CF1, CF2
C32 100UF TANT
C33 100UF TANT
C34 1UF

J5: +5, GND, GND, +5

C4 .1, C5 .1, C6 .1, C7 .1, C8 .1
C9 .1, C10 .1, C11 .1, C12 .1

BULK CAPS FOR RAM LOWER BUS BAR
C25 1UF, C26 1UF, C27 1UF, C28 1UF, C29 1UF, C30 1UF, C31 1UF

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