



Apple Computer Schematics ... About Me

Here are a set of schematics for several computers and computer peripherals from Apple Computer.

Schematics were obtained from official Apple Computer micro-fische cards that originated from the Apple Computer factory in Carrollton Texas (just north of Dallas). These card images were scanned into digital TIFF graphic files.

Schematics cover the following:

- Apple Lisa computer
- Apple Macintosh computer
- Apple II Monitor
- Apple II Mouse
- Apple ImageWriter Printer
- Apple ProFile Hard Drive (5MB or 10MB)
- Apple Widget Hard Drive (10MB)
- Apple 3.5" 400K Micro-Floppy Disk Drive

Schematics were edited, renamed, and placed into folders by DTC for clarity sake (they were in a simple linear arrangement which was not very reader friendly). Schematic TIFF files were also converted to be in an uncompressed TIFF format so that they could be more quickly opened (the original compressed TIFF files have extension .TIF, the uncompressed files have extension .TIFF).

Each schematic was also saved as in PDF format for Adobe Acrobat Reader use. These PDF files should be the most portable and also print fully on whatever size paper you choose.

Catalogs of what appear in this set follow.



LISA Microfiche

Lisa/Mac128k/peripherals Microfiche

050-0074-C SCH SWEEP/PWR SUPPLY SHT 3-3 0044
 050-0074-C SCH SWEEP/PWR SUPPLY SHT 2-3 0044
 050-0074-C SCH SWEEP/PWR SUPPLY SHT 1-3 0044

 630-0102-D ASSY PCH UNTSTD SWEEP/PWR SPLY 0244
 630-0102-01-D ASSY PCH UNTSTD SWEEP/PWR SPLY 0244
 050-0073-C SCHEMATIC, MAIN LOGIC BRD 3138

 620-6179-A ASSY TOP 1/2 MB LISA 2/10 0244
 620-5145-A SUBASSY DSK DR MODULE, LISA 2 0244
 620-0140-A ASSY PROFILE CONTRLR, LISA-2.0 0044
 620-5115-H SUBASSY VIDEO ONE LISA 3433
 050-5028-C SCH.R/W BD, WIDGET SHT 1-4 3533
 677-0140-C ASSY PCH UNTSTD READ/WRITE BD, WIDGET 3533
 677-0103-C ASSY PCB UNTSTD MOTHER BD, WIDGET 3533
 050-5028-C SCH.R/W BD, WIDGET SHT 3-4 3533
 050-5028-C SCH.R/W BD, WIDGET SHT 4-4 3533
 656-6121-A ASSY CHASSIS PROFILE-B SHT 1-3 3533
 050-5028-C SCH.R/W BD, WIDGET SHT 2-4 3533
 620-5130-A SUBASSY VIDEO ONE LISA 2.0 3493
 620-5129-A SUBASSY CHASSIS TWO LISA 2.0 SHT 1-2 3493
 620-5129-A SUBASSY CHASSIS TWO LISA 2.0 SHT 2-2 3493
 620-5132-A SUBASSY CD CAGE LISA 2.0 3493
 620-5128-A SUBASSY CHASSIS ONE-A LISA 2.0 3473

There are 2 of the following:

815-5032-A COUNTERWEIGHT ARM WIDGET 3413
 815-5032-A COUNTERWEIGHT ARM WIDGET 3413

 677-6000-A ASSY, HEAD/DISK WIDGET SHT 1-2 3413
 677-6000-A ASSY, HEAD/DISK WIDGET SHT 2-2 3413
 677-5016-A SUBASSY HEAD/DISK WIDGET SHT 1-2 3413
 677-5016-A SUBASSY HEAD/DISK WIDGET SHT 2-2 3413
 620-0142-D ASSY, PCB I/O BRD LISA-2.0 3363
 677-5013-A SUBASSY ARM WIDGET SHT 2-2 3153
 677-5013-A SUBASSY ARM WIDGET SHT 1-2 3153
 050-5023-B SCH.MOTOR CONTROL WIDGET 3153
 677-0103-B ASSY, PCH UNTSTD MOTHERBD, WIDGET 3113
 050-5024-B SCHEMATIC MOTHERBRD, WIDGET SHT 3-3 3113
 050-5024-B SCHEMATIC MOTHERBRD, WIDGET SHT 2-3 3113
 050-5024-B SCHEMATIC MOTHERBRD, WIDGET SHT 1-3 3113
 620-5134-A SUBASSY CHASSIS THREE LISA, 2.0 0064
 620-5133-A SUBASSY DSK DR 10 MB LISA 0064
 620-5136-A SUBASSY BEZEL LISA, 2.0 0064
 620-5135-A SUBASSY CHASSIS FOUR LISA, 2.0 0064
 620-0019-L ASSY, PCB CPU BRD LISA 0104
 590-0207-B CABLE ASSY MOTHERBD LISA CONTRLR SHT 1-2 0204
 590-0167-A ASSY INTERNAL CABLE 3 1/2" DR 0204
 620-5203-L SUBASSY POWER SUPPLY LISA 2233
 620-0119-J ASSY PCB CPU 8D LISA 2233
 620-0120-P ASSEMBLY PCB PWR SUPPLY 8A 115V LISA 2233
 620-5104-D SUBASSY CARD CAGE LISA 2233
 620-8108-B ASSY F/G LISA 2233
 050-5006-E SCH. CONTRLR, PROFILE 3253
 050-5005-H SCH ANALOG BD PROFILE 0244
 050-5027-A SCHEMATIC CNTRL LISA-WIDGET 3543
 050-4034-A SCH PROFILE CONTRLR LISA 2.0 0044
 050-4019-A SCH.PWR.SUPP.UNIV.LISA 2213
 050-4011-J SCH. PWR.SUPP.LISA 2213

Page 1



LISA Microfiche

620-5103-R SUBASSY POWER SUPPLY LISA 2233
620-0220-J ASSEMBLY PCB PMR SUPPLY 8A 220V LISA 2233
699-0285-A DSK DRIVE 3 1/2 INCH SHT 1-4 1-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 5-8 2-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 9-12 3-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 13-16 4-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 17-20 5-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 21-24 6-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 25-28 7-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 29-32 8-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 33-36 9-10 0204
699-0285-A DSK DRIVE 3 1/2 INCH SHT 37-38 10-10 0204
050-0089-A SCH.MAIN LOGIC BD IMAGEWRITER SHT 1-2 3273
050-0089-A SCH.MAIN LOGIC BD IMAGEWRITER SHT 2-2 3273
699-0201-A ASSY MAIN ELECTRNC MONITOR II 3133
699-0165-A ASSY DWG, MONITOR II GRN.115V 3133
050-5020-A SCH. MAIN ELECTRNC MONITOR II DOM 3133
050-0073-C SCHEMATIC, MAIN LOGIC BRD 3183
050-5028-B SCH.R/W BD, WIDGET SHT 1-4 3253
050-5028-B SCH.R/W BD, WIDGET SHT 2-4 3253
050-5028-B SCH.R/W BD, WIDGET SHT 3-4 3253
050-5028-B SCH.R/W BD, WIDGET SHT 4-4 3253
050-4009-H SCHEMATIC CPU LISA SHT 1-5 2233
050-4009-H SCHEMATIC CPU LISA SHT 2-5 2233
050-4009-H SCHEMATIC CPU LISA SHT 3-5 2233
050-4009-H SCHEMATIC CPU LISA SHT 4-5 2233
050-4009-H SCHEMATIC CPU LISA SHT 5-5 2233
620-0117-P ASSY PCB, SYS I/O LISA 0244
620-0142-E ASSY PCH I/O BD LISA-2.0 0244
[6]20-0121-J ASSY, PCB VIDEO BRD LISA 3433
620-0121-H ASSY, PCB VIDEO BRD LISA 3363
050-4043-A SCH PCB LISA LITE ADAPTER 0044
050-4012-H SCHEMATIC VIDEO BRD LISA 3433
050-0101-A SCH-A2 MOUSE BD 0914
620-0135-B ASSY PCB PARALLEL I/F LISA 0244
620-0135-B ASSEMBLY PCB PARALLEL I/F LISA 2233



Here's a complete listing of all the files in this collection with their new ordering by DTC:

```

':! 21 FEBRUARY 2002:'
':! APPLE COMPUTER SCHEMATICS:'
':AppleSchematics - 400K FLOPPY:'
':AppleSchematics - APPLE 2 MAUS:'
':AppleSchematics - APPLE 2 MON:'
':AppleSchematics - IMAGEWRITER:'
':AppleSchematics - LISA:'
':AppleSchematics - MACINTOSH:'
':AppleSchematics - PROFILE HD:'
':AppleSchematics - WIDGET HD:'
':AppleSchematics TIFF Originals:'
':AppleSchematics About Me.msw'
':AppleSchematics Catalog 1.pdf'
':AppleSchematics Catalog 1.TIFF'
':AppleSchematics Catalog 2.pdf'
':AppleSchematics Catalog 2.TIFF'

':! 21 FEBRUARY 2002:'

':! APPLE COMPUTER SCHEMATICS:'

APPLE_590-0167-A-1of1.pdf
APPLE_590-0167-A-1of1.TIFF

':AppleSchematics - 400K FLOPPY:APPLE 3.5 400K DRIVE SPEC EDIT:'
APPLE_699-0285-A-01of39.TIFF
APPLE_699-0285-A-02of39.TIFF
APPLE_699-0285-A-03of39.TIFF
APPLE_699-0285-A-04of39.TIFF
APPLE_699-0285-A-05of39.TIFF
APPLE_699-0285-A-06of39.TIFF
APPLE_699-0285-A-07of39.TIFF
APPLE_699-0285-A-08of39.TIFF
APPLE_699-0285-A-09of39.TIFF
APPLE_699-0285-A-10of39.TIFF
APPLE_699-0285-A-11of39.TIFF
APPLE_699-0285-A-12of39.TIFF
APPLE_699-0285-A-13of39.TIFF
APPLE_699-0285-A-14of39.TIFF
APPLE_699-0285-A-15of39.TIFF
APPLE_699-0285-A-16of39.TIFF
APPLE_699-0285-A-17of39.TIFF
APPLE_699-0285-A-18of39.TIFF
APPLE_699-0285-A-19of39.TIFF
APPLE_699-0285-A-20of39.TIFF
APPLE_699-0285-A-21of39.TIFF
APPLE_699-0285-A-22of39.TIFF

':AppleSchematics - 400K FLOPPY:'
':APPLE 3.5 400K DRIVE SPEC EDIT:'
':APPLE 3.5 400K DRIVE SPEC ORIG:'
':APPLE_699-0285-A PDFs:'

```



APPLE_699-0285-A-23of39.TIFF
APPLE_699-0285-A-24of39.TIFF
APPLE_699-0285-A-25of39.TIFF
APPLE_699-0285-A-26of39.TIFF
APPLE_699-0285-A-27of39.TIFF
APPLE_699-0285-A-28of39.TIFF
APPLE_699-0285-A-29of39.TIFF
APPLE_699-0285-A-30of39.TIFF
APPLE_699-0285-A-31of39.TIFF
APPLE_699-0285-A-32of39.TIFF
APPLE_699-0285-A-33of39.TIFF
APPLE_699-0285-A-34of39.TIFF
APPLE_699-0285-A-35of39.TIFF
APPLE_699-0285-A-36of39.TIFF
APPLE_699-0285-A-37of39.TIFF
APPLE_699-0285-A-38of39.TIFF
APPLE_699-0285-A-39of39.TIFF

':AppleSchematics - 400K FLOPPY:APPLE 3.5 400K DRIVE SPEC ORIG:'
';APPLE_699-0285-A ORIG PDFs:'

APPLE_699-0285-A-01of39o.TIFF
APPLE_699-0285-A-05of39o.TIFF
APPLE_699-0285-A-09of39o.TIFF
APPLE_699-0285-A-13of39o.TIFF
APPLE_699-0285-A-17of39o.TIFF
APPLE_699-0285-A-21of39o.TIFF
APPLE_699-0285-A-25of39o.TIFF
APPLE_699-0285-A-29of39o.TIFF
APPLE_699-0285-A-33of39o.TIFF
APPLE_699-0285-A-37of39o.TIFF
APPLE_699-0285-A-39of39o.TIFF

':AppleSchematics - 400K FLOPPY:APPLE 3.5 400K DRIVE SPEC ORIG:APPLE_699-
0285-A ORIG PDFs:'

APPLE_699-0285-A-01of39o.pdf
APPLE_699-0285-A-05of39o.pdf
APPLE_699-0285-A-09of39o.pdf
APPLE_699-0285-A-13of39o.pdf
APPLE_699-0285-A-17of39o.pdf
APPLE_699-0285-A-21of39o.pdf
APPLE_699-0285-A-25of39o.pdf
APPLE_699-0285-A-29of39o.pdf
APPLE_699-0285-A-33of39o.pdf
APPLE_699-0285-A-37of39o.pdf
APPLE_699-0285-A-39of39o.pdf

':AppleSchematics - 400K FLOPPY:APPLE_699-0285-A PDFs:'

APPLE_699-0285-A-01of39.pdf
APPLE_699-0285-A-02of39.pdf
APPLE_699-0285-A-03of39.pdf
APPLE_699-0285-A-04of39.pdf
APPLE_699-0285-A-05of39.pdf
APPLE_699-0285-A-06of39.pdf
APPLE_699-0285-A-07of39.pdf



APPLE_699-0285-A-08of39.pdf
APPLE_699-0285-A-09of39.pdf
APPLE_699-0285-A-10of39.pdf
APPLE_699-0285-A-11of39.pdf
APPLE_699-0285-A-12of39.pdf
APPLE_699-0285-A-13of39.pdf
APPLE_699-0285-A-14of39.pdf
APPLE_699-0285-A-15of39.pdf
APPLE_699-0285-A-16of39.pdf
APPLE_699-0285-A-17of39.pdf
APPLE_699-0285-A-18of39.pdf
APPLE_699-0285-A-19of39.pdf
APPLE_699-0285-A-20of39.pdf
APPLE_699-0285-A-21of39.pdf
APPLE_699-0285-A-22of39.pdf
APPLE_699-0285-A-23of39.pdf
APPLE_699-0285-A-24of39.pdf
APPLE_699-0285-A-25of39.pdf
APPLE_699-0285-A-26of39.pdf
APPLE_699-0285-A-27of39.pdf
APPLE_699-0285-A-28of39.pdf
APPLE_699-0285-A-29of39.pdf
APPLE_699-0285-A-30of39.pdf
APPLE_699-0285-A-31of39.pdf
APPLE_699-0285-A-32of39.pdf
APPLE_699-0285-A-33of39.pdf
APPLE_699-0285-A-34of39.pdf
APPLE_699-0285-A-35of39.pdf
APPLE_699-0285-A-36of39.pdf
APPLE_699-0285-A-37of39.pdf
APPLE_699-0285-A-38of39.pdf
APPLE_699-0285-A-39of39.pdf

'':AppleSchematics - APPLE 2 MAUS:'
':APPLE 2 MOUSE SCHEMATICS PDFs:'

APPLE_050-0101-A-1of1.TIFF

'':AppleSchematics - APPLE 2 MAUS:APPLE 2 MOUSE SCHEMATICS PDFs:'
APPLE_050-0101-A-1of1.pdf

'':AppleSchematics - APPLE 2 MON:'

'':APPLE 2 MONITOR SCHEMATICS PDFs:'
APPLE_050-5020-A-1of1.TIFF
APPLE_699-0165-A-1of1.TIFF

'':AppleSchematics - APPLE 2 MON:APPLE 2 MONITOR SCHEMATICS PDFs:'
APPLE_050-5020-A-1of1.pdf
APPLE_699-0165-A-1of1.pdf

'':IMAGEWRITER SCHEMATICS PDFs:'
APPLE_050-0089-A-1of2.TIFF
APPLE_050-0089-A-2of2.TIFF

'':AppleSchematics - IMAGEWRITER:'



' :AppleSchematics - IMAGEWRITER:IMAGewriter SCHEMATICS PDFs:'
APPLE_050-0089-A-1of2.pdf
APPLE_050-0089-A-2of2.pdf

' :AppleSchematics - LISA:'
' :LISA SCHEMATICS PDFs:'

APPLE_050-4009-H-1of5.TIFF
APPLE_050-4009-H-2of5.TIFF
APPLE_050-4009-H-3of5.TIFF
APPLE_050-4009-H-4of5.TIFF
APPLE_050-4009-H-5of5.TIFF
APPLE_050-4011-J-1of1.TIFF
APPLE_050-4012-H-10.TIFF
APPLE_050-4019-A-1of1.TIFF
APPLE_050-4043-A-1of1.TIFF
APPLE_590-0207-B-1of2.TIFF
APPLE_590-0207-B-2of2.TIFF
APPLE_620-0117-P-1of1.TIFF
APPLE_620-0119-J-1of1.TIFF
APPLE_620-0119-L-1of1.TIFF
APPLE_620-0120-P-1of1.TIFF
APPLE_620-0121-H-1of1.TIFF
APPLE_620-0135-B-1of1.TIFF
APPLE_620-0135-B-1of1b.TIFF
APPLE_620-0142-D-1of1.TIFF
APPLE_620-0142-E-1of1.TIFF
APPLE_620-0212-J-1of1.TIFF
APPLE_620-0220-J-1of1.TIFF
APPLE_620-5103-R-1of1.TIFF
APPLE_620-5104-D-1of1.TIFF
APPLE_620-5115-H-1of1.TIFF
APPLE_620-5128-A-1of1.TIFF
APPLE_620-5129-A-1of2.TIFF
APPLE_620-5129-A-2of2.TIFF
APPLE_620-5130-A-1of1.TIFF
APPLE_620-5132-A-1of1.TIFF
APPLE_620-5133-A-1of1.TIFF
APPLE_620-5134-A-1of1.TIFF
APPLE_620-5135-A-1of1.TIFF
APPLE_620-5136-A-1of1.TIFF
APPLE_620-5145-A-1of1.TIFF
APPLE_620-5203-L-1of1.TIFF
APPLE_620-6179-A-1of1.TIFF
APPLE_620-8108-B-1of1.TIFF

' :AppleSchematics - LISA:LISA SCHEMATICS PDFs:'

APPLE_050-4009-H-1of5.pdf
APPLE_050-4009-H-2of5.pdf
APPLE_050-4009-H-3of5.pdf
APPLE_050-4009-H-4of5.pdf
APPLE_050-4009-H-5of5.pdf
APPLE_050-4011-J-1of1.pdf
APPLE_050-4012-H-10.pdf
APPLE_050-4019-A-1of1.pdf



APPLE_050-4043-A-1of1.pdf
APPLE_590-0207-B-1of2.pdf
APPLE_590-0207-B-2of2.pdf
APPLE_620-0117-P-1of1.pdf
APPLE_620-0119-J-1of1.pdf
APPLE_620-0119-L-1of1.pdf
APPLE_620-0120-P-1of1.pdf
APPLE_620-0121-H-1of1.pdf
APPLE_620-0135-B-1of1.pdf
APPLE_620-0135-B-1of1b.pdf
APPLE_620-0142-D-1of1.pdf
APPLE_620-0142-E-1of1.pdf
APPLE_620-0212-J-1of1.pdf
APPLE_620-0220-J-1of1.pdf
APPLE_620-5103-R-1of1.pdf
APPLE_620-5104-D-1of1.pdf
APPLE_620-5115-H-1of1.pdf
APPLE_620-5128-A-1of1.pdf
APPLE_620-5129-A-1of2.pdf
APPLE_620-5129-A-2of2.pdf
APPLE_620-5130-A-1of1.pdf
APPLE_620-5132-A-1of1.pdf
APPLE_620-5133-A-1of1.pdf
APPLE_620-5134-A-1of1.pdf
APPLE_620-5135-A-1of1.pdf
APPLE_620-5136-A-1of1.pdf
APPLE_620-5145-A-1of1.pdf
APPLE_620-5203-L-1of1.pdf
APPLE_620-6179-A-1of1.pdf
APPLE_620-8108-B-1of1.pdf

':AppleSchematics - MACINTOSH:'
'':MACINTOSH SCHEMATICS PDFs:'

APPLE_050-0073-C-1of1.TIFF
APPLE_050-0073-C-1of1b.TIFF
APPLE_050-0073-C-1of1c.TIFF
APPLE_050-0074-C-1of3.TIFF
APPLE_050-0074-C-2of3.TIFF
APPLE_050-0074-C-3of3.TIFF
APPLE_630-0102-01-D-1of1.TIFF
APPLE_630-0102-D-1of1.TIFF

':AppleSchematics - MACINTOSH:MACINTOSH SCHEMATICS PDFs:'

APPLE_050-0073-C-1of1.pdf
APPLE_050-0073-C-1of1b.pdf
APPLE_050-0073-C-1of1c.pdf
APPLE_050-0074-C-1of3.pdf
APPLE_050-0074-C-2of3.pdf
APPLE_050-0074-C-3of3.pdf
APPLE_630-0102-01-D-1of1.pdf
APPLE_630-0102-D-1of1.pdf

':PROFILE SCHEMATICS PDFs:'
'':AppleSchematics - PROFILE HD:'



APPLE_050-4034-A-1of1.TIFF
APPLE_050-5005-H-1of1.TIFF
APPLE_050-5006-E-1of1.TIFF
APPLE_620-0140-A-1of1.TIFF
APPLE_656-6121-A-1of3.TIFF

':AppleSchematics - PROFILE HD:PROFILE SCHEMATICS PDFs:'

':AppleSchematics - WIDGET HD:'

':WIDGET SCHEMATICS PDFs:'

APPLE_050-5023-B-1of1.TIFF
APPLE_050-5024-B-1of3.TIFF
APPLE_050-5024-B-2of3.TIFF
APPLE_050-5024-B-3of3.TIFF
APPLE_050-5027-A-1of1.TIFF
APPLE_050-5028-B-1of4.TIFF
APPLE_050-5028-B-2of4.TIFF
APPLE_050-5028-B-3of4.TIFF
APPLE_050-5028-B-4of4.TIFF
APPLE_050-5028-C-1of4.TIFF
APPLE_050-5028-C-2of4.TIFF
APPLE_050-5028-C-3of4.TIFF
APPLE_050-5028-C-4of4.TIFF
APPLE_677-0103-B-1of1.TIFF
APPLE_677-0103-C-1of1.TIFF
APPLE_677-0104-C-1of1.TIFF
APPLE_677-5013-A-1of2.TIFF
APPLE_677-5013-A-2of2.TIFF
APPLE_677-5016-A-1of2.TIFF
APPLE_677-5016-A-2of2.TIFF
APPLE_677-6000-A-1of2.TIFF
APPLE_677-6000-A-2of2.TIFF
APPLE_815-5032-A-1of1.TIFF
APPLE_815-5032-A-1of1b.TIFF

':AppleSchematics - WIDGET HD:WIDGET SCHEMATICS PDFs:'

APPLE_050-5023-B-1of1.pdf
APPLE_050-5024-B-1of3.pdf
APPLE_050-5024-B-2of3.pdf
APPLE_050-5024-B-3of3.pdf
APPLE_050-5027-A-1of1.pdf
APPLE_050-5028-B-1of4.pdf
APPLE_050-5028-B-2of4.pdf
APPLE_050-5028-B-3of4.pdf
APPLE_050-5028-B-4of4.pdf
APPLE_050-5028-C-1of4.pdf
APPLE_050-5028-C-2of4.pdf
APPLE_050-5028-C-3of4.pdf
APPLE_050-5028-C-4of4.pdf
APPLE_677-0103-B-1of1.pdf
APPLE_677-0103-C-1of1.pdf
APPLE_677-0104-C-1of1.pdf
APPLE_677-5013-A-1of2.pdf
APPLE_677-5013-A-2of2.pdf



APPLE_677-5016-A-1of2.pdf
APPLE_677-5016-A-2of2.pdf
APPLE_677-6000-A-1of2.pdf
APPLE_677-6000-A-2of2.pdf
APPLE_815-5032-A-1of1.pdf
APPLE_815-5032-A-1of1b.pdf

':AppleSchematics TIFF Originals:'

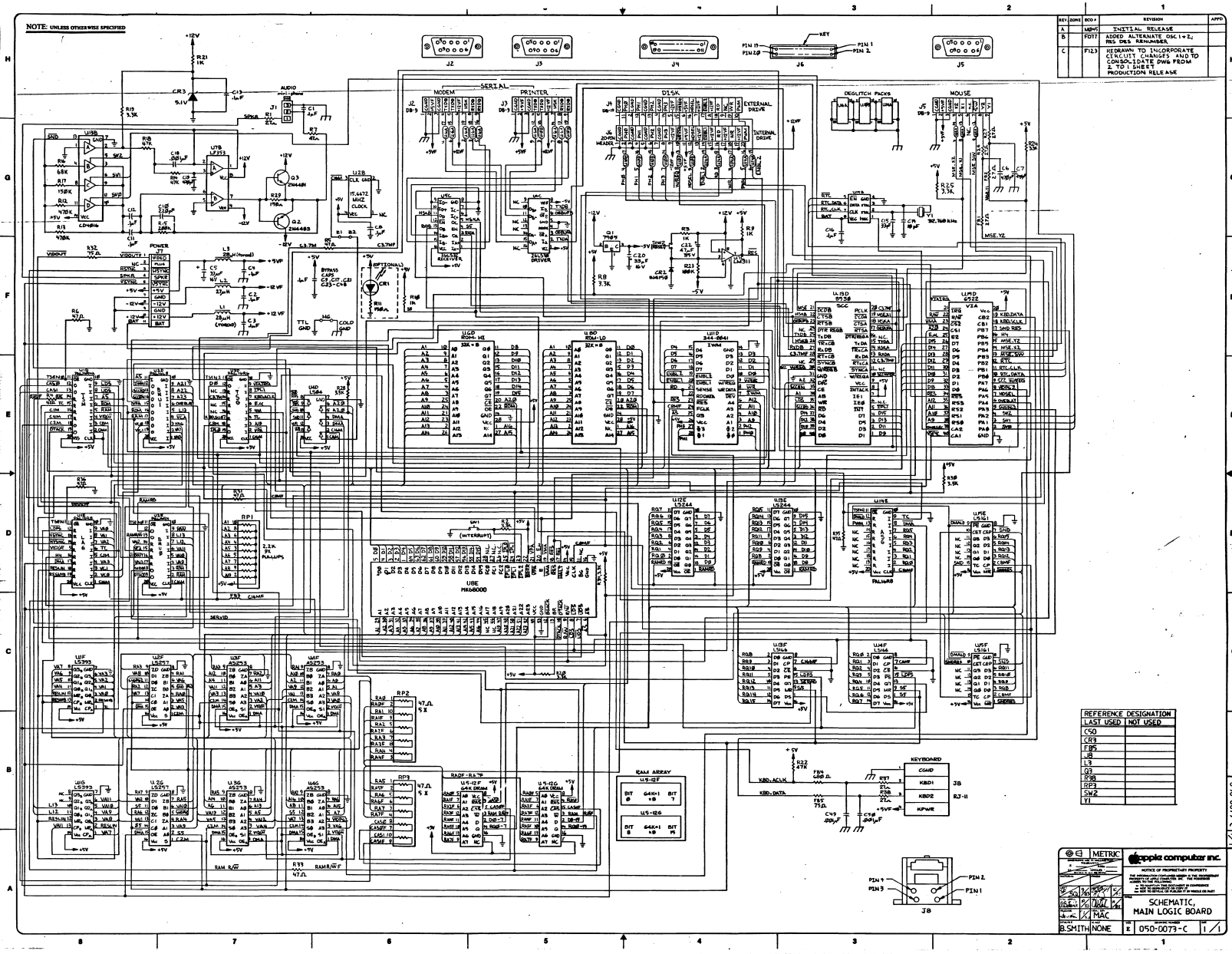
050-00~1.TIF
050-00~2.TIF
050-00~3.TIF
050-00~4.TIF
050-00~5.TIF
050-00~6.TIF
050-00~7.TIF
050-00~8.TIF
050-01~1.TIF
050-40~1.TIF
050-40~2.TIF
050-40~3.TIF
050-40~4.TIF
050-40~5.TIF
050-40~6.TIF
050-40~7.TIF
050-40~8.TIF
050-40~9.TIF
050-4~10.TIF
050-50~1.TIF
050-50~2.TIF
050-50~3.TIF
050-50~4.TIF
050-50~5.TIF
050-50~6.TIF
050-50~7.TIF
050-50~8.TIF
050-50~9.TIF
050-5~10.TIF
050-5~11.TIF
050-5~12.TIF
050-5~13.TIF
050-5~14.TIF
050-5~15.TIF
050-5~16.TIF
590-01~1.TIF
590-02~1.TIF
590-02~2.TIF
620-01~1.TIF
620-01~2.TIF
620-01~3.TIF
620-01~4.TIF
620-01~5.TIF
620-01~6.TIF
620-01~7.TIF
620-01~8.TIF



620-01~9.TIF
620-02~1.TIF
620-0~10.TIF
620-0~11.TIF
620-51~1.TIF
620-51~2.TIF
620-51~3.TIF
620-51~4.TIF
620-51~5.TIF
620-51~6.TIF
620-51~7.TIF
620-51~8.TIF
620-51~9.TIF
620-52~1.TIF
620-5~10.TIF
620-5~11.TIF
620-5~12.TIF
620-5~13.TIF
620-61~1.TIF
620-81~1.TIF
630-01~1.TIF
630-01~2.TIF
656-61~1.TIF
677-01~1.TIF
677-01~2.TIF
677-01~3.TIF
677-50~1.TIF
677-50~2.TIF
677-50~3.TIF
677-50~4.TIF
677-60~1.TIF
677-60~2.TIF
699-01~1.TIF
699-02~1.TIF
699-02~2.TIF
699-02~3.TIF
699-02~4.TIF
699-02~5.TIF
699-02~6.TIF
699-02~7.TIF
699-02~8.TIF
699-02~9.TIF
699-0~11.TIF
699-0~12.TIF
815-50~1.TIF
815-50~2.TIF

End of Document



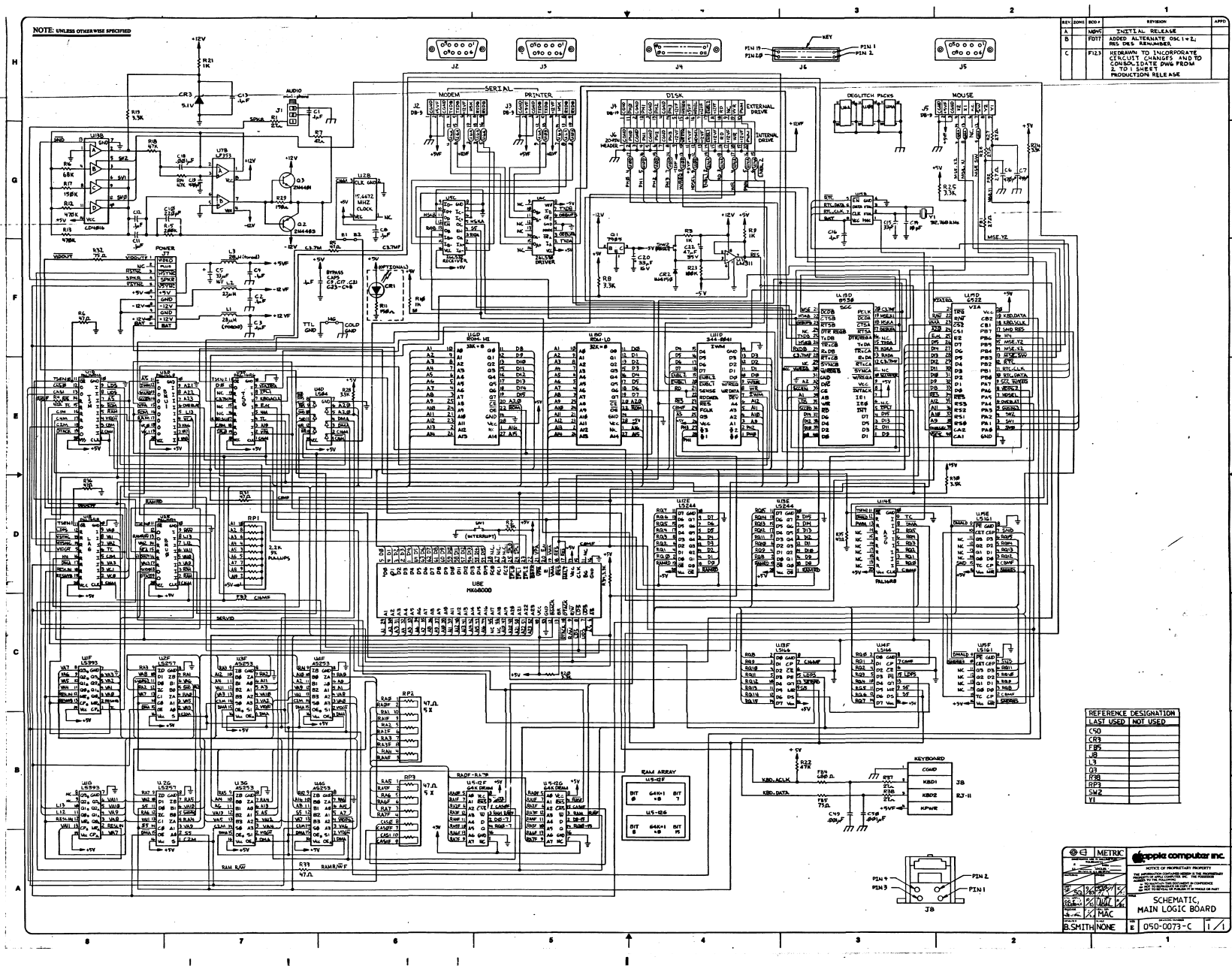


| REV | DATE | BY | REVISION | APP'D |
|-----|------|-----|--|-------|
| 1 | 1/80 | BSM | INITIAL RELEASE | |
| 2 | 1/80 | FOT | ADDED ALTERNATE OSC 1+2, REV SW. MESSAGE | |
| 3 | 1/80 | FIL | REDRAWN TO INCORPORATE CIRCUIT CHANGES AND TO CONSOLIDATE PWS FROM 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 | |

| REFERENCE DESIGNATION | LAST USED | NOT USED |
|-----------------------|-----------|----------|
| C00 | | |
| C01 | | |
| F00 | | |
| L00 | | |
| R00 | | |
| R01 | | |
| R02 | | |
| R03 | | |
| R04 | | |
| R05 | | |
| R06 | | |
| R07 | | |
| R08 | | |
| R09 | | |
| R10 | | |
| R11 | | |
| R12 | | |
| R13 | | |
| R14 | | |
| R15 | | |
| R16 | | |
| R17 | | |
| R18 | | |
| R19 | | |
| R20 | | |
| R21 | | |
| R22 | | |
| R23 | | |
| R24 | | |
| R25 | | |
| R26 | | |
| R27 | | |
| R28 | | |
| R29 | | |
| R30 | | |
| R31 | | |
| R32 | | |
| R33 | | |
| R34 | | |
| R35 | | |
| R36 | | |
| R37 | | |
| R38 | | |
| R39 | | |
| R40 | | |
| R41 | | |
| R42 | | |
| R43 | | |
| R44 | | |
| R45 | | |
| R46 | | |
| R47 | | |
| R48 | | |
| R49 | | |
| R50 | | |
| R51 | | |
| R52 | | |
| R53 | | |
| R54 | | |
| R55 | | |
| R56 | | |
| R57 | | |
| R58 | | |
| R59 | | |
| R60 | | |
| R61 | | |
| R62 | | |
| R63 | | |
| R64 | | |
| R65 | | |
| R66 | | |
| R67 | | |
| R68 | | |
| R69 | | |
| R70 | | |
| R71 | | |
| R72 | | |
| R73 | | |
| R74 | | |
| R75 | | |
| R76 | | |
| R77 | | |
| R78 | | |
| R79 | | |
| R80 | | |
| R81 | | |
| R82 | | |
| R83 | | |
| R84 | | |
| R85 | | |
| R86 | | |
| R87 | | |
| R88 | | |
| R89 | | |
| R90 | | |
| R91 | | |
| R92 | | |
| R93 | | |
| R94 | | |
| R95 | | |
| R96 | | |
| R97 | | |
| R98 | | |
| R99 | | |
| R100 | | |

NOTICE OF PROPRIETARY RIGHTS
 THIS DOCUMENT CONTAINS APPLE'S PROPRIETARY INFORMATION AND IS THE PROPERTY OF APPLE COMPUTER, INC. IT IS TO BE KEPT CONFIDENTIAL AND NOT REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE EXPRESS WRITTEN PERMISSION OF APPLE COMPUTER, INC.

SCHEMATIC
 MAIN LOGIC BOARD
 BSMITH/NONE 2 050-0073-C 1/1



| REV | DATE | BY | REVISION | APP'D |
|-----|------|-----|--|-------|
| A | | WPC | INITIAL RELEASE | |
| B | | PTW | ADDED ALTERNATE OSC 1+L RES DES. REVISIONS | |
| C | | F13 | REDESIGN TO INCORPORATE CIRCUIT CHANGES AND TO CONSOLIDATE SWM FROM 2 TO 1 SHEET PRODUCTION HOLE ASE | |

| REFERENCE DESIGNATION | LAST USED | NOT USED |
|-----------------------|-----------|----------|
| <S0 | | |
| C05 | | |
| F05 | | |
| J05 | | |
| Q05 | | |
| R05 | | |
| U05 | | |
| V05 | | |
| W05 | | |
| X05 | | |
| Y05 | | |
| Z05 | | |

NOTICE OF PROPRIETARY PRIVACY
 THIS DOCUMENT CONTAINS APPLE'S PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE EXPRESS WRITTEN PERMISSION OF APPLE COMPUTER, INC.

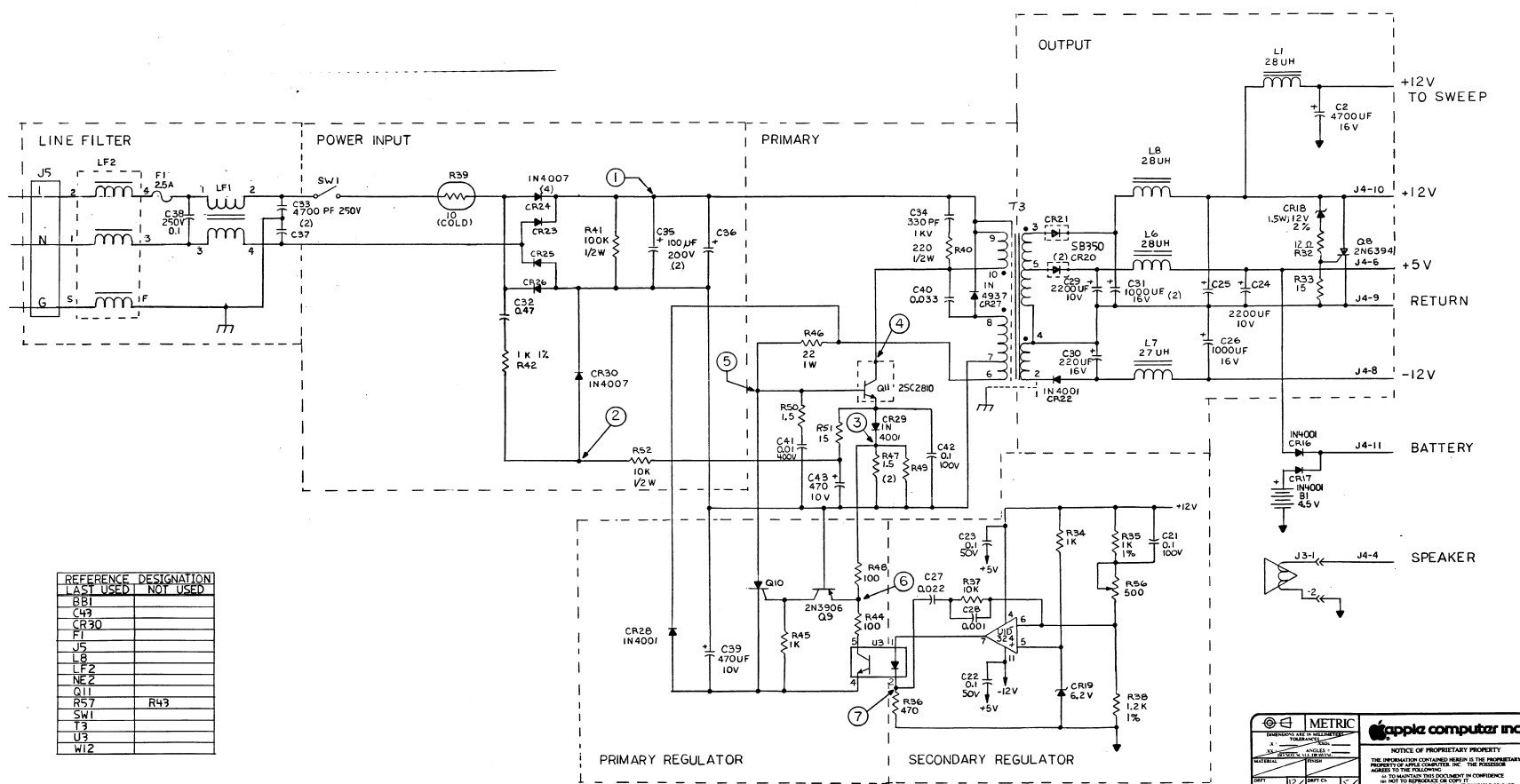
SCHEMATIC, MAIN LOGIC BOARD
 050-0073-C

B.SMITH:ONE

| REV | ZONE | ECO # | REVISION | APPD. |
|-----|------|-------|------------------------|-------|
| A | | M051 | INITIAL RELEASE | |
| B | | F084 | SILKSCREEN FILM CHANGE | 22c |
| C | | F183 | PAGE 2 - ADDED R53 | 22c |

NOTE: UNLESS OTHERWISE SPECIFIED

L ALL DIODES IN4150
 RESISTORS 1/4W 5%
 CAPACITANCE IN UF

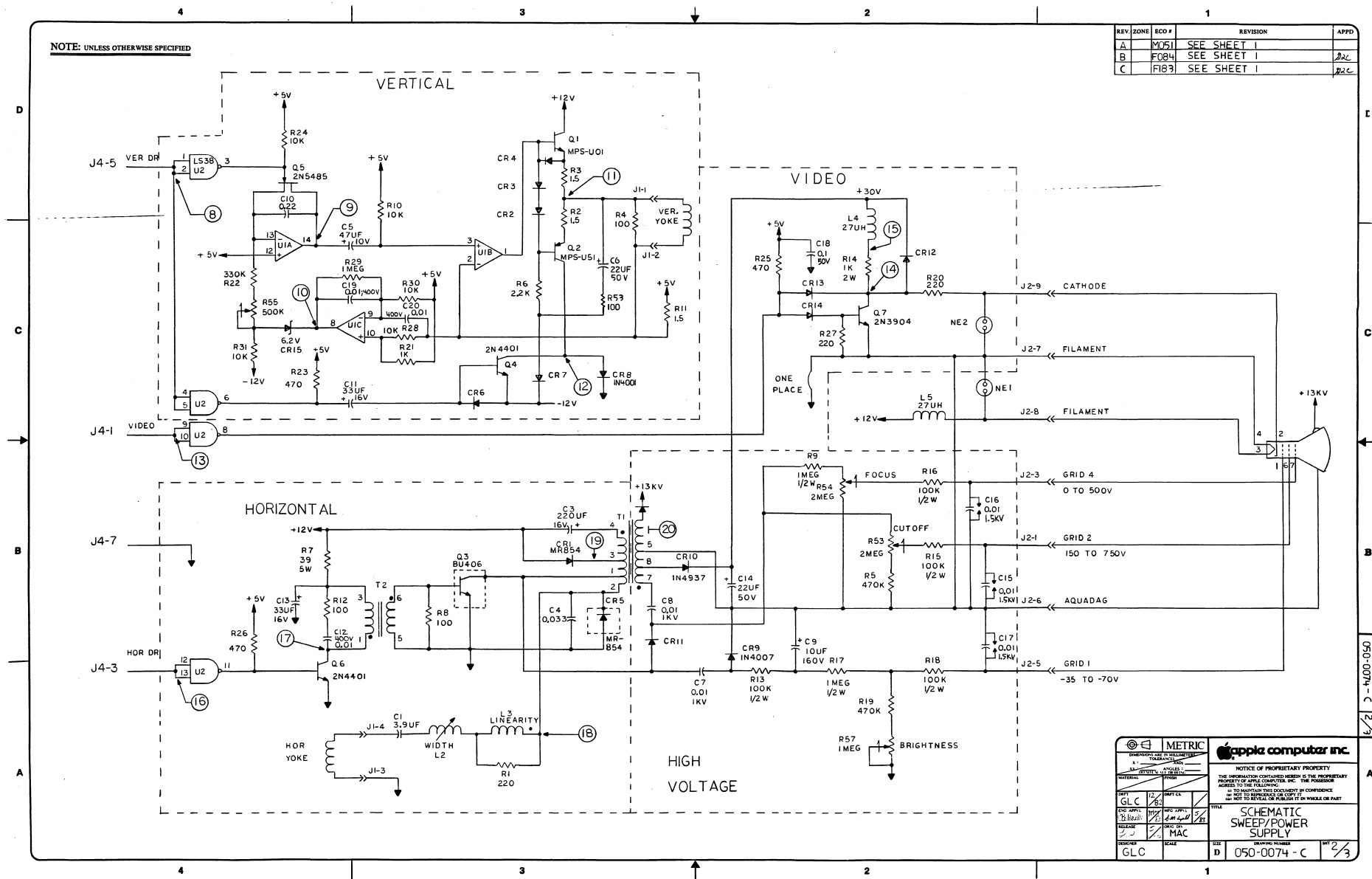


| REFERENCE DESIGNATION | LAST USED | NOT USED |
|-----------------------|-----------|----------|
| BB1 | | |
| C43 | | |
| CR30 | | |
| F1 | | |
| J5 | | |
| L8 | | |
| LF2 | | |
| NE2 | | |
| Q11 | | |
| R57 | R43 | |
| SW1 | | |
| T3 | | |
| U3 | | |
| W12 | | |

| | | | |
|---|--------------|---|------------------|
| | | | |
| NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSION AND USE OF THIS DOCUMENT BY ANY OTHER PERSON IS STRICTLY PROHIBITED. ALL RIGHTS ARE RESERVED. | | | |
| DESIGNED BY GLC | DATE 1/83 | CHECKED BY J22C | DATE 1/83 |
| DRAWN BY J22C | DATE 1/83 | TITLE SCHEMATIC SWEEP/POWER SUPPLY | SHEET NO. 1/3 |
| REVISION GLC | SCALE D | PART NO. 050-0074 - C | DATE 1/83 |

| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|-------------|------|
| A | M051 | | SEE SHEET 1 | |
| B | F084 | | SEE SHEET 1 | JLC |
| C | F183 | | SEE SHEET 1 | JLC |

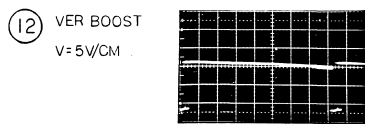
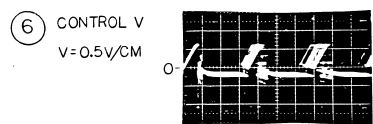
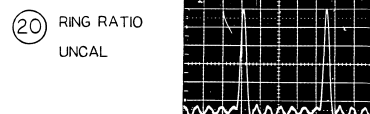
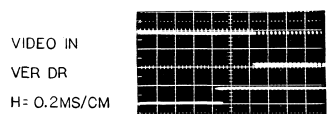
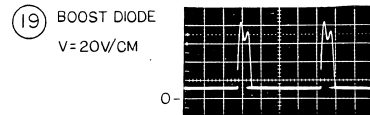
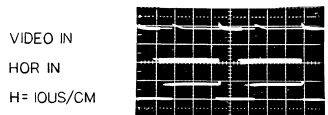
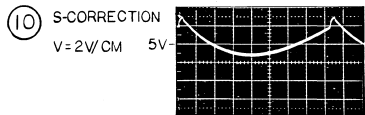
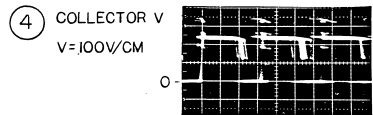
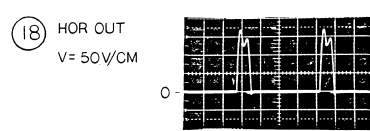
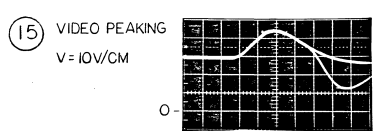
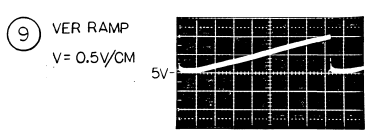
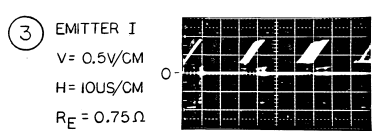
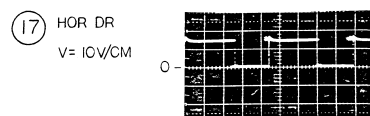
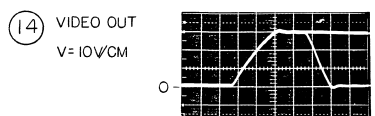
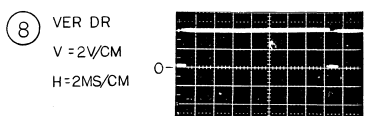
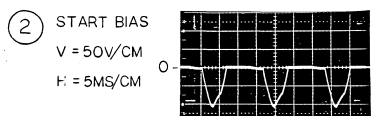
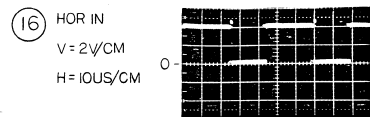
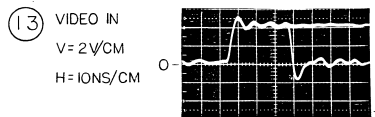
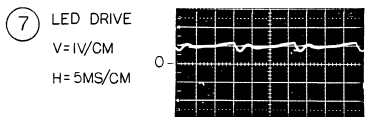
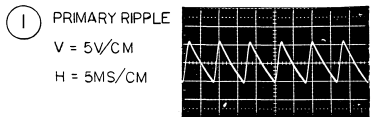
NOTE: UNLESS OTHERWISE SPECIFIED



| | | | |
|---|------|---------------------------|-------|
| | | | |
| <small>NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSION AND REPRODUCTION OF THIS DOCUMENT IN CONFIDENCE IS TO BE LIMITED TO THE INDIVIDUALS AND DEPARTMENTS SPECIFICALLY IDENTIFIED IN THE CONFIDENTIALITY AGREEMENT. IT IS NOT TO BE REPRODUCED OR PUBLISHED IN WHOLE OR PART.</small> | | | |
| REV | GLC | REV | 12/83 |
| ECO | APPL | REV | 12/83 |
| RELEASE | MAC | REV | 12/83 |
| REV | GLC | SCALE | D |
| TITLE SCHEMATIC SWEEP/POWER SUPPLY | | PART NUMBER 050-0074-C | |
| | | SHEET 2/3 | |

NOTE: UNLESS OTHERWISE SPECIFIED

| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|-------------|------|
| A | | 10051 | SEE SHEET 1 | |
| B | | 10054 | SEE SHEET 1 | 22C |
| C | | 1183 | SEE SHEET 1 | 22C |



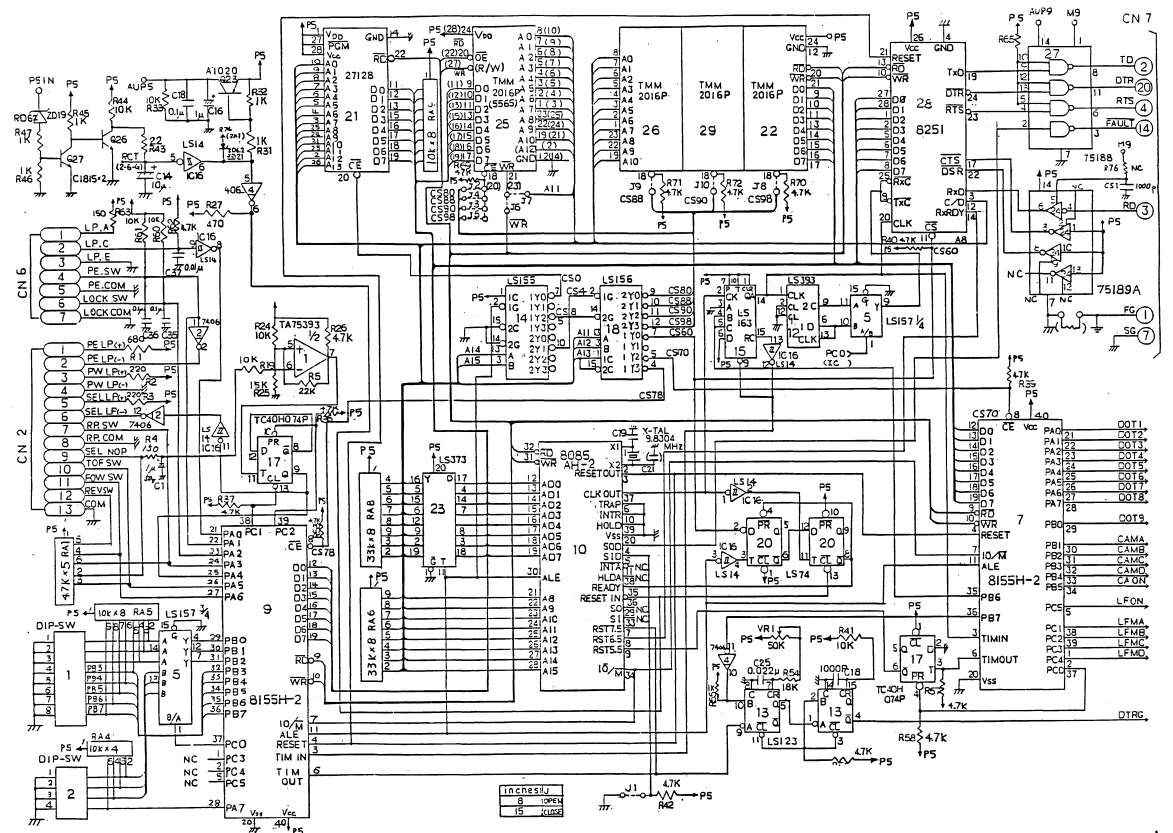
NOTES:
1. ALL PRIMARY WAVEFORMS ARE REFERENCED TO THE NEGATIVE SIDE OF C35.
2. ALL SECONDARY MEASUREMENTS ARE REFERENCED TO THE RETURN LINE J4-7,9.
3. PHOTO 20, RING RATIO, IS TAKEN WITH THE SCOPE PROBE NEAR THE FLYBACK TRANSFORMER, 11.

WARNING: TO MAKE PRIMARY CIRCUIT MEASUREMENTS THE SUPPLY MUST BE CONNECTED TO THE POWER LINE THROUGH AN ISOLATION TRANSFORMER, AND GREAT CARE MUST BE TAKEN TO AVOID SHOCK HAZARD.

| | | | |
|--|--------------|------------------------|-------------------|
| | | | |
| NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE REPRODUCER AGREES TO THE FOLLOWING: 1. TO MAINTAIN THIS DOCUMENT IN CONFIDENCE 2. NOT TO REPRODUCE OR COPY IT 3. NOT TO REVEAL OR PUBLISH IT IN WHOLE OR IN PART | | | |
| TITLE SCHEMATIC SWEEP/POWER SUPPLY | DATE 1/83 | DRAWN BY MAC | CHECKED BY MAC |
| APPROVED BY GLC | SCALE 1:1 | PART NO. 050-0074-C | REV. 3/3 |

NOTE: UNLESS OTHERWISE SPECIFIED

| | | | | | |
|-----|------|-----|-----------------|------|------|
| REV | ZONE | ECO | REVISION | APPD | DATE |
| 1 | A | 006 | INITIAL RELEASE | | |

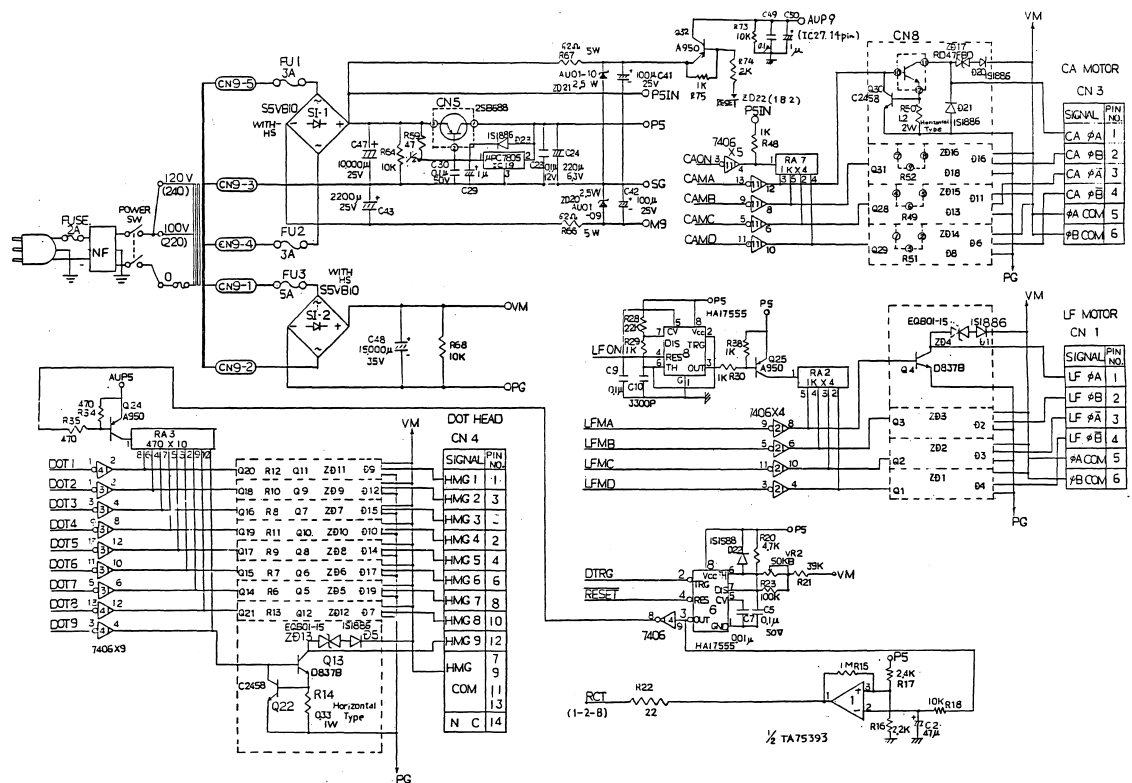


| ITEM | QTY | PART NUMBER | DESCRIPTION |
|--|---------|-------------|-------------|
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | | | |
| DECIMALS | XX.X | | |
| FRACTIONS | XX.X/4 | | |
| ANGLES | XX.X° | | |
| DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS | | | |
| MATERIAL: | | | |
| NEXT ASSY: | FINISH: | | |

| | | | |
|----------------|--|------|--|
| DRAWN BY | | DATE | |
| CHECKED BY | | DATE | |
| APPROVED BY | | DATE | |
| RELEASED BY | | DATE | |
| TITLE | | | SCHEMATIC, MAIN LOGIC BOARD, IMAGEWRITER |
| DRAWING NUMBER | | | |
| SIZE | | | D 050-0089-A |
| SCALE | | | NONE |
| SHEET | | | 1 OF 2 |

| REV | EDN | ECO | REVISION | APPD | DATE |
|-----|-----|-----|-------------|------|------|
| | | | SEE SHEET 1 | | |

NOTE: UNLESS OTHERWISE SPECIFIED

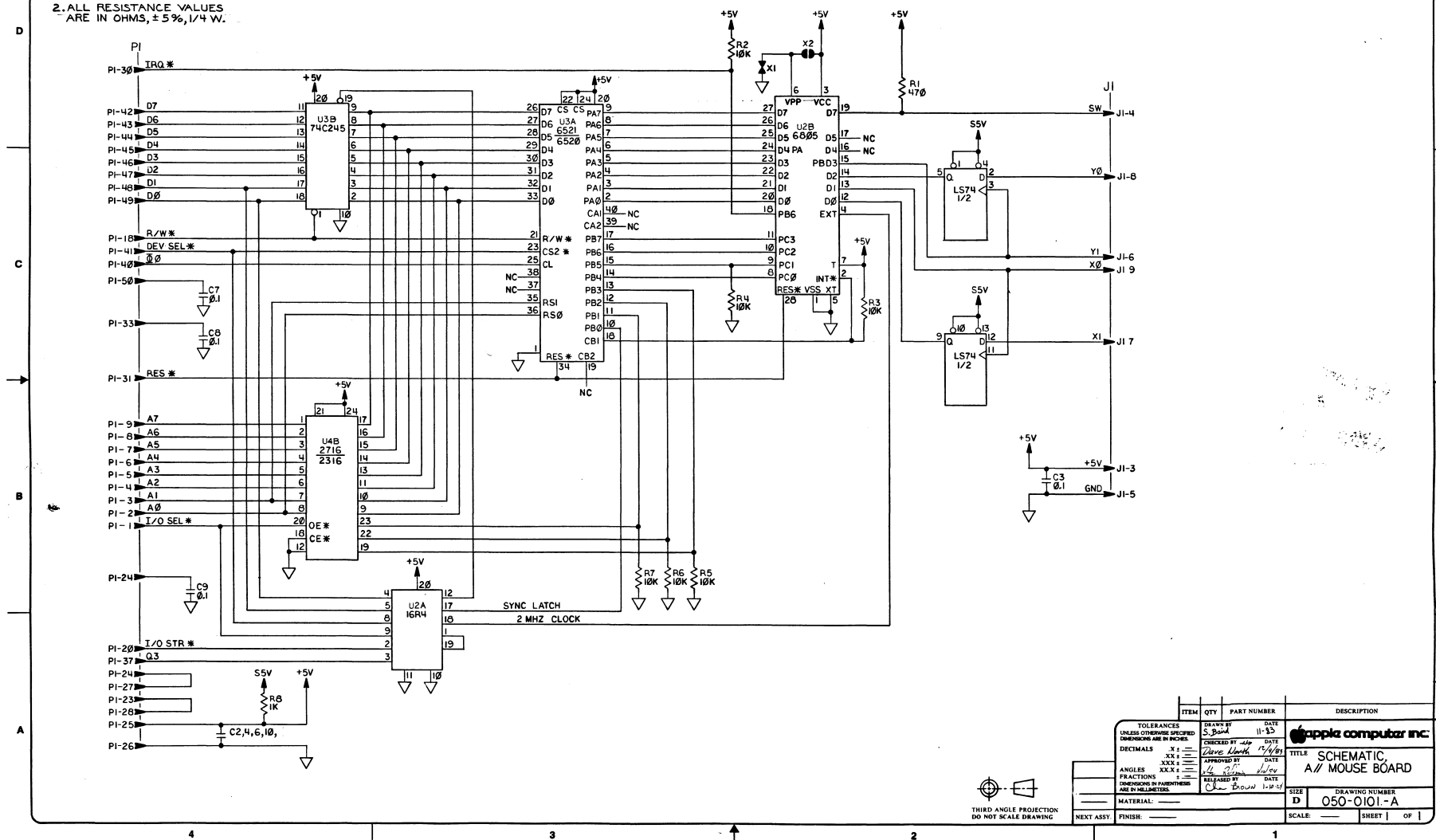


| ITEM | QTY | PART NUMBER | DESCRIPTION |
|--|-----|--------------|-------------|
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS .XX ± FRACTIONS XXX ± DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS | | | |
| DRAWN BY | | DATE | |
| CHECKED BY | | DATE | |
| APPROVED BY | | DATE | |
| RELEASED BY | | DATE | |
| MATERIAL: | | | |
| NEXT ASSY | | FINISH | |
| SCALE: | | SHEET 2 OF 2 | |

NOTE: UNLESS OTHERWISE SPECIFIED

1. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
2. ALL RESISTANCE VALUES ARE IN OHMS, ± 5%, 1/4 W.

| REV. | ZONE | ECO # | REVISION | APPROV. |
|------|------|-------|-----------------|---------|
| A | | A933 | INITIAL RELEASE | |

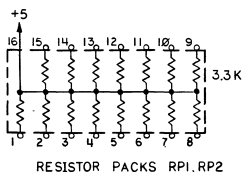
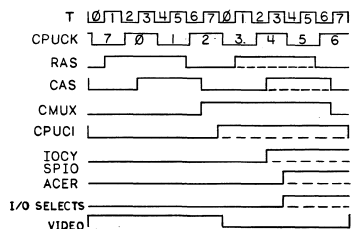


| ITEM | QTY | PART NUMBER | DESCRIPTION |
|---|-----|--|-------------|
| TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. DECIMALS .XX ± .005 FRACTIONS XX/64 ± .005 DIMENSIONS BY PART NUMBER ARE IN MILLIMETERS. | | | |
| DRAWN BY: S. BOM CHECKED BY: [Signature] DATE: 11-85 | | DATE: 11/85 TITLE: SCHEMATIC, A// MOUSE BOARD | |
| MATERIAL: _____ FINISH: _____ | | DRAWING NUMBER: 050-0101-A SIZE: 11" x 17" | |
| NEXT ASSY: _____ | | SCALE: _____ SHEET 1 OF 1 | |

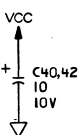
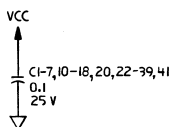
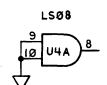
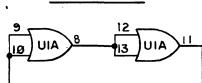
NOTE: UNLESS OTHERWISE SPECIFIED

- ALL RESISTORS VALUE ARE IN OHMS 1/4 WATT ±5%.
- ALL CAPACITORS ARE IN MICROFARADS.

TIMING



SPARE GATES



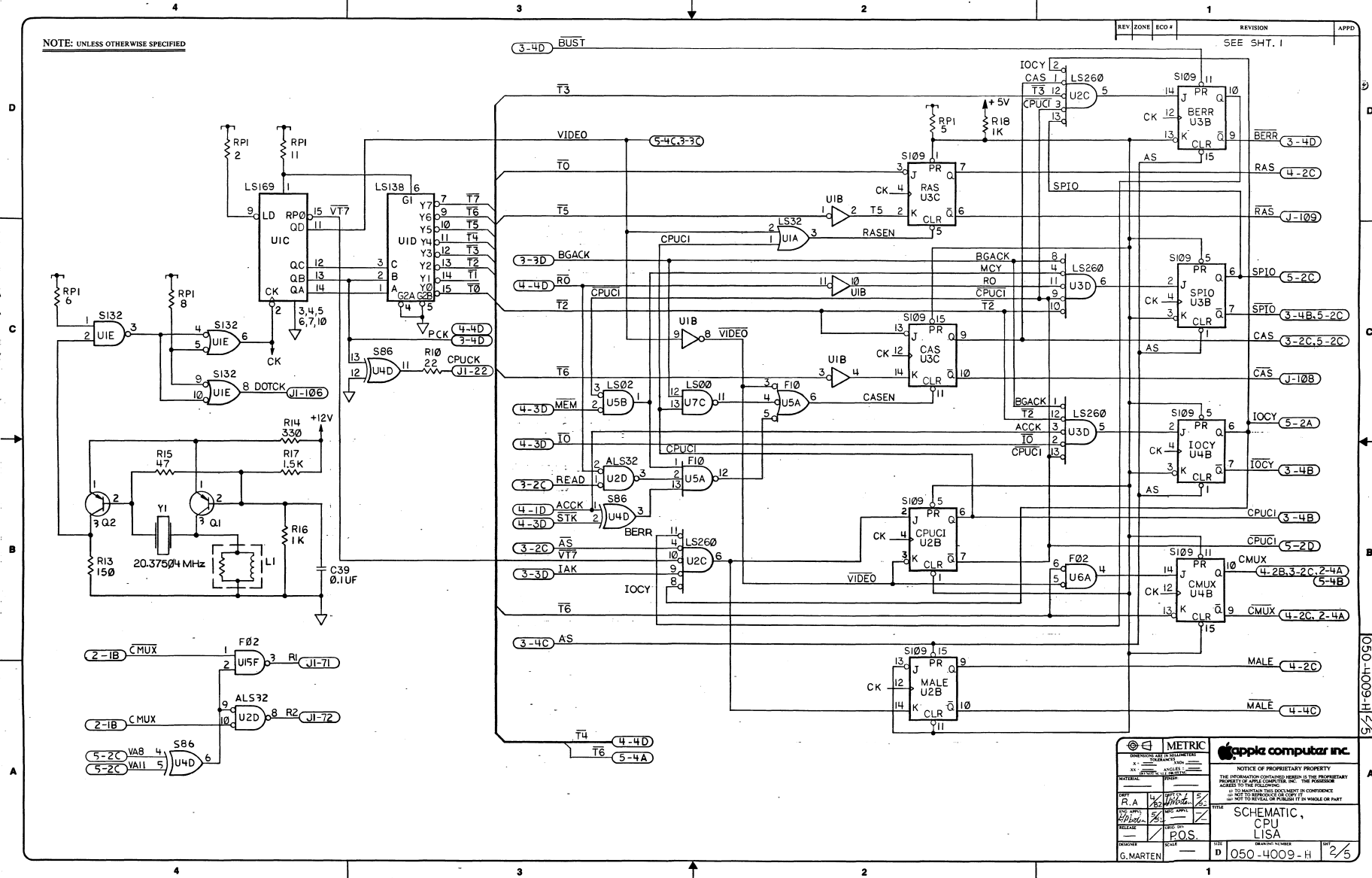
| DEVICE | LAST USED | NOT USED |
|--------|-----------|----------|
| CR | CR1 | |
| Q | Q2 | |
| J | J1 | |
| R | R19 | |
| C | C42 | |
| RP | RP2 | |
| SW | | |
| L | L1 | |
| Y | Y1 | |
| DS | DS1 | |

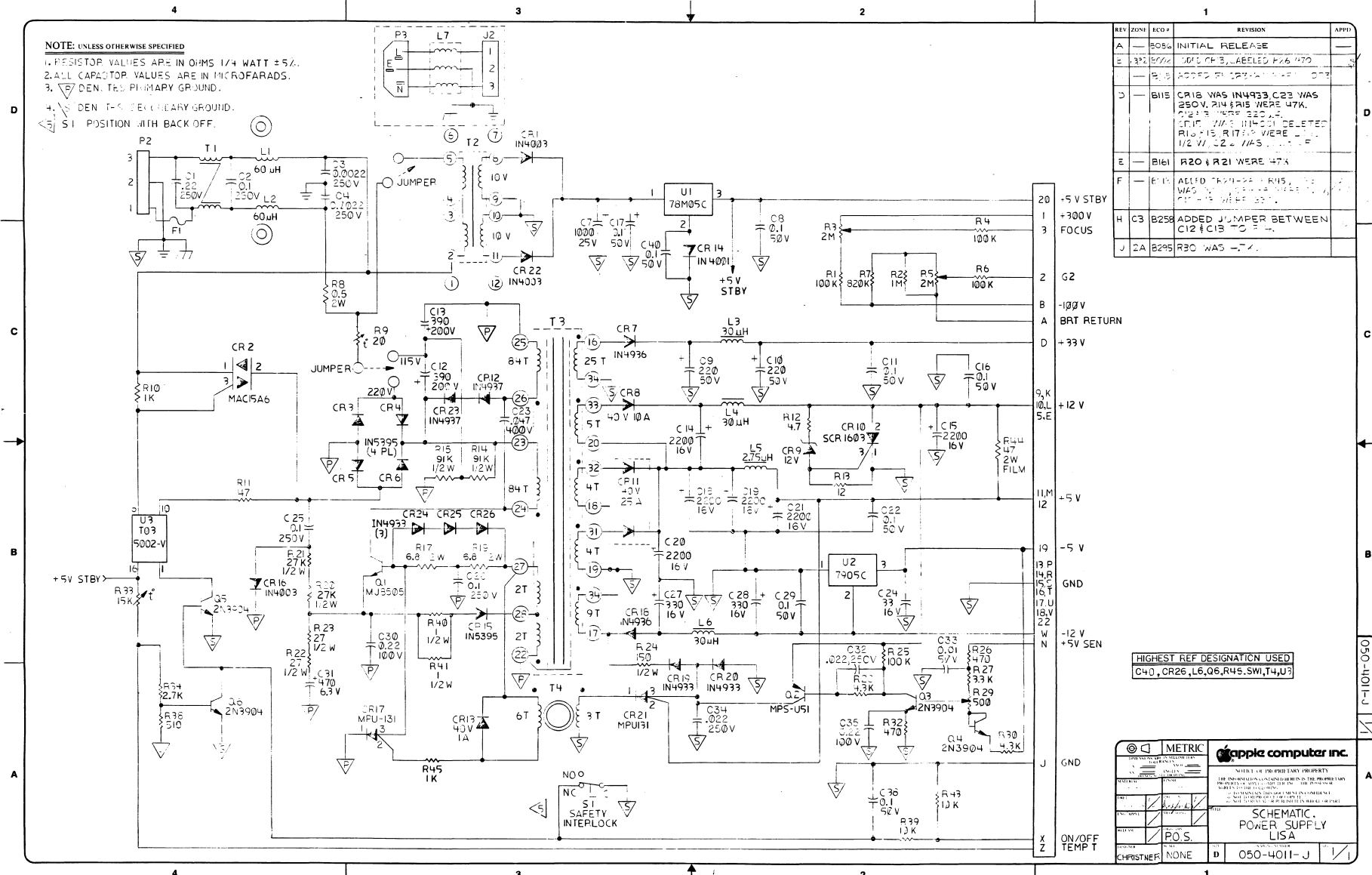
| J1 | | | |
|----------------|-------|-------|--------------------------|
| 5-1A | SL0 | SH0 | 5-1A |
| 5-1A | SL1 | SH1 | 5-1B |
| 5-1B | SL2 | SH2 | 5-1B |
| 3-4C | INT 0 | IAK0 | 3-2D |
| 3-4C | INT 1 | IAK1 | 3-2D |
| 3-4C | INT 2 | IAK2 | 3-2D |
| 3-4C | RSIR | KBIR | 3-4C |
| 3-4C | IOIR | E | |
| 3-1B,3-4C | DGND | 3-2C | |
| | +5 | DGND | |
| | RESET | +5 | |
| 3-2D | LDMA | CPUCK | 2-3C |
| 3-4C | BR | BGACK | 3-4D,4-2B,5-2B |
| 3-4C | BD0 | BG | |
| 3-4A | BD2 | BD1 | 3-3C |
| 3-4A | BD4 | BD3 | 3-4A |
| 3-4A | BD6 | BD5 | 3-4A |
| 3-4A | BD8 | BD7 | 3-4A |
| 3-4B | BD10 | BD9 | 3-4B |
| 3-4B | BD12 | BD11 | 3-4B |
| 3-4B | BD14 | BD13 | 3-4B |
| 3-4B | BD16 | BD15 | 3-4B |
| | DGND | DGND | |
| | +5 | +5 | |
| 5-2D,4-2D,3-2C | A1 | A2 | 3-1C,4-2D,5-2D |
| 5-2D,4-2D,3-2C | A3 | A4 | 3-1C,4-2D,5-4D |
| 4-2D,3-1C | A5 | A6 | 3-1C,4-2D |
| 4-2D,3-2D | A7 | A8 | 3-1C,4-2D |
| 3-2D | A9 | A10 | 3-1C |
| 5-2B,3-1C | A11 | A12 | 3-1C,5-2B |
| 3-2C | +12 | VPA | 3-4C,3-2D |
| 3-2C,3-4C | A5 | DTACK | 5-1C |
| 3-2C | LD5 | READ | 3-4B,3-2C,4-4D,4-4B,5-4D |
| 5-2D,3-2B | CSYNC | UDS | 3-2C |
| 5-2A | VA10B | INT10 | 3-2C |
| 2-4A | R1 | VA9B | 5-1B |
| 5-4A,3-4A | MD0 | R2 | 5-2A |
| 5-4A,3-4A | MD2 | MD1 | 2-4A |
| 5-4A,3-4A | MD4 | MD3 | 3-4A,5-4A |
| 5-4A,3-4A | MD6 | MD5 | 3-4A,5-4A |
| 5-4A,3-4B | MD8 | MD7 | 3-4A,5-4A |
| 5-4A,3-4B | MD10 | MD9 | 3-4A,5-4A |
| 5-4A,3-4B | MD12 | MD11 | 3-4A,5-4A |
| 5-4A,3-4B | MD14 | MD13 | 3-4A,5-4A |
| | DGND | MD15 | 3-4A,5-4A |
| | +5 | DGND | |
| 4-1B | RA1 | +5 | |
| 4-1B | RA3 | RA2 | 4-1B |
| 4-1B | RA5 | RA4 | 4-1B |
| 4-1B | RA7 | RA6 | 4-1B |
| 3-4C | RSTSW | RA8 | 4-1B |
| 3-1D | A17 | A16 | 3-1D |
| 3-1D | A19 | A18 | 3-1D |
| 3-1D | MREAD | DTACK | 4-4B,5-4A |
| 3-1D | RAS | CAS | 2-1C |
| 2-1D | HSYNC | A20 | 3-1C |
| 3-2C | VSYSN | HDER | 3-2C,5-1D |
| 3-2D | VID | SFER | 3-2C,5-1D |
| 5-2C,3-2B | DGND | NMI | 3-1C |
| | +5 | DGND | |
| | | +5 | |

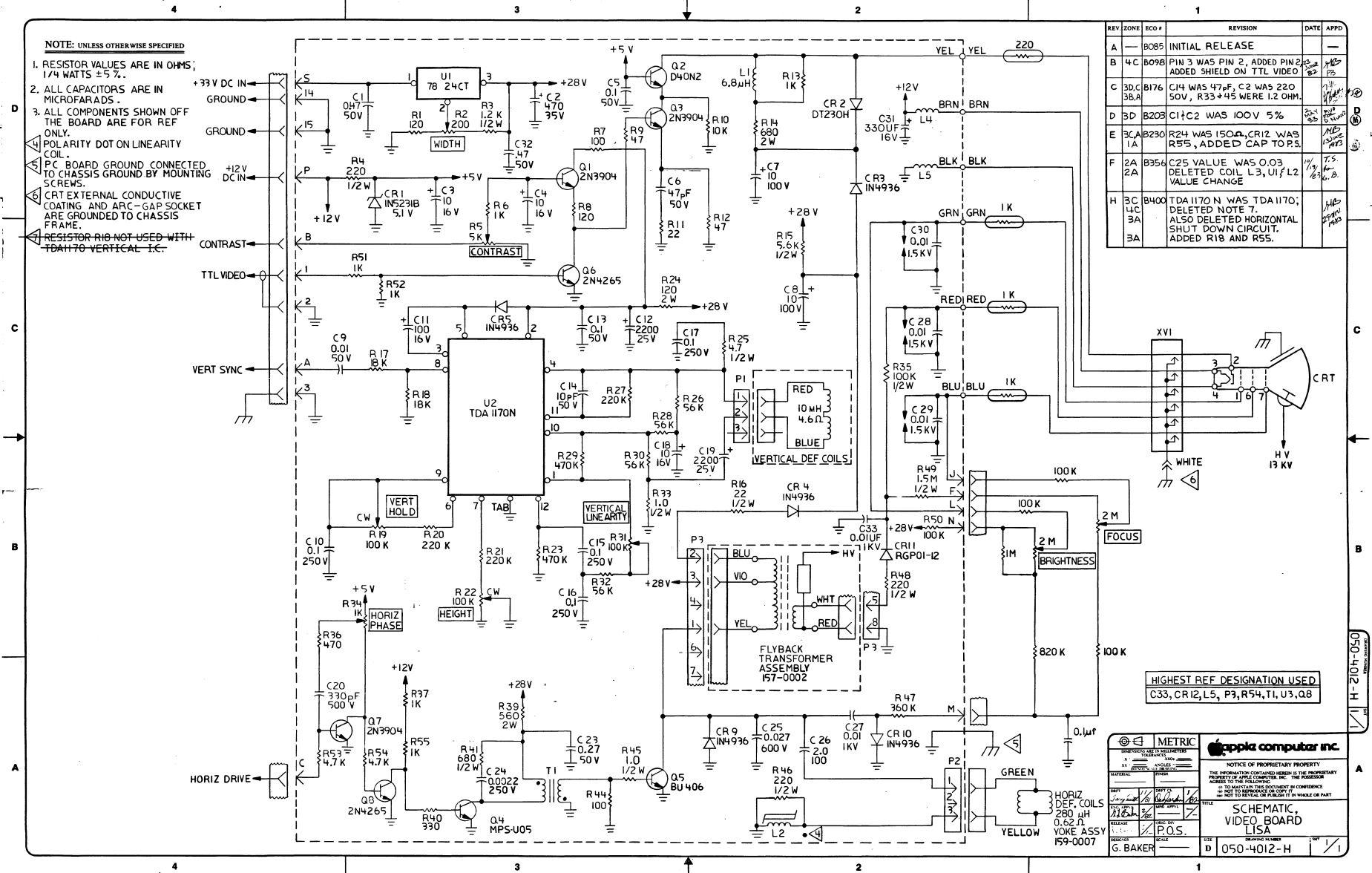
| DEVICE | NAME | +5V | GND | PG# |
|------------|-------------------------|-------------|-----|-------|
| 74LS00 | U7C,6D,15F | 14 | 7 | 3,4,5 |
| 74LS04 | U1B | | | 2,5 |
| 74LS08 | U4A | | | 5 |
| 74LS11 | U10C | | | 3 |
| 7417 | U2E | | | 3,5 |
| 74LS32 | U1A | | | 2,4 |
| 74ALS32 | U2D | | | 2,4 |
| 74LS38 | U7A | | | 5 |
| 74S06 | U4D | 14 | 7 | 2,5 |
| 74S109 | U3A,2B,3B,4B,3C,5D,3E | 16 | 8 | 2,4,5 |
| 74S132 | U1E | 14 | 7 | 2,5 |
| 74S138 | U1D | 16 | 8 | 2 |
| 74LS138 | U13F | | | 5 |
| 74LS139 | U14F | | | 5 |
| 74LS148 | U12F | | | 3 |
| 74LS153 | U6E,7E,8E,5F | | | 4 |
| 74LS156 | U4F | | | 3 |
| 74LS166 | U7F,8F | | | 5 |
| 74S169 | U1C | 16 | 8 | 2 |
| 74LS244 | U8C,15C,9E | 20 | 10 | 3 |
| 74LS245 | U11A,11B,14E,15E,9F,11F | 20 | 10 | 3,4 |
| 74LS259 | U4E | 16 | 8 | 5 |
| 74LS260 | U2C, U3D | 14 | 7 | 2 |
| 74LS279 | U5C | 16 | 8 | 3 |
| 74F283 | U8B,9B,10B | 16 | 8 | 4 |
| 74LS373 | U9D | 20 | 10 | 4 |
| 74LS374 | U6B,11C,7D,11D,11E,13E | 20 | 10 | 3,4 |
| 74LS393 | U7B,5E,6F | 14 | 7 | 5 |
| 74ALS1002 | U6A, U5B | 14 | 7 | 2,5 |
| 68000 | U13A | 14,9,16,5,3 | | 3 |
| ROM SERIAL | U6C | 20 | 10 | 5 |
| 74F10 | U5A | 14 | 7 | 2,3 |
| RAM,STATIC | U8A,9A,10B | 18 | 9 | 4 |
| ROM, HI | U13D | 28 | 14 | 3 |
| ROM, LO | U14D | 28 | 14 | 3 |
| 556 | U15B | 14 | 7 | 3 |

| REV | ZONE | ECO # | REVISION | DATE | APPD |
|-----|----------------------|-------|--|------|--------|
| A | | B097 | INITIAL RELEASE | | |
| B | | B120 | SHEET 1-ADDED C40 & C42; SHEET 1-5 MISC CORRECTION TO SHEET-TO-SHEET DESIGNATORS & SIGNAL NAMES. | 9/82 | APL/ED |
| C | 4D | B136 | SHEET 4- 2-4C WAS J1-106, 2-3C WAS 2-2D, PCK WAS T5, T4 WAS T3, PIN 5(USD) WAS PIN 11, ADDED RPI-5 TO USD, ADDED PIN 11 TO USD | 1/73 | APL |
| D | 2B | B142 | SHEET 2- SWITCHED PIN NUMBERS 2 & 3 AND THEIR TRACES ON U2B. SHEET 3- 341-0175 WAS 374-0070, 341-0176 WAS 341-0071. | 1/82 | APL |
| E | | B160 | SHEET 2- U2B PIN 3 WAS CONNECTED TO U4B PIN 10, IS NOW U1B PIN 8; REFERENCE REMOVED FROM U1B PIN 2. SHEETS 4 & 5- MADE MINOR CLARIFICATION CORRECTIONS | 1-82 | APL |
| F | 4D | B181 | 5H3- CB WAS I.O | 7/82 | APL |
| H | 3A 2D 3C 1B | B202 | SH1-R19 WAS R17, ADDED DS1, SH2-ADDED R18, SH3-ADDED R19, SH4-U1C PIN 3 WAS CONNECTED TO GND, ADDED DS1 | 7/82 | APL |

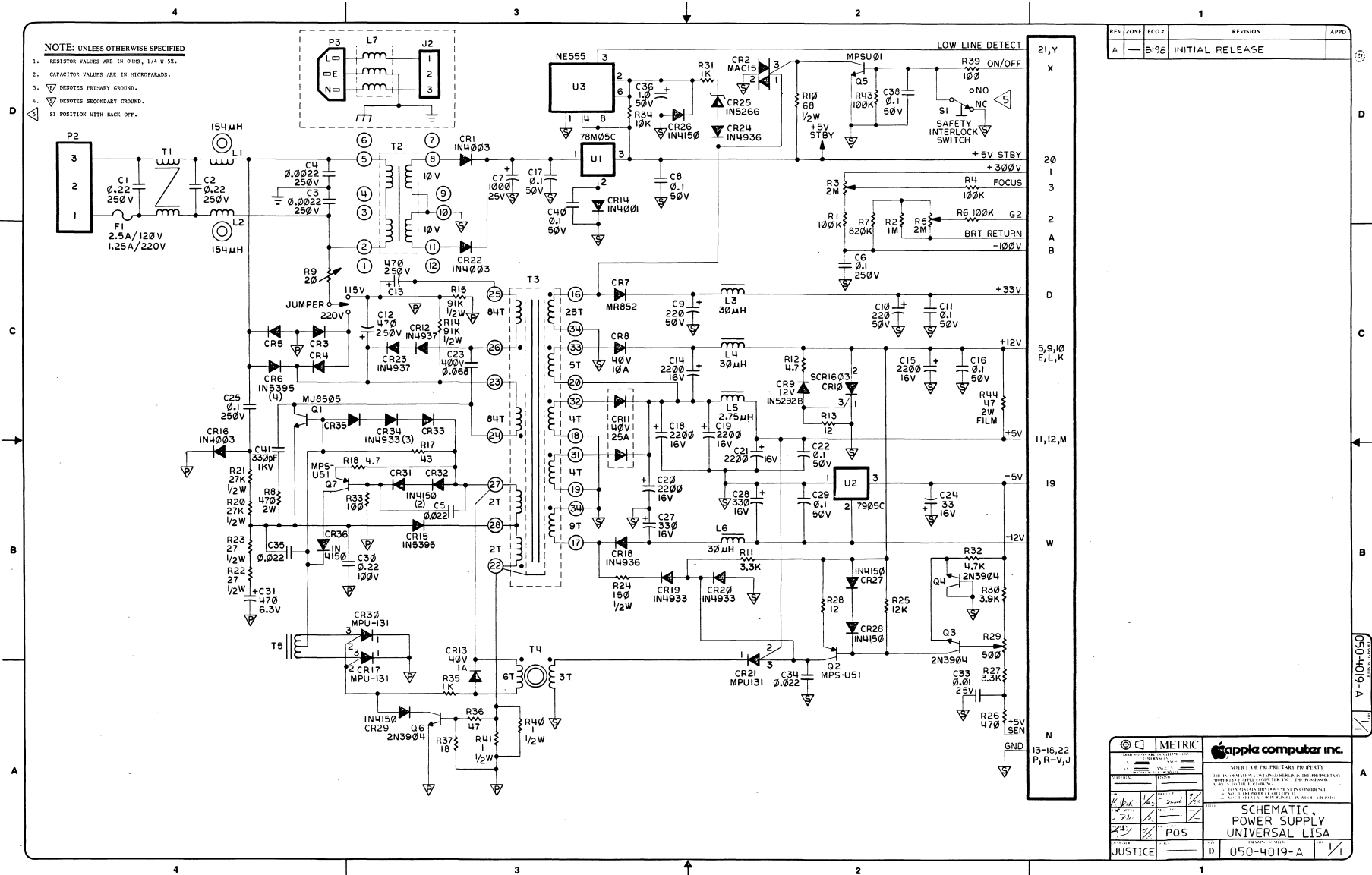
| | |
|--|---|
| <p>GOVERNMENT USE ONLY EXCLUDED FROM THE DEFENSE PURCHASE REGULATION</p> | <p>NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR HEREOF IS TO REPRODUCE OR TO TRANSMIT IN ANY FORM OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM APPLE COMPUTER, INC.</p> |
| <p>DATE: 1/82 BY: G. MARTEN CHECKED: 1/82 APPROVED: 1/82</p> | <p>TITLE: SCHEMATIC, CPU LISA DRAWING NUMBER: 050-4009-H SHEET: 1/5</p> |

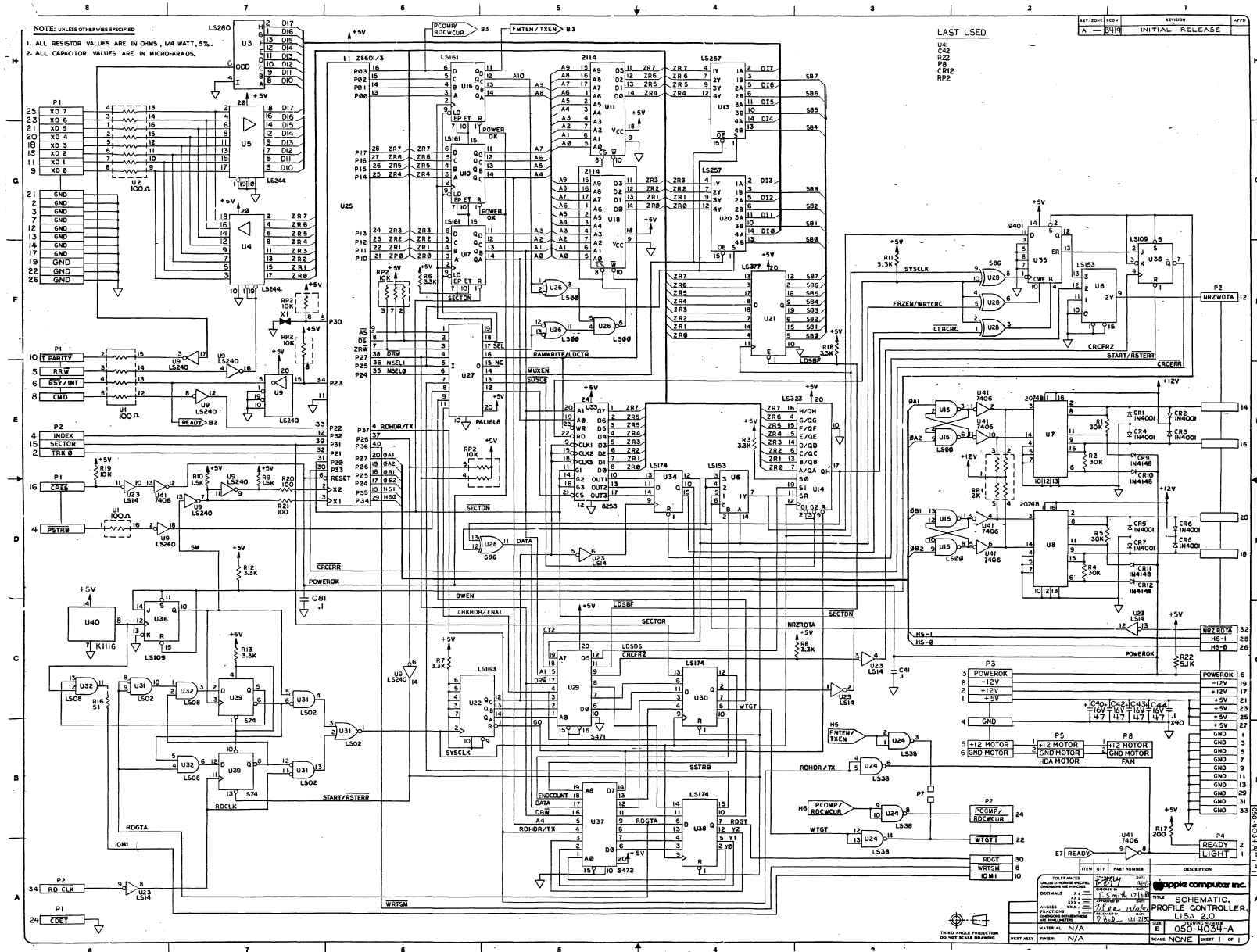






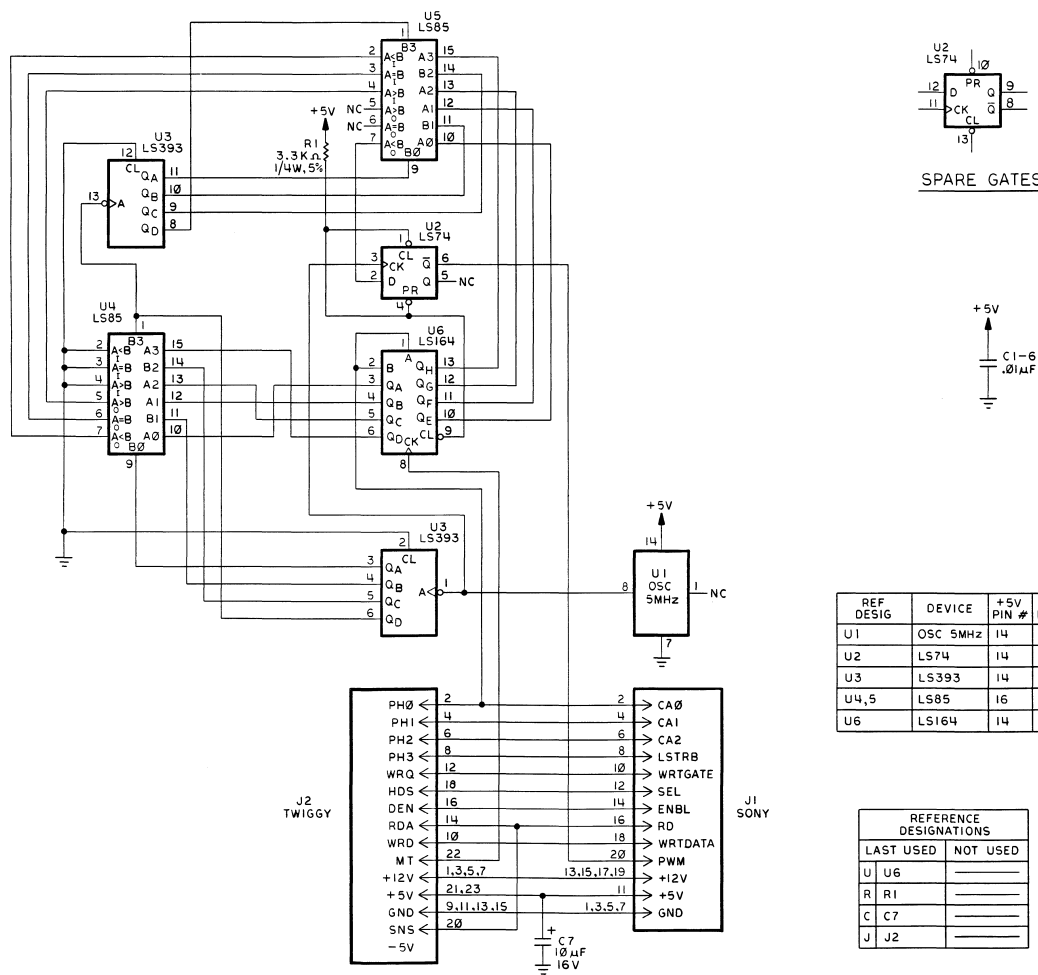
| REV | ZONE | ECO# | REVISION | DATE | APPD |
|-----|------|------|--|----------|------|
| A | — | B085 | INITIAL RELEASE | — | — |
| B | 4C | B098 | PIN 3 WAS PIN 2, ADDED PIN 2. ADDED SHIELD ON TTL VIDEO | 1/22/82 | MES |
| C | 3D,C | B176 | C14 WAS 47pF, C2 WAS 220 50V, R33+45 WERE 1.2 OHM. | 2/11/82 | MES |
| D | 3D | B205 | C1+C2 WAS 100V 5% | 2/25/82 | MES |
| E | 3A,B | B230 | R24 WAS 150Ω, CR12 WAS 1A | 3/10/82 | MES |
| F | 2A | B356 | C25 VALUE WAS 0.003 DELETED COIL L3, U1 L2 VALUE CHANGE | 10/19/82 | MES |
| H | 3C | B400 | TDA 1170 N WAS TDA 1170; DELETED NOTE 7. ALSO DELETED HORIZONTAL SHUT DOWN CIRCUIT. ADDED R18 AND R55. | 1/19/83 | MES |





NOTE: UNLESS OTHERWISE SPECIFIED

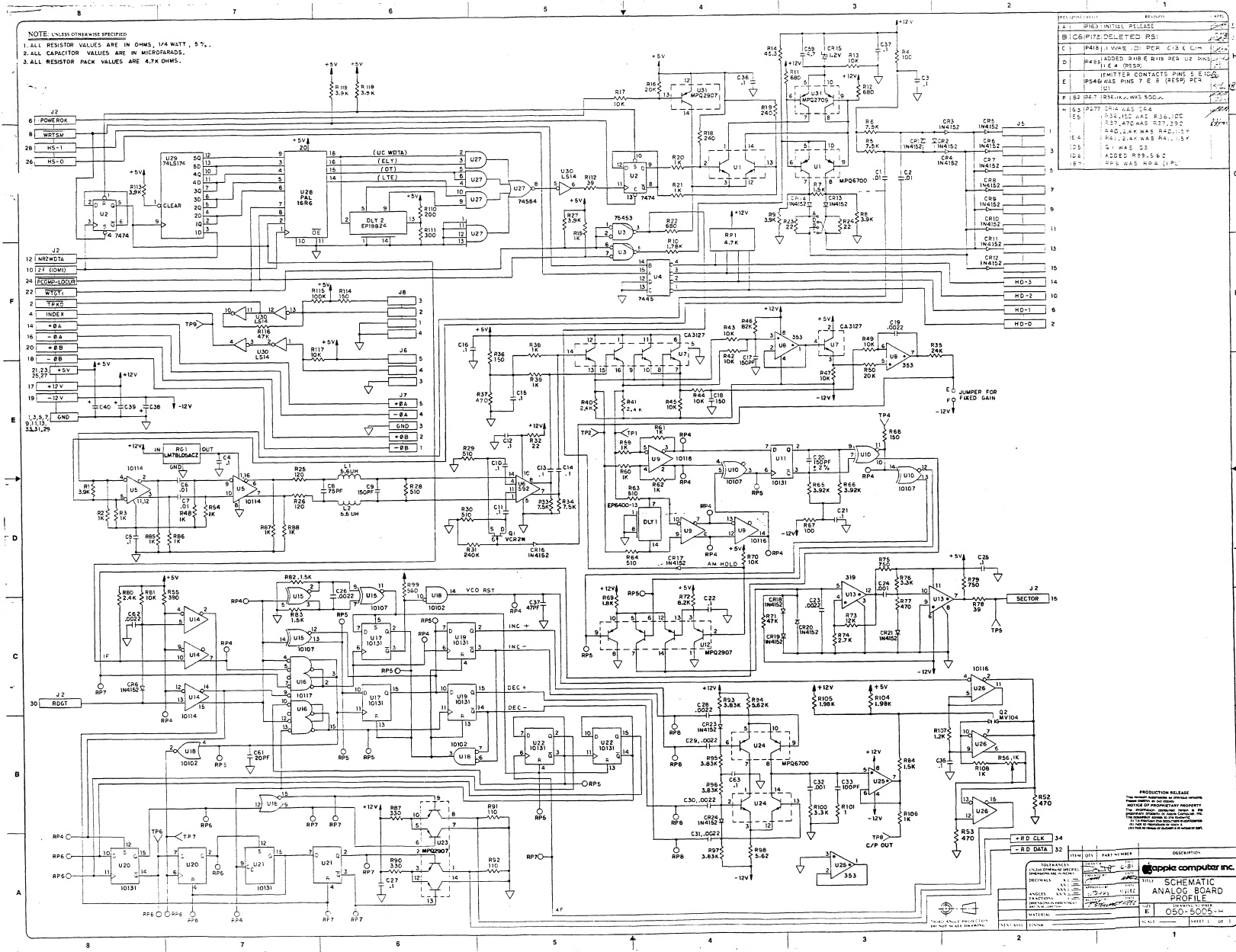
| REV | ZONE | ECO # | REVISION | APPD | DATE |
|-----|------|-------|-----------------|------|------|
| A | | 5449 | INITIAL RELEASE | | |

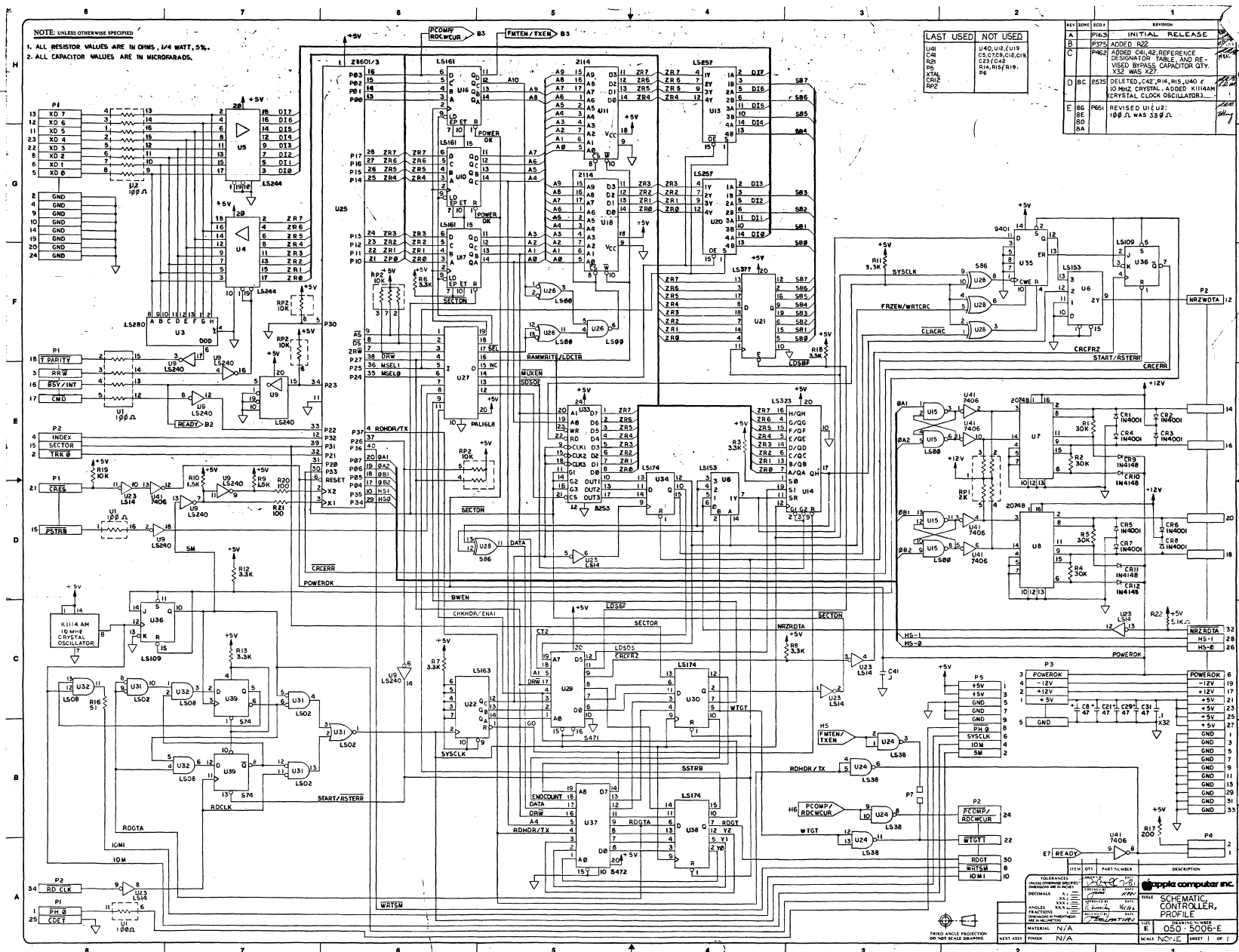


| REF DESIG | DEVICE | +5V PIN # | GND PIN # |
|-----------|----------|-----------|-----------|
| U1 | OSC 5MHz | 14 | 7 |
| U2 | LS74 | 14 | 7 |
| U3 | LS393 | 14 | 7 |
| U4,5 | LS85 | 16 | 8 |
| U6 | LS164 | 14 | 7 |

| REFERENCE DESIGNATIONS | |
|------------------------|----------|
| LAST USED | NOT USED |
| U | U6 |
| R | R1 |
| C | C7 |
| J | J2 |

| | |
|--|---------------------|
| METRIC | apple computer inc. |
| DESIGNED BY: B. LEE | DATE: 050-4043-A |
| CHECKED BY: B. LEE | DATE: 050-4043-A |
| APPROVED BY: B. LEE | DATE: 050-4043-A |
| NOTICE OF PROPRIETARY PROPERTY | |
| THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE READER AGREES TO THE FOLLOWING: | |
| - TO MAINTAIN THE INFORMATION IN CONFIDENCE | |
| - NOT TO REPRODUCE OR TRANSMIT IN ANY FORM OR BY ANY MEANS | |
| - NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART | |
| TITLE: SCHEMATIC, PCB, LISA LITE ADAPTOR | |
| DESIGNED BY: B. LEE | DATE: 050-4043-A |

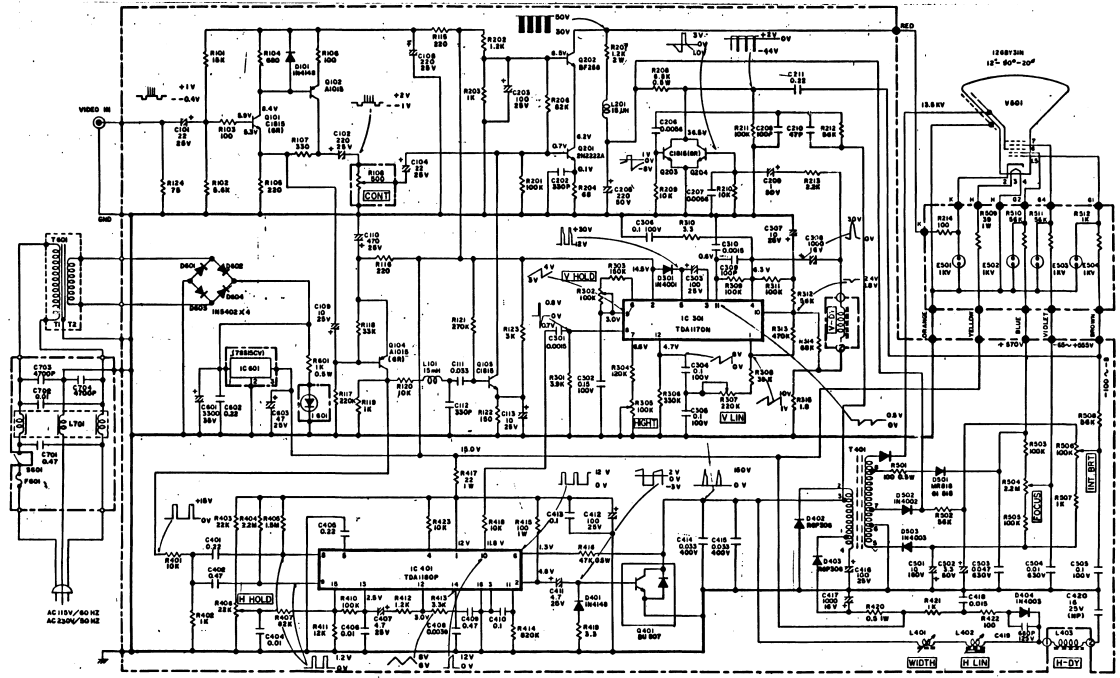




NOTE: UNLESS OTHERWISE SPECIFIED

1. ○ DENOTES HOUSING CONNECTOR
2. ● DIRECT
3. ALL WAVEFORMS MEASURED WITH STRONG SIGNAL INPUT. CONTRAST SET TO GIVE NORMAL PICTURE.

| REV. | ZONE | ECO # | REVISION | APPD |
|------|------|-------|-----------------|------|
| A | | 0071 | INITIAL RELEASE | |

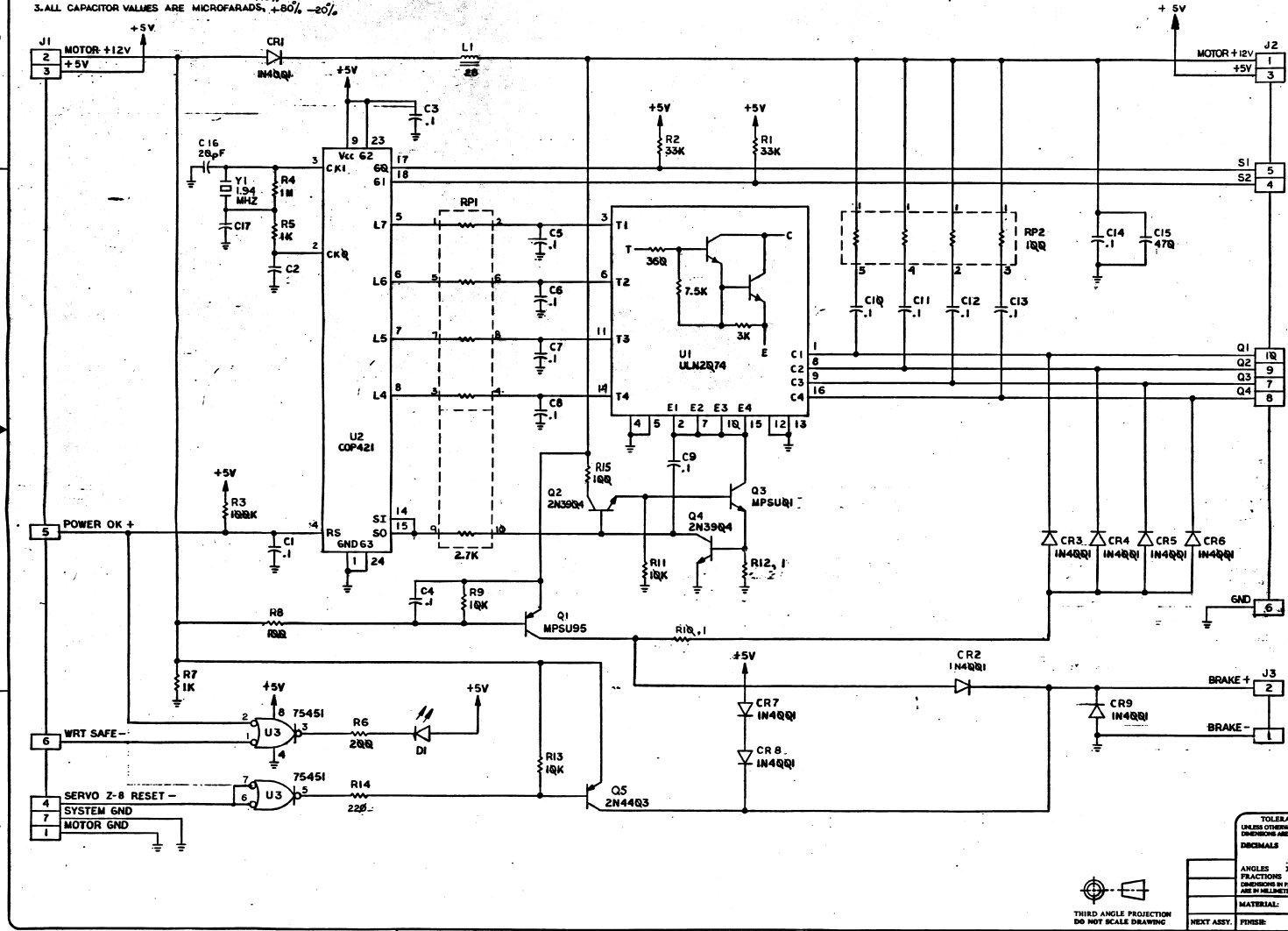


| | |
|--|---|
| METRIC DIMENSIONS ARE IN MILLIMETERS TOLERANCES: .XX = ANGLES - (SHEET) SCALE DRAWING | |
| DRAFT WINDING ENG APPR RELEASE DESIGNER | DRAFT CL R. Myers MFC APPR APG DATE 8/83 |
| TITLE SCHEMATIC, MAIN ELECTRONICS, MONITOR II, DOMESTIC | |
| SIZE NONE | DRAWING NUMBER 050-5020-A |

| | |
|--|------------|
| apple computer inc. NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING: (i) TO MAINTAIN THIS DOCUMENT IN CONFIDENCE (ii) NOT TO REPRODUCE OR COPY IT (iii) NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART | |
| SIZE C | DWT 1/1 |

| REV | ZONE | ECO # | REVISION | APP'D |
|-----|------|-------|---------------------------------|-------|
| A | | PS81 | INITIAL RELEASE (SK-WG52-93) | AKS |
| B | 4A | P614 | R14, 220K WAS TYPICAL | AKS |

NOTE: UNLESS OTHERWISE SPECIFIED
 1. ALL RESISTOR VALUES ARE OHMS $\pm 4\%$, 5%
 2. ALL INDUCTOR VALUES ARE MICROHENRY, 10%
 3. ALL CAPACITOR VALUES ARE MICROFARADS, $\pm 80\%$, -20%



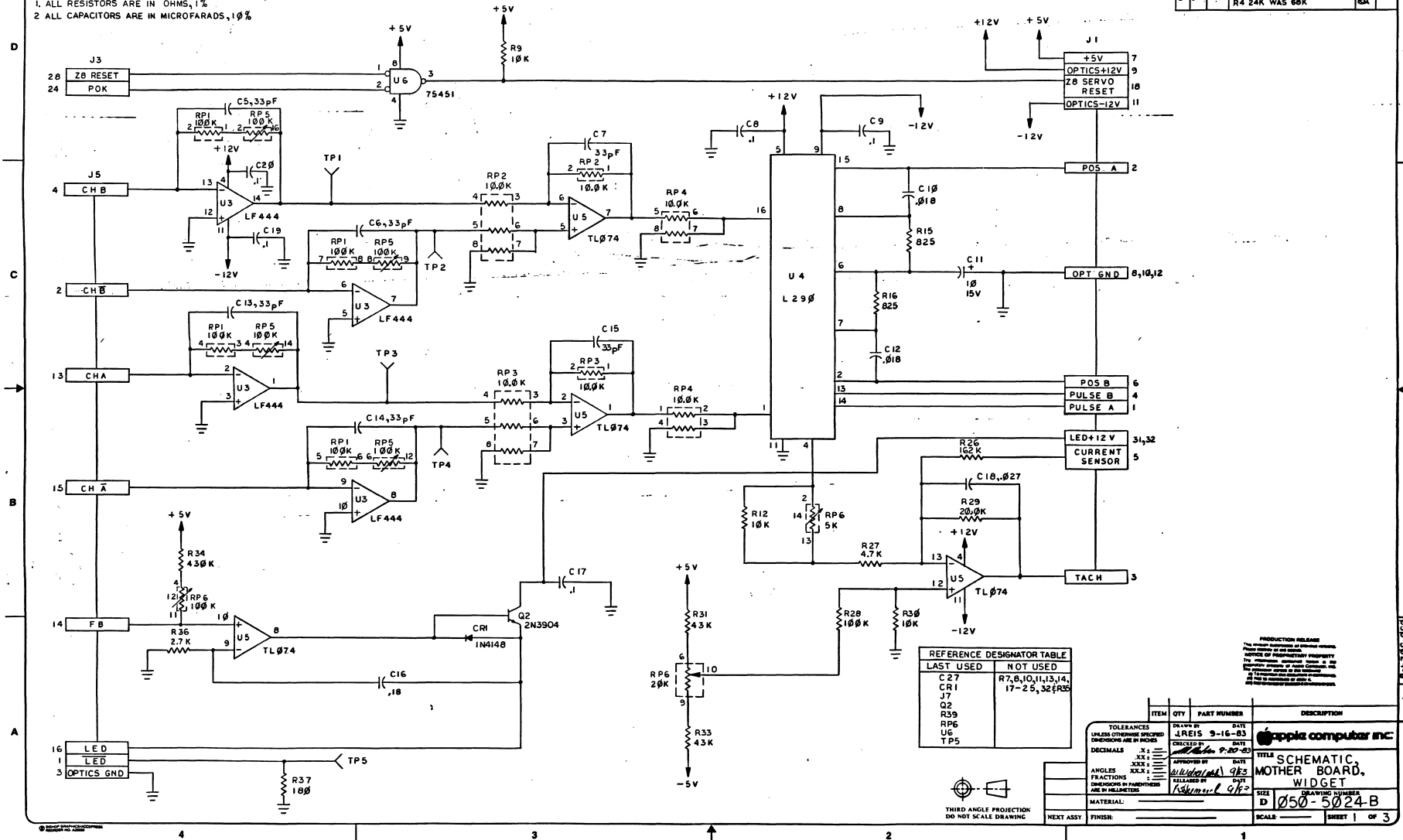
| REFERENCE DESIGNATOR | |
|----------------------|----------|
| LAST USED | NOT USED |
| C 17 | |
| CR 9 | |
| D 1 | |
| U 3 | |
| L 1 | |
| Q 5 | |
| R 15 | |
| RP 2 | |
| U 3 | |

| ITEM | QTY | PART NUMBER | DESCRIPTION |
|---|-----|---|-------------|
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ANGLES DECIMALS FRACTIONS DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS MATERIAL: N/A FINISH: N/A | | | |
| CHECKED BY: JEFFREY IO-27-82 DATE: 9-20-82 APPROVED BY: [Signature] DATE: 9/23/82 RELEASED BY: [Signature] | | TITLE: SCHEMATIC, MOTOR CONTROL, WIDGET DRAWING NUMBER: Q5Q-5Q23-B SCALE: NONE SHEET: 1 OF 1 | |

NOTE: UNLESS OTHERWISE SPECIFIED

- 1. ALL RESISTORS ARE IN OHMS, 1%
- 2. ALL CAPACITORS ARE IN MICROFARADS, 10%

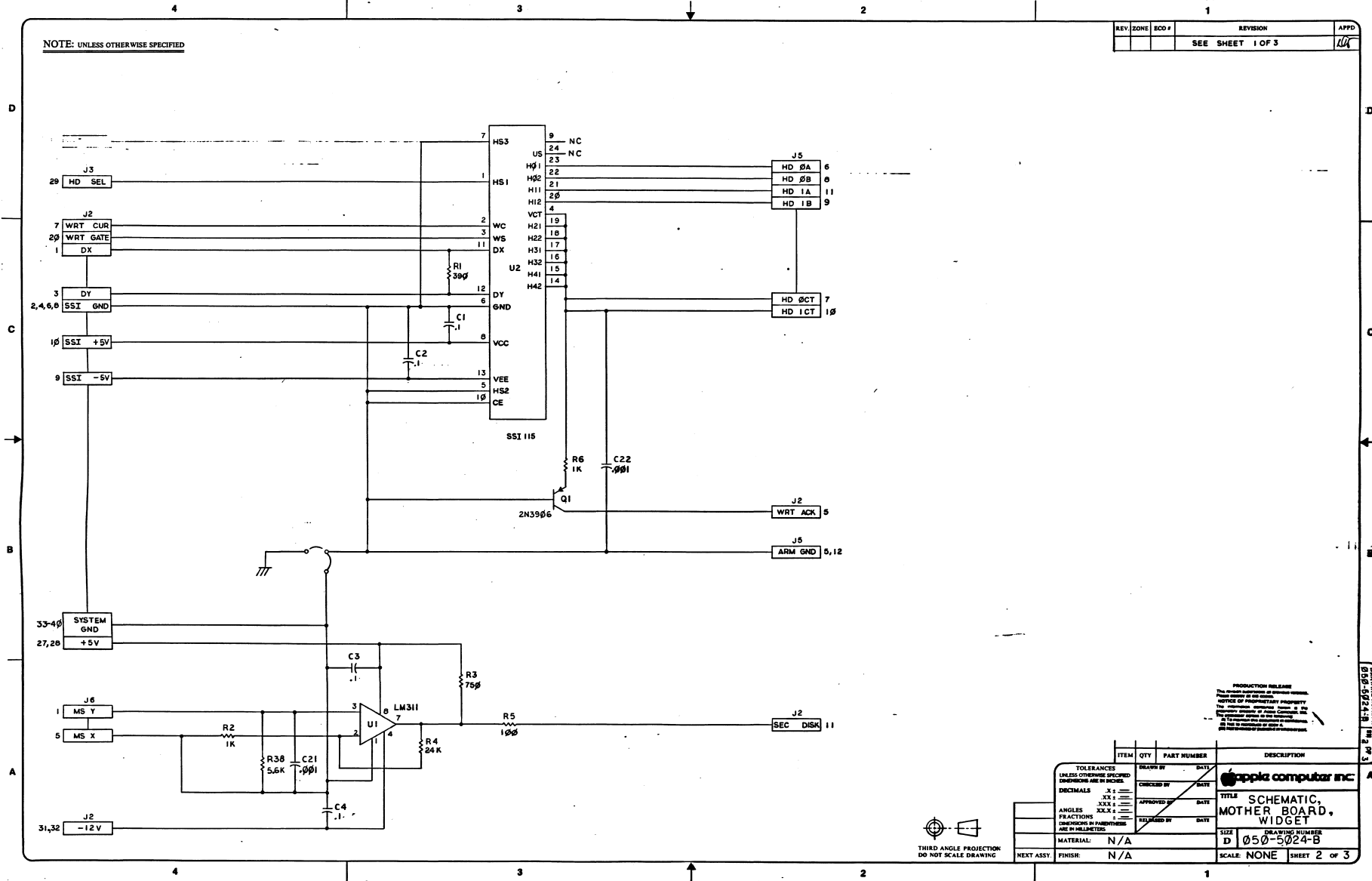
| REV | ZONE | ECO | REVISION | DATE | BY |
|-----|------|------|----------------------------|------|----|
| A | P581 | | INITIAL RELEASE (SK-WIS-D) | | |
| B | SA | PCOH | SHEET 2 R4 24K WAS 60K | | |

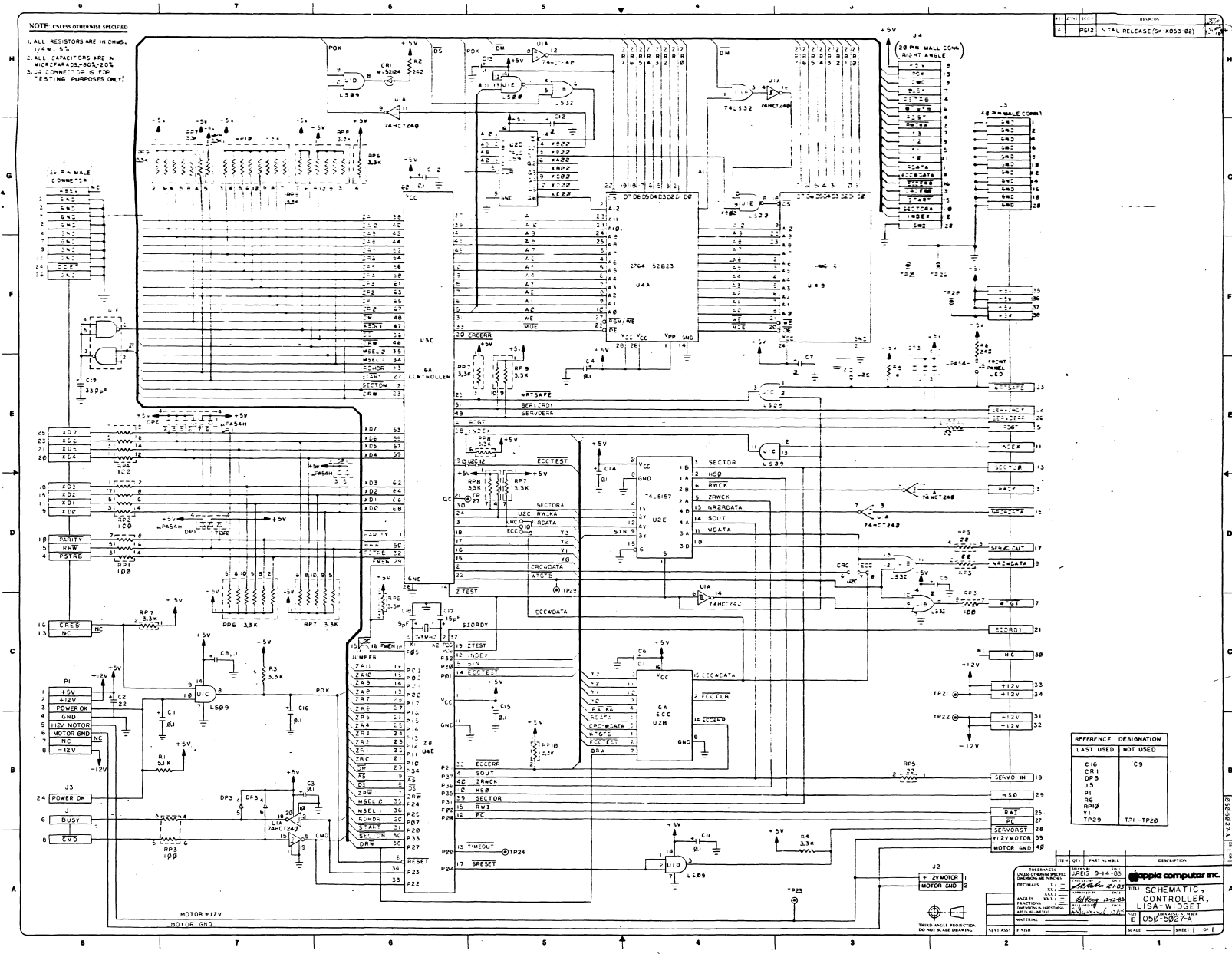


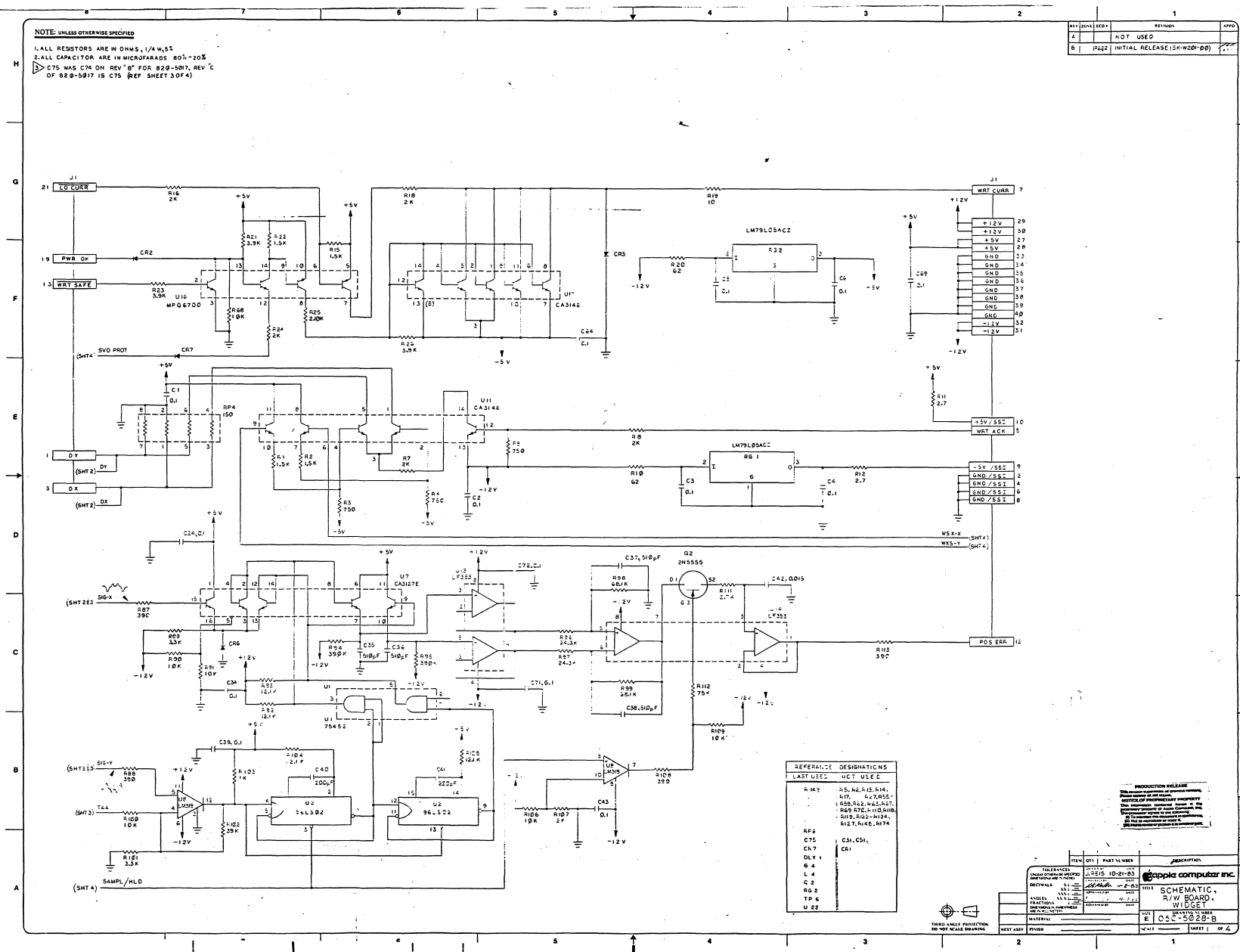
| REFERENCE DESIGNATOR TABLE | |
|----------------------------|-------------------------|
| LAST USED | NOT USED |
| C 27 | R 7, 8, 10, 11, 13, 14, |
| C 81 | 17-25, 32 (FDS) |
| J 7 | |
| Q 2 | |
| R 39 | |
| RP 6 | |
| U 6 | |
| TP 5 | |

PRODUCTION RELEASE
This release is made at the discretion of Apple Computer, Inc. and is not intended to be used for any purpose other than that for which it was originally intended. All other rights are reserved.

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------|-------------|--|---------------------------------------|------|--|--------------|---------|--|------------------|--|--|-------------|--|--|---|------|--|-------------|------|--|-------------|------|--|-----------|--|--|
| <table border="0"> <tr> <td>TOLERANCES UNLESS OTHERWISE SPECIFIED</td> <td>DATE</td> <td></td> </tr> <tr> <td>DECIMALS .X1</td> <td>9-16-83</td> <td></td> </tr> <tr> <td>FRACTIONS XX/100</td> <td></td> <td></td> </tr> <tr> <td>ANGLES 3X45</td> <td></td> <td></td> </tr> <tr> <td>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</td> <td>DATE</td> <td></td> </tr> <tr> <td>APPROVED BY</td> <td>DATE</td> <td></td> </tr> <tr> <td>RELEASED BY</td> <td>DATE</td> <td></td> </tr> <tr> <td>MATERIAL:</td> <td></td> <td></td> </tr> </table> | | | | TOLERANCES UNLESS OTHERWISE SPECIFIED | DATE | | DECIMALS .X1 | 9-16-83 | | FRACTIONS XX/100 | | | ANGLES 3X45 | | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DATE | | APPROVED BY | DATE | | RELEASED BY | DATE | | MATERIAL: | | |
| TOLERANCES UNLESS OTHERWISE SPECIFIED | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DECIMALS .X1 | 9-16-83 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS XX/100 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANGLES 3X45 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| APPROVED BY | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RELEASED BY | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MATERIAL: | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TITLE SCHEMATIC, MOTHER BOARD, WIDGET SIZE D 050-5024-B SCALE SHEET 1 OF 3 | | | | | | | | | | | | | | | | | | | | | | | | |

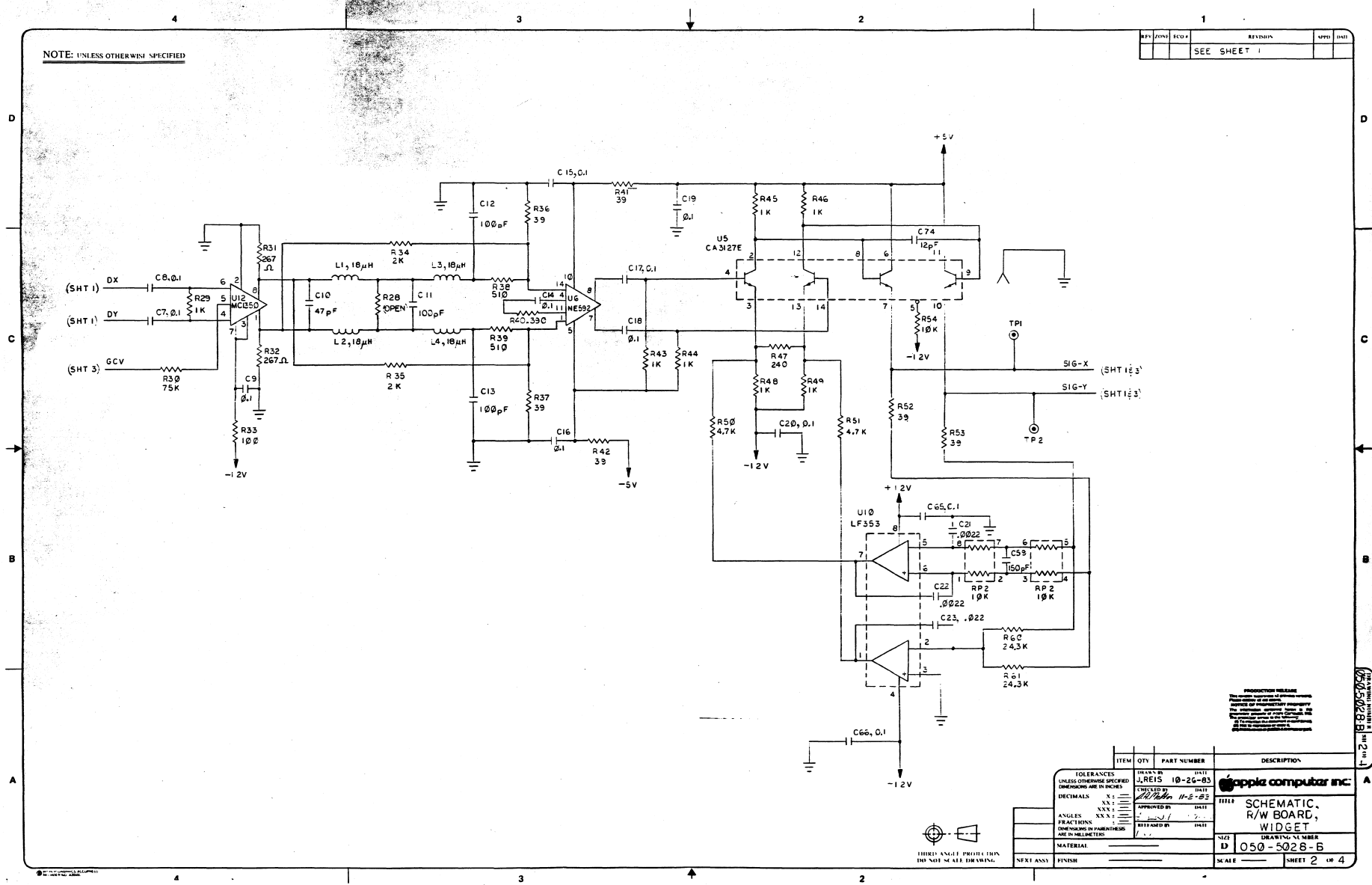






NOTE: UNLESS OTHERWISE SPECIFIED

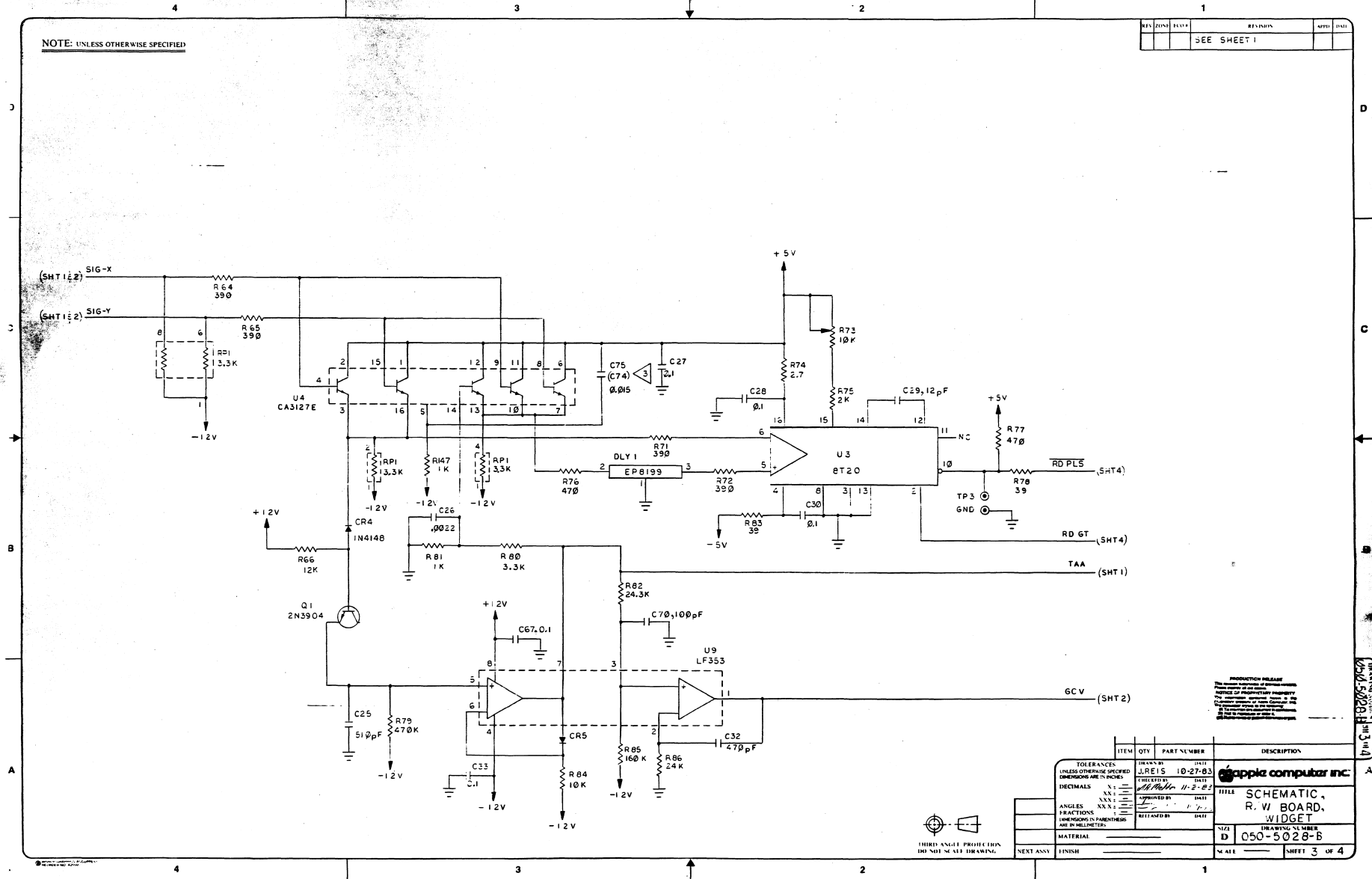
| | | | | | |
|-----|------|----|-------------|-------|------|
| REV | DATE | BY | DESCRIPTION | APP'D | DATE |
| | | | SEE SHEET 1 | | |



PRODUCTION RELEASE
This drawing contains information of a proprietary nature and is the property of Apple Computer, Inc. It is to be controlled and its use restricted to those personnel authorized by Apple Computer, Inc. for that purpose. It is not to be distributed outside the organization without the express written permission of Apple Computer, Inc.

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|-------------|---------------------|--|----------|------|--------------|---------|----------|------------------|------------|------|------------|---------|---------|-------------------|-------------|------|------------|--|--|----------------|--|--|---------------|--|--|---------------|--|--|
| <table border="1"> <tr> <td>TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</td> <td>DRAWN BY</td> <td>DATE</td> </tr> <tr> <td>DECIMALS .XX</td> <td>U. REIS</td> <td>10-20-83</td> </tr> <tr> <td>FRACTIONS XX/100</td> <td>CHECKED BY</td> <td>DATE</td> </tr> <tr> <td>ANGLES XXX</td> <td>U. REIS</td> <td>11-2-83</td> </tr> <tr> <td>FRACTIONS XXX/100</td> <td>APPROVED BY</td> <td>DATE</td> </tr> <tr> <td>DRAWING BY</td> <td></td> <td></td> </tr> <tr> <td>DRAWING NUMBER</td> <td></td> <td></td> </tr> <tr> <td>DRAWING TITLE</td> <td></td> <td></td> </tr> <tr> <td>DRAWING SCALE</td> <td></td> <td></td> </tr> </table> | | | | TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY | DATE | DECIMALS .XX | U. REIS | 10-20-83 | FRACTIONS XX/100 | CHECKED BY | DATE | ANGLES XXX | U. REIS | 11-2-83 | FRACTIONS XXX/100 | APPROVED BY | DATE | DRAWING BY | | | DRAWING NUMBER | | | DRAWING TITLE | | | DRAWING SCALE | | |
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DECIMALS .XX | U. REIS | 10-20-83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS XX/100 | CHECKED BY | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANGLES XXX | U. REIS | 11-2-83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS XXX/100 | APPROVED BY | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRAWING BY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRAWING NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRAWING TITLE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRAWING SCALE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TITLE SCHEMATIC R/W BOARD WIDGET | | | APPLE COMPUTER INC. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRAWING NUMBER D 050-5028-B | | | SHEET 2 OF 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING



NOTE: UNLESS OTHERWISE SPECIFIED

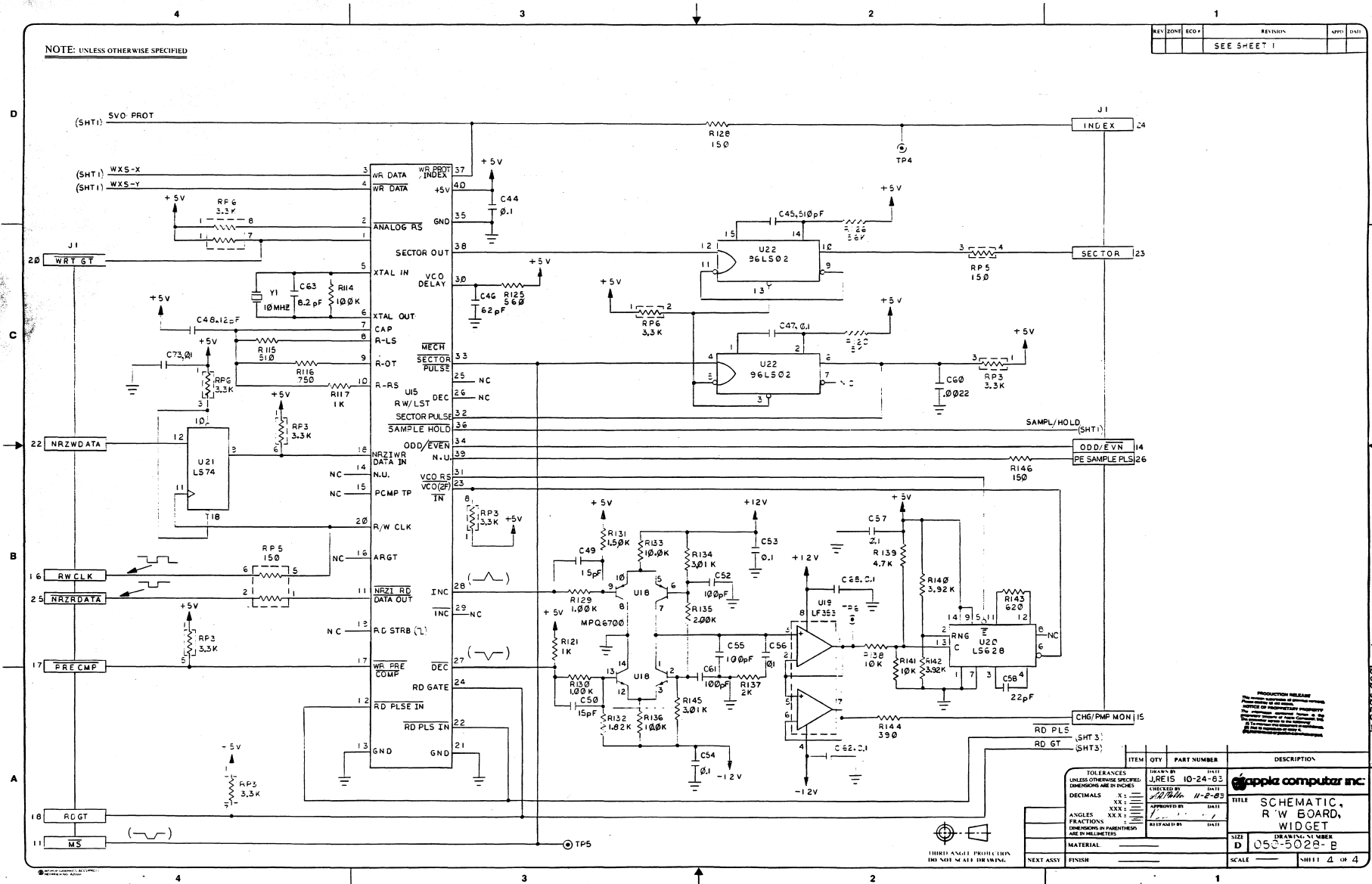
| | | | | | |
|-----|------|----|------|------|------|
| REV | DATE | BY | CHKD | APPD | DATE |
| | | | | | |

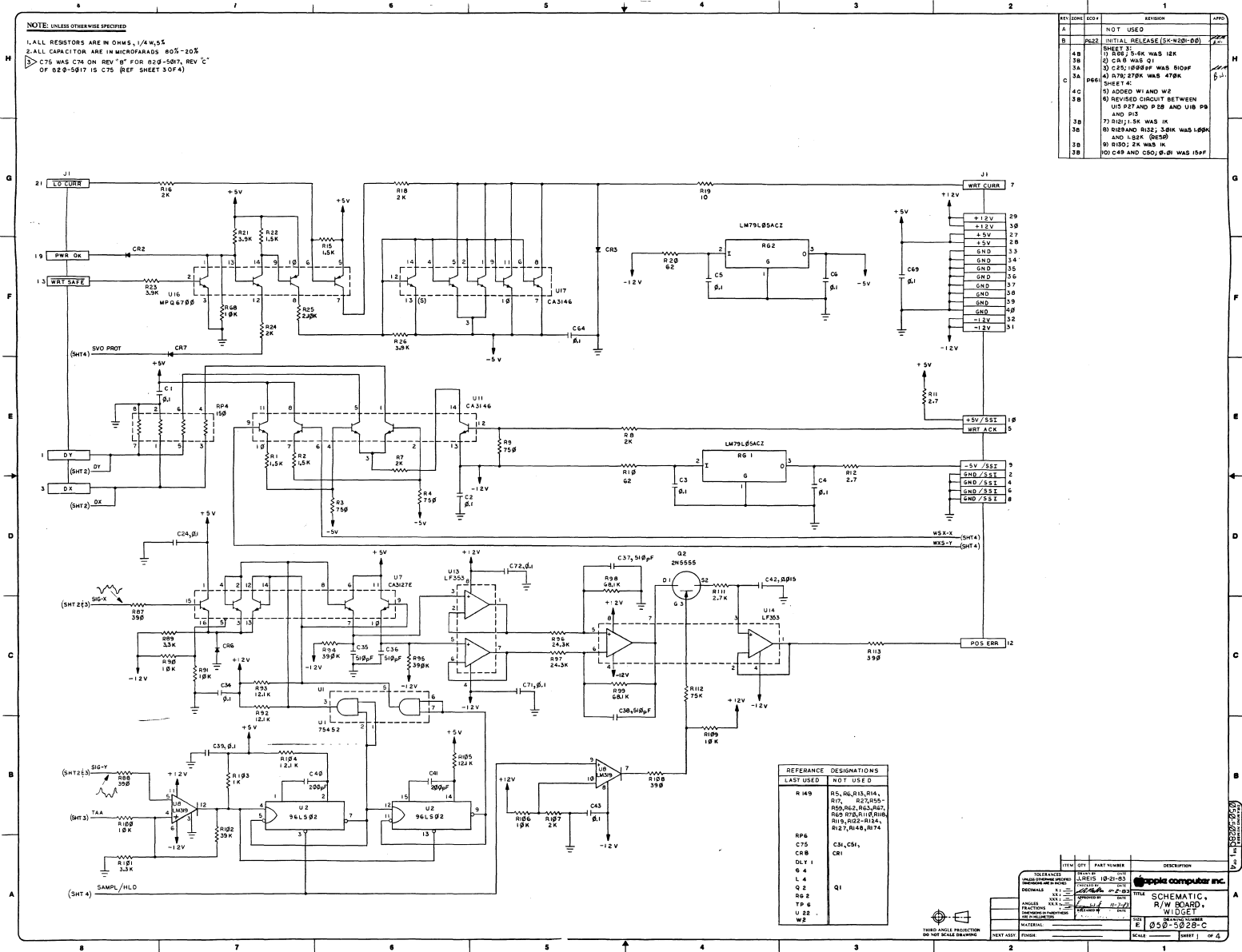
SEE SHEET 1

PRODUCTION RELEASE
 This document is the property of Apple Computer, Inc. and is loaned to you. It is not to be distributed outside your organization. If you are not an authorized recipient, please return this document to the person who loaned it to you.

| ITEM | QTY | PART NUMBER | DESCRIPTION |
|--|-----|-------------|---|
| TOLERANCES: UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS: XX.1 ANGLES: XX.1 FRACTIONS: (DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS) MATERIAL: _____ FINISH: _____ | | | |
| DRAWN BY: J. REIS CHECKED BY: [Signature] APPROVED BY: [Signature] DATE: 11-2-82 | | | TITLE: SCHEMATIC R/W BOARD WIDGET DRAWING NUMBER: 050-5028-B SHEET 3 OF 4 |



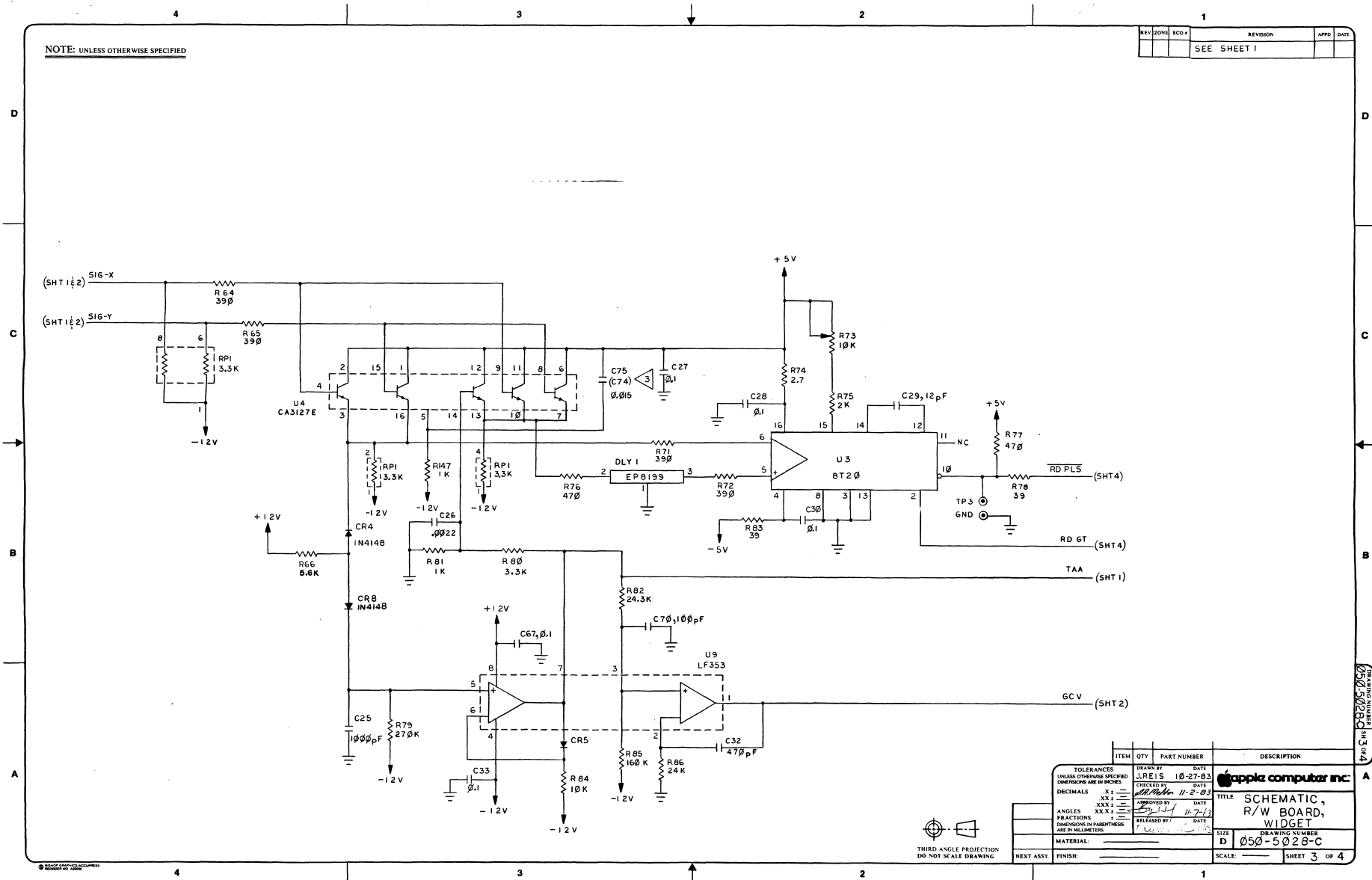


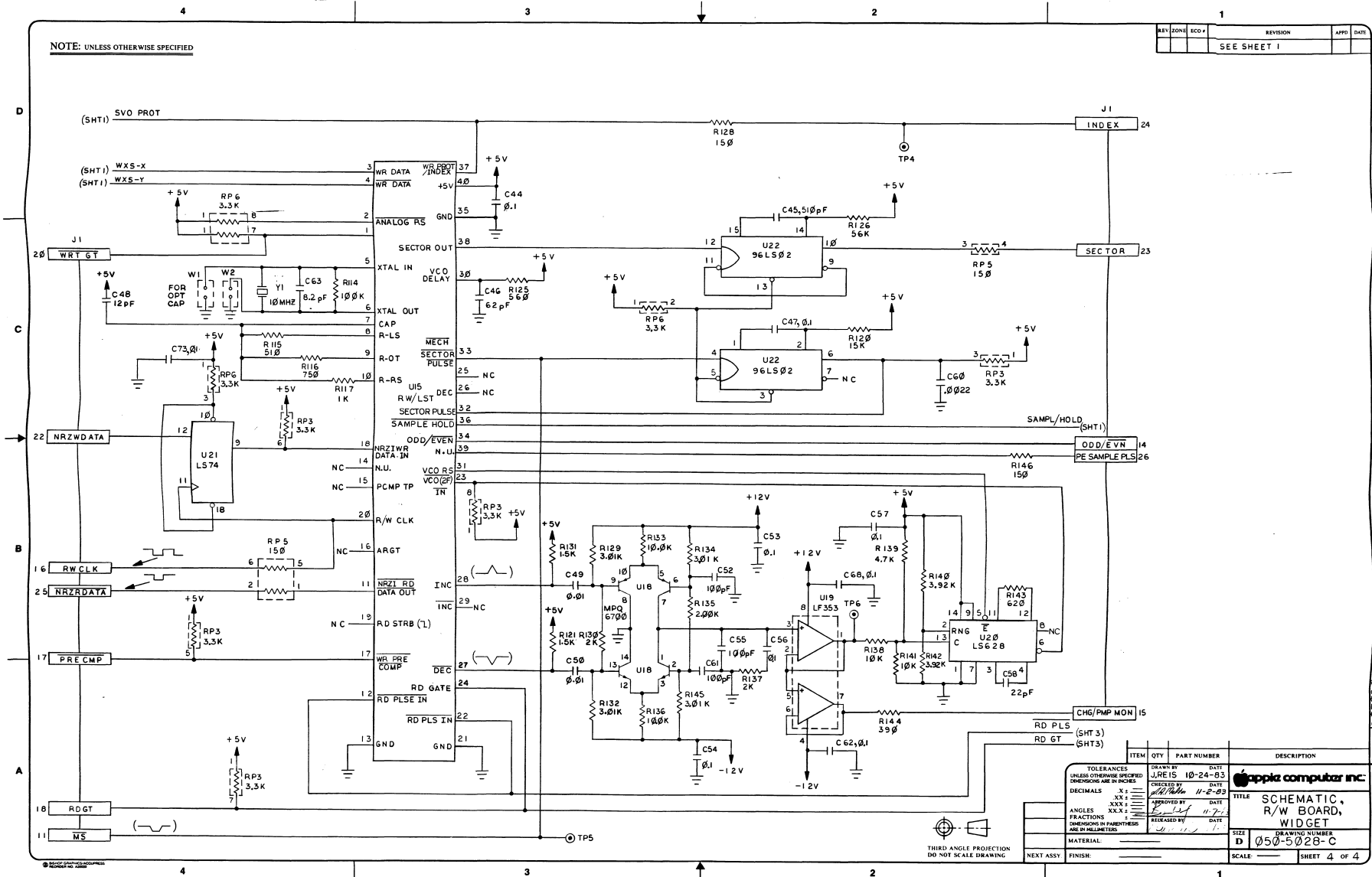


NOTE: UNLESS OTHERWISE SPECIFIED
 1. ALL RESISTORS ARE IN OHMS, 1/4W, 5%
 2. ALL CAPACITORS ARE IN MICROFARADS 805-20%
 3. C75 WAS C74 ON REV "B" FOR R20-5017, REV "C"
 OF 020-5017 IS C75 (REF SHEET 3074)

| REV | DATE | BY | REVISION | APPD |
|-----|-------|----|---|------|
| 1 | | | NOT USED | |
| 2 | 06-22 | | INITIAL RELEASE (5K-020-00) | |
| 3 | | | SHEET 31 | |
| 4B | | | 1) 50K 54K WAS 12K | |
| 5B | | | 2) CA8 WAS Q1 | |
| 5A | | | 3) C25, 100PF WAS 100FF | |
| 3A | | | 4) A70; 270K WAS 470K | |
| 6 | 06-26 | | SHEET 4: | |
| 4C | | | 1) ADDED W1 AND W2 | |
| 3B | | | 6) REVISED CIRCUITRY BETWEEN U15-R27 AND P38 AND U18-P8 AND P13 | |
| 3B | | | 7) R10; 15K WAS 1K | |
| 3B | | | 8) R10 AND R10; 3.9K WAS 4.9K AND 1.82K (0630) | |
| 3B | | | 9) R10; 2K WAS 1K | |
| 3B | | | 10) C49 AND C50; 0.1 WAS 15FF | |

| REFERENCE | DESIGNATIONS |
|-----------|---|
| LAST USED | NOT USED |
| R49 | R5, R6, R13, R14, R17, R27, R55, R56, R63, R65, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R853, R854, R855, R856, R857, R858, R859, R860, R861, R862, R863, R864, R865, R866, R867, R868, R869, R870, R871, R872, R873, R874, R875, R876, R877, R878, R879, R880, R881, R882, R883, R884, R885, R886, R887, R888, R889, R890, R891, R892, R893, R894, R895, R896, R897, R898, R899, R900, R901, R902, R903, R904, R905, R906, R907, R908, R909, R910, R911, R912, R913, R914, R915, R916, R917, R918, R919, R920, R921, R922, R923, R924, R925, R926, R927, R928, R929, R930, R931, R932, R933, R934, R935, R936, R937, R938, R939, R940, R941, R942, R943, R944, R945, R946, R947, R948, R949, R950, R951, R952, R953, R954, R955, R956, R957, R958, R959, R960, R961, R962, R963, R964, R965, R966, R967, R968, R969, R970, R971, R972, R973, R974, R975, R976, R977, R978, R979, R980, R981, R982, R983, R984, R985, R986, R987, R988, R989, R990, R991, R992, R993, R994, R995, R996, R997, R998, R999, R1000, R1001, R1002, R1003, R1004, R1005, R1006, R1007, R1008, R1009, R1010, R1011, R1012, R1013, R1014, R1015, R1016, R1017, R1018, R1019, R1020, R1021, R1022, R1023, R1024, R1025, R1026, R1027, R1028, R1029, R1030, R1031, R1032, R1033, R1034, R1035, R1036, R1037, R1038, R1039, R1040, R1041, R1042, R1043, R1044, R1045, R1046, R1047, R1048, R1049, R1050, R1051, R1052, R1053, R1054, R1055, R1056, R1057, R1058, R1059, R1060, R1061, R1062, R1063, R1064, R1065, R1066, R1067, R1068, R1069, R1070, R1071, R1072, R1073, R1074, R1075, R1076, R1077, R1078, R1079, R1080, R1081, R1082, R1083, R1084, R1085, R1086, R1087, R1088, R1089, R1090, R1091, R1092, R1093, R1094, R1095, R1096, R1097, R1098, R1099, R1100, R1101, R1102, R1103, R1104, R1105, R1106, R1107, R1108, R1109, R1110, R1111, R1112, R1113, R1114, R1115, R1116, R1117, R1118, R1119, R1120, R1121, R1122, R1123, R1124, R1125, R1126, R1127, R1128, R1129, R1130, R1131, R1132, R1133, R1134, R1135, R1136, R1137, R1138, R1139, R1140, R1141, R1142, R1143, R1144, R1145, R1146, R1147, R1148, R1149, R1150, R1151, R1152, R1153, R1154, R1155, R1156, R1157, R1158, R1159, R1160, R1161, R1162, R1163, R1164, R1165, R1166, R1167, R1168, R1169, R1170, R1171, R1172, R1173, R1174, R1175, R1176, R1177, R1178, R1179, R1180, R1181, R1182, R1183, R1184, R1185, R1186, R1187, R1188, R1189, R1190, R1191, R1192, R1193, R1194, R1195, R1196, R1197, R1198, R1199, R1200, R1201, R1202, R1203, R1204, R1205, R1206, R1207, R1208, R1209, R1210, R1211, R1212, R1213, R1214, R1215, R1216, R1217, R1218, R1219, R1220, R1221, R1222, R1223, R1224, R1225, R1226, R1227, R1228, R1229, R1230, R1231, R1232, R1233, R1234, R1235, R1236, R1237, R1238, R1239, R1240, R1241, R1242, R1243, R1244, R1245, R1246, R1247, R1248, R1249, R1250, R1251, R1252, R1253, R1254, R1255, R1256, R1257, R1258, R1259, R1260, R1261, R1262, R1263, R1264, R1265, R1266, R1267, R1268, R1269, R1270, R1271, R1272, R1273, R1274, R1275, R1276, R1277, R1278, R1279, R1280, R1281, R1282, R1283, R1284, R1285, R1286, R1287, R1288, R1289, R1290, R1291, R1292, R1293, R1294, R1295, R1296, R1297, R1298, R1299, R1300, R1301, R1302, R1303, R1304, R1305, R1306, R1307, R1308, R1309, R1310, R1311, R1312, R1313, R1314, R1315, R1316, R1317, R1318, R1319, R1320, R1321, R1322, R1323, R1324, R1325, R1326, R1327, R1328, R1329, R1330, R1331, R1332, R1333, R1334, R1335, R1336, R1337, R1338, R1339, R1340, R1341, R1342, R1343, R1344, R1345, R1346, R1347, R1348, R1349, R1350, R1351, R1352, R1353, R1354, R1355, R1356, R1357, R1358, R1359, R1360, R1361, R1362, R1363, R1364, R1365, R1366, R1367, R1368, R1369, R1370, R1371, R1372, R1373, R1374, R1375, R1376, R1377, R1378, R1379, R1380, R1381, R1382, R1383, R1384, R1385, R1386, R1387, R1388, R1389, R1390, R1391, R1392, R1393, R1394, R1395, R1396, R1397, R1398, R1399, R1400, R1401, R1402, R1403, R1404, R1405, R1406, R1407, R1408, R1409, R1410, R1411, R1412, R1413, R1414, R1415, R1416, R1417, R1418, R1419, R1420, R1421, R1422, R1423, R1424, R1425, R1426, R1427, R1428, R1429, R1430, R1431, R1432, R1433, R1434, R1435, R1436, R1437, R1438, R1439, R1440, R1441, R1442, R1443, R1444, R1445, R1446, R1447, R1448, R1449, R1450, R1451, R1452, R1453, R1454, R1455, R1456, R1457, R1458, R1459, R1460, R1461, R1462, R1463, R1464, R1465, R1466, R1467, R1468, R1469, R1470, R1471, R1472, R1473, R1474, R1475, R1476, R1477, R1478, R1479, R1480, R1481, R1482, R1483, R1484, R1485, R1486, R1487, R1488, R1489, R1490, R1491, R1492, R1493, R1494, R1495, R1496, R1497, R1498, R1499, R1500, R1501, R1502, R1503, R1504, R1505, R1506, R1507, R1508, R1509, R1510, R1511, R1512, R1513, R1514, R1515, R1516, R1517, R1518, R1519, R1520, R1521, R1522, R1523, R1524, R1525, R1526, R1527, R1528, R1529, R1530, R1531, R1532, R1533, R1534, R1535, R1536, R1537, R1538, R1539, R1540, R1541, R1542, R1543, R1544, R1545, R1546, R1547, R1548, R1549, R1550, R1551, R1552, R1553, R1554, R1555, R1556, R1557, R1558, R1559, R1560, R1561, R1562, R1563, R1564, R1565, R1566, R1567, R1568, R1569, R1570, R1571, R1572, R1573, R1574, R1575, R1576, R1577, R1578, R1579, R1580, R1581, R1582, R1583, R1584, R1585, R1586, R1587, R1588, R1589, R1590, R1591, R1592, R1593, R1594, R1595, R1596, R1597, R1598, R1599, R1600, R1601, R1602, R1603, R1604, R1605, R1606, R1607, R1608, R1609, R1610, R1611, R1612, R1613, R1614, R1615, R1616, R1617, R1618, R1619, R1620, R1621, R1622, R1623, R1624, R1625, R1626, R1627, R1628, R1629, R1630, R1631, R1632, R1633, R1634, R1635, R1636, R1637, R1638, R1639, R1640, R1641, R1642, R1643, R1644, R1645, R1646, R1647, R1648, R1649, R1650, R1651, R1652, R1653, R1654, R1655, R1656, R1657, R1658, R1659, R1660, R1661, R1662, R1663, R1664, R1665, R1666, R1667, R1668, R1669, R1670, R1671, R1672, R1673, R1674, R1675, R1676, R1677, R1678, R1679, R1680, R1681, R1682, R1683, R1684, R1685, R1686, R1687, R1688, R1689, R1690, R1691, R1692, R1693, R1694, R1695, R1696, R1697, R1698, R1699, R1700, R1701, R1702, R1703, R1704, R1705, R1706, R1707, R1708, R1709, R1710, R1711, R1712, R1713, R1714, R1715, R1716, R1717, R1718, R1719, R1720, R1721, R1722, R1723, R1724, R1725, R1726, R1727, R1728, R1729, R1730, R1731, R1732, R1733, R1734, R1735, R1736, R1737, R1738, R1739, R1740, R1741, R1742, R1743, R1744, R1745, R1746, R1747, R1748, R1749, R1750, R1751, R1752, R1753, R1754, R1755, R1756, R1757, R1758, R1759, R1760, R1761, R1762, R1763, R1764, R1765, R1766, R1767, R1768, R1769, R1770, R1771, R1772, R1773, R1774, R1775, R1776, R1777, R1778, R1779, R1780, R1781, R1782, R1783, R1784, R1785, R1786, R1787, R1788, R1789, R1790, R1791, R1792, R1793, R1794, R1795, R1796, R1797, R1798, R1799, R1800, R1801, R1802, R1803, R1804, R1805, R1806, R1807, R1808, R1809, R1810, R1811, R1812, R1813, R1814, R1815, R1816, R1817, R1818, R1819, R1820, R1821, R1822, R1823, R1824, R1825, R1826, R1827, R1828, R1829, R1830, R1831, R1832, R1833, R1834, R1835, R1836, R1837, R1838, R1839, R1840, R1841, R1842, R1843, R1844, R1845, R1846, R1847, R1848, R1849, R1850, R1851, R1852, R1853, R1854, R1855, R1856, R1857, R1858, R1859, R1860, R1861, R1862, R1863, R1864, R1865, R1866, R1867, R1868, R1869, R1870, R1871, R1872, R1873, R1874, R1875, R1876, R1877, R1878, R1879, R1880, R1881, R1882, R1883, R1884, R1885, R1886, R1887, R1888, R1889, R1890, R1891, R1892, R1893, R1894, R1895, R1896, R1897, R1898, R1899, R1900, R1901, R1902, R1903, R1904, R1905, R1906, R1907, R1908, R1909, R1910, R1911, R1912, R1913, R1914, R1915, R1916, R1917, R1918, R1919, R1920, R1921, R1922, R1923, R1924, R1925, R1926, R1927, R1928, R1929, R1930, R1931, R1932, R1933, R1934, R1935, R1936, R1937, R1938, R1939, R1940, R1941, R1942, R1943, R1944, R1945, R1946, R1947, R1948, R1949, R1950, R1951, R1952, R1953, R1954, R1955, R1956, R1957, R1958, R1959, R1960, R1961, R1962, R1963, R1964, R1965, R1966, R1967, R1968, R1969, R1970, R1971, R1972, R1973, R1974, R1975, R1976, R1977, R1978, R1979, R1980, R1981, R1982, R1983, R1984, R1985, R1986, R1987, R1988, R1989, R1990, R1991, R1992, R1993, R1994, R1995, R1996, R1997, R1998, R1999, R2000, R2001, R2002, R2003, R2004, R2005, R2006, R2007, R2008, R2009, R2010, R2011, R2012, R2013, R2014, R2015, R2016, R2017, R2018, R2019, R2020, R2021, R2022, R2023, R2024, R2025, R2026, R2027, R2028, R2029, R2030, R2031, R2032, R2033, R2034, R2035, R2036, R2037, R2038, R2039, R2040, R2041, R2042, R2043, R2044, R2045, R2046, R2047, R2048, R2049, R2050, R2051, R2052, R2053, R2054, R2055, R2056, R2057, R2058, R2059 |



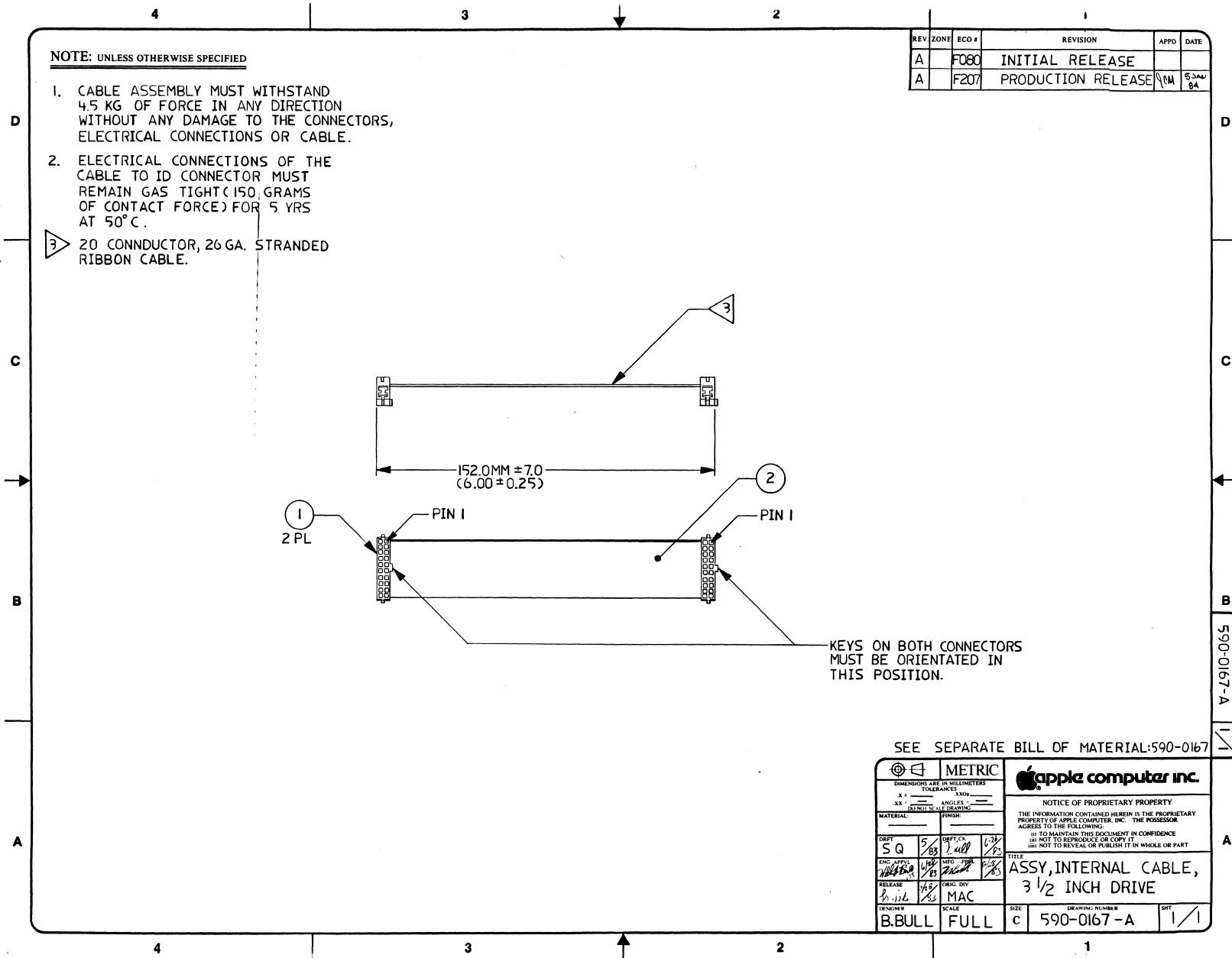


NOTE: UNLESS OTHERWISE SPECIFIED

1. CABLE ASSEMBLY MUST WITHSTAND 4.5 KG OF FORCE IN ANY DIRECTION WITHOUT ANY DAMAGE TO THE CONNECTORS, ELECTRICAL CONNECTIONS OR CABLE.

2. ELECTRICAL CONNECTIONS OF THE CABLE TO ID CONNECTOR MUST REMAIN GAS TIGHT (150 GRAMS OF CONTACT FORCE) FOR 5 YRS AT 50° C.

3. 20 CONDUCTOR, 26 GA. STRANDED RIBBON CABLE.



| REV | ZONE | ECO # | REVISION | APPD | DATE |
|-----|------|-------|--------------------|------|--------|
| A | | F080 | INITIAL RELEASE | | |
| A | | F207 | PRODUCTION RELEASE | SKM | 5.3.84 |

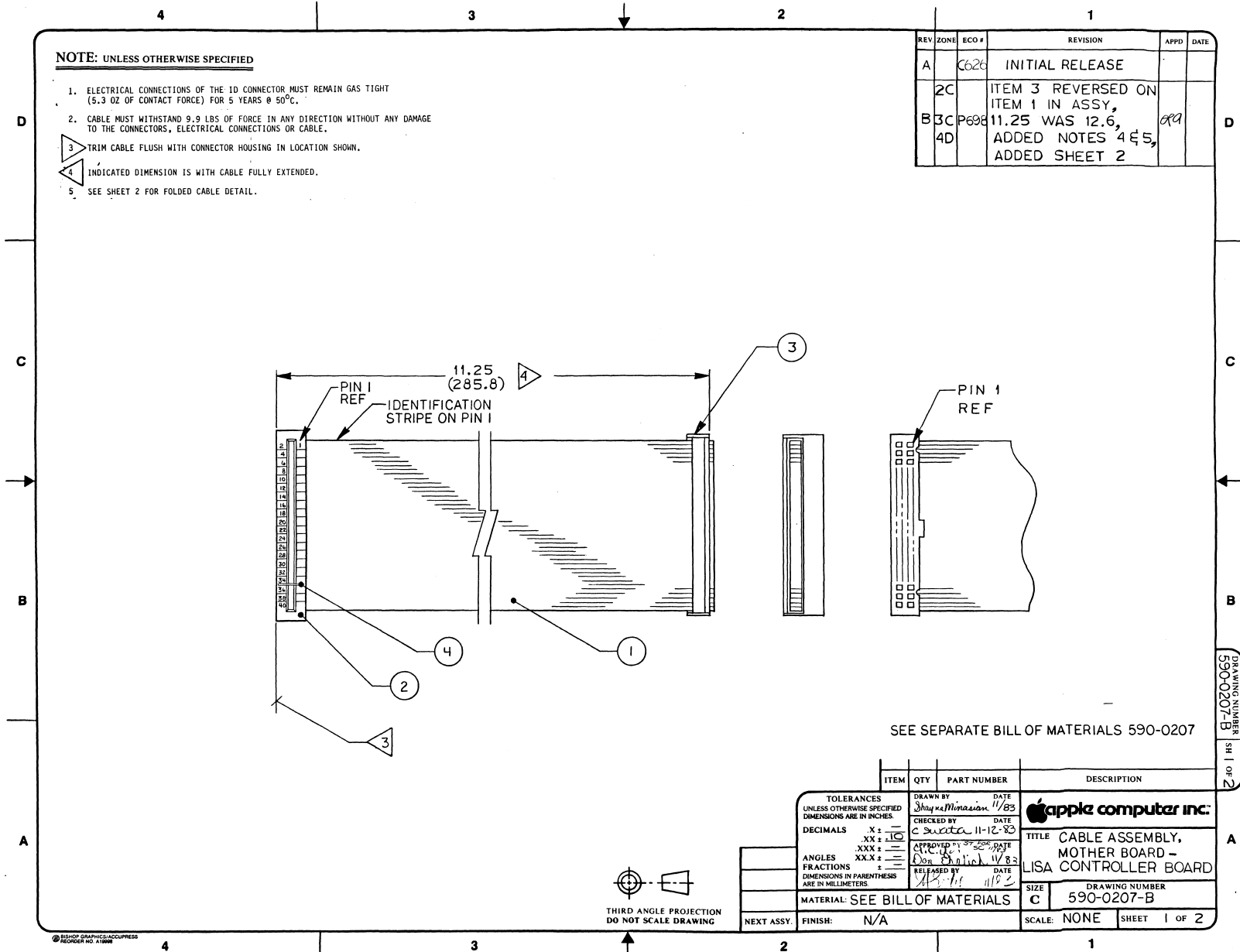
SEE SEPARATE BILL OF MATERIAL: 590-0167

| | | | | | |
|-------------------------------|--|-----------|--|---|--|
| DIMENSIONS ARE IN MILLIMETERS | | METRIC | | apple computer inc. | |
| TOLERANCES | | ANGLES | | NOTICE OF PROPRIETARY PROPERTY | |
| .XX - .XX | | .XX - .XX | | THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING: | |
| MATERIAL | | FINISH | | i) TO MAINTAIN THIS DOCUMENT IN CONFIDENCE | |
| DRAFT | | DRAFT | | ii) NOT TO REPRODUCE OR COPY IT | |
| S Q | | S Q | | iii) NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART | |
| ENG APP'D | | ENG APP'D | | TITLE | |
| RELEASE | | RELEASE | | ASSY, INTERNAL CABLE, | |
| DESIGNER | | SCALE | | 3 1/2 INCH DRIVE | |
| B.BULL | | FULL | | SIZE | |
| | | | | DRAWING NUMBER | |
| | | | | 590-0167-A | |
| | | | | SHEET | |
| | | | | 1/1 | |

NOTE: UNLESS OTHERWISE SPECIFIED

1. ELECTRICAL CONNECTIONS OF THE ID CONNECTOR MUST REMAIN GAS TIGHT (5.3 OZ OF CONTACT FORCE) FOR 5 YEARS @ 50°C.
2. CABLE MUST WITHSTAND 9.9 LBS OF FORCE IN ANY DIRECTION WITHOUT ANY DAMAGE TO THE CONNECTORS, ELECTRICAL CONNECTIONS OR CABLE.
3. TRIM CABLE FLUSH WITH CONNECTOR HOUSING IN LOCATION SHOWN.
4. INDICATED DIMENSION IS WITH CABLE FULLY EXTENDED.
5. SEE SHEET 2 FOR FOLDED CABLE DETAIL.

| REV | ZONE | ECO # | REVISION | APPD | DATE |
|-----|------|-------|------------------------------------|------|------|
| A | | C628 | INITIAL RELEASE | | |
| 2C | | | ITEM 3 REVERSED ON ITEM 1 IN ASSY, | | |
| B3C | P698 | | 11.25 WAS 12.6, | epa | |
| 4D | | | ADDED NOTES 4 & 5, ADDED SHEET 2 | | |



SEE SEPARATE BILL OF MATERIALS 590-0207

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------|---|---|---|------|----------------------------|-------------------|-------------------------------------|------|-----------------|-------------------------------------|------|---|--------------------|-----------------------------|------|---------------------------------|--|--|---|--------|---------------------------|------------|-------------|-------------|--------------|
| <table border="1"> <tr> <td>TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.</td> <td>DRAWN BY <i>Shay & Morrison</i> 11/83</td> <td>DATE</td> <td rowspan="2"> apple computer inc. </td> </tr> <tr> <td>DECIMALS .X ± .10</td> <td>CHECKED BY <i>C. Swita</i> 11-12-83</td> <td>DATE</td> </tr> <tr> <td>ANGLES .XX ± .5</td> <td>APPROVED BY <i>Don Daniel</i> 11/83</td> <td>DATE</td> <td rowspan="2"> TITLE CABLE ASSEMBLY, MOTHER BOARD - LISA CONTROLLER BOARD </td> </tr> <tr> <td>FRACTIONS .XX ± .5</td> <td>RELEASED BY <i>MS</i> 11/83</td> <td>DATE</td> </tr> <tr> <td colspan="3">MATERIAL: SEE BILL OF MATERIALS</td> <td> <table border="1"> <tr> <td>SIZE C</td> <td>DRAWING NUMBER 590-0207-B</td> </tr> </table> </td> </tr> <tr> <td>NEXT ASSY.</td> <td>FINISH: N/A</td> <td>SCALE: NONE</td> <td>SHEET 1 OF 2</td> </tr> </table> | | | | TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. | DRAWN BY <i>Shay & Morrison</i> 11/83 | DATE | apple computer inc. | DECIMALS .X ± .10 | CHECKED BY <i>C. Swita</i> 11-12-83 | DATE | ANGLES .XX ± .5 | APPROVED BY <i>Don Daniel</i> 11/83 | DATE | TITLE CABLE ASSEMBLY, MOTHER BOARD - LISA CONTROLLER BOARD | FRACTIONS .XX ± .5 | RELEASED BY <i>MS</i> 11/83 | DATE | MATERIAL: SEE BILL OF MATERIALS | | | <table border="1"> <tr> <td>SIZE C</td> <td>DRAWING NUMBER 590-0207-B</td> </tr> </table> | SIZE C | DRAWING NUMBER 590-0207-B | NEXT ASSY. | FINISH: N/A | SCALE: NONE | SHEET 1 OF 2 |
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. | DRAWN BY <i>Shay & Morrison</i> 11/83 | DATE | apple computer inc. | | | | | | | | | | | | | | | | | | | | | | | | |
| DECIMALS .X ± .10 | CHECKED BY <i>C. Swita</i> 11-12-83 | DATE | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANGLES .XX ± .5 | APPROVED BY <i>Don Daniel</i> 11/83 | DATE | TITLE CABLE ASSEMBLY, MOTHER BOARD - LISA CONTROLLER BOARD | | | | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS .XX ± .5 | RELEASED BY <i>MS</i> 11/83 | DATE | | | | | | | | | | | | | | | | | | | | | | | | | |
| MATERIAL: SEE BILL OF MATERIALS | | | <table border="1"> <tr> <td>SIZE C</td> <td>DRAWING NUMBER 590-0207-B</td> </tr> </table> | SIZE C | DRAWING NUMBER 590-0207-B | | | | | | | | | | | | | | | | | | | | | | |
| SIZE C | DRAWING NUMBER 590-0207-B | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NEXT ASSY. | FINISH: N/A | SCALE: NONE | SHEET 1 OF 2 | | | | | | | | | | | | | | | | | | | | | | | | |

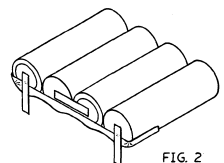
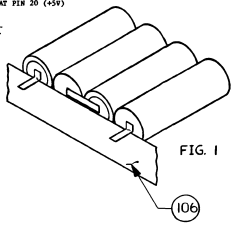
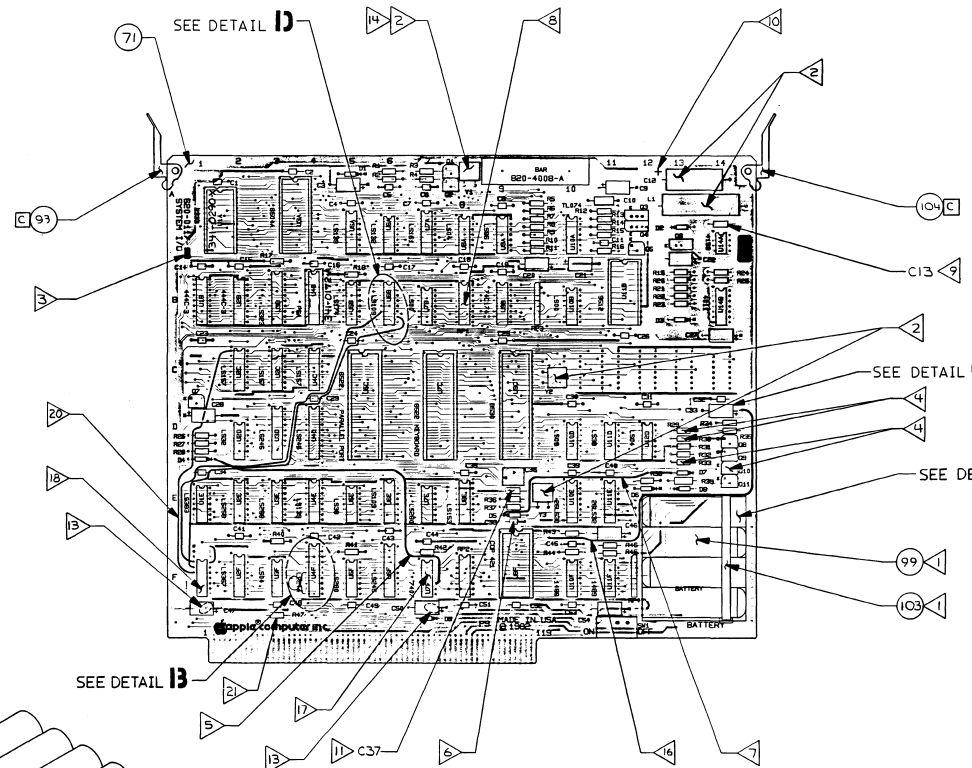
DRAWING NUMBER 590-0207-B 1st 1 of 2

© HISHON GRAPHICS/ACCOMPRESS REORDER NO. A10000

NOTE: UNLESS OTHERWISE SPECIFIED

- △ AFTER WAVE SOLDERING, SECURE BATTERY PACK (ITEM 99) WITH TIE WRAP (ITEM 103).
- △ SECURE COMPONENTS Y1, Y2, Y3, Y4, Y5, AND C12 TO PCB USING REV (ITEM 105). DO NOT EXPOSE REV TO WATER OR CLEANING FLUID FOR AT LEAST 24 HRS.
- △ THE ASST KEY LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL KEY LEVEL. MANUFACTURING MUST STAMP THE LATEST KEY LEVEL IN APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REWORK.
- △ COMPONENTS NOT LOADED IN THESE POSITIONS.
- △ ISOLATE PAD ON D4-1 (CATHODE SIDE), BY CUTTING POWER TRACE ON SOLDER (BACK) SIDE OF PCB. CONDUCT D4-1 (CATHODE) TO U7F-10 ON COMPONENT SIDE OF PCB USING #24 AWG KEMAR JUMPER WIRE. SECURE WIRE TACK-PAD OR SOLDER.
- △ CUT TRACE FROM D5 CATHODE (LEFT SIDE) TO C38 RIGHT SIDE (PAT TRACE FOR +5V).
- △ ADD #24 AWG KEMAR JUMPER WIRE FROM D5 CATHODE TO +12V ON FEEDTHROUGH TO THE LEFT OF D7 (SILAR STROGOL E35). SECURE JUMPER WITH TACK-PAD OR SOLDER.
- △ CUT TRACES RY1-13 AND RY1-9. (GRID LOCATION D8B).
- △ C13 IS MISSING FROM THE SILSCREEN. IT IS LOCATED IMMEDIATELY TO THE RIGHT OF D2 AND ABOVE U14A.
- △ C12 DOES NOT HAVE ITS POLARIZATION INDICATED ON THE SILSCREEN. INSTALL C12 WITH THE POSITIVE TO THE LEFT SIDE.
- △ C37 IS MISSING FROM THE SILSCREEN. IT IS LOCATED DIRECTLY ABOVE R36 AND TO THE LEFT OF U7.
- △ ADD A 475F CAPACITOR (APPLE P/N 131-3703) BETWEEN D9F-6 AND D4F-10. ATTACH THE CAPACITOR DIRECTLY TO THE IC PAD WITH A BEAD OF SOLDER.
- △ BLOCK HOLE OF SOLDER SIDE PRIOR TO WAVE SOLDER TO PREVENT CAPACITOR DAMAGE FROM SOLDER FLOW-THROUGH.
- △ Y1 MUST BE SECURED SO THAT IT DOES NOT EXTEND INTO "BAR" AREA OUTLINE. ON THE NON-COMPONENT SIDE, CUT THE TRACE AT C33 "A".
- △ ADD #24 AWG KEMAR JUMPER WIRE FROM C33 "A" TO THE FEEDTHROUGH NEAR R43.
- △ ADD #24 AWG KEMAR JUMPER BETWEEN PINS U7F-11 AND U7F-13 NON-COMPONENT SIDE. LOOP FROM PIN 11 TO PIN 13 MUST BE WIDE ENOUGH TO ALLOW TEST PROBE TO REACH PIN U7F-13 UNOBSTRUCTED.
- △ ADD TALSOR AT LOCATION U7F. 14 PIN IC JUSTIFIED TO BOTTOM HOLES OF 20 PIN HOLE PATTERN.
- △ CUT TRACE FROM U6B-6 AT LOCATION BETWEEN PINS U6B-10 & U6B-11, BEFORE FEED THEM.
- △ ADD JUMPER WIRES (SIZES 30-40 AWG ACCEPTABLE).
 - U7F-14 TO HOLE AT PIN 20 (+5V)
 - U7F-2 TO U6B-10
 - U7F-3 TO U7C-1
 - U7F-1 TO U6B-4

△ NO COMPONENT TO BE STUFFED AT LOCATION R41.



- PROCEDURE: (PRIOR TO WAVE SOLDER)
1. BEND BOTH TERMINALS OUT AT WELD (FIG. 1).
 2. INSERT KAPTON TAPE UNDER TERMINALS. STICKY SIDE TOWARD CELLS (FIG. 1).
 3. STICK TAPE TO CELLS AND STRAIGHTEN TERMINALS (FIG. 2).

DETAIL A

DETAIL D
SCALE: 2X

DETAIL B
SCALE: 2X

DETAIL C

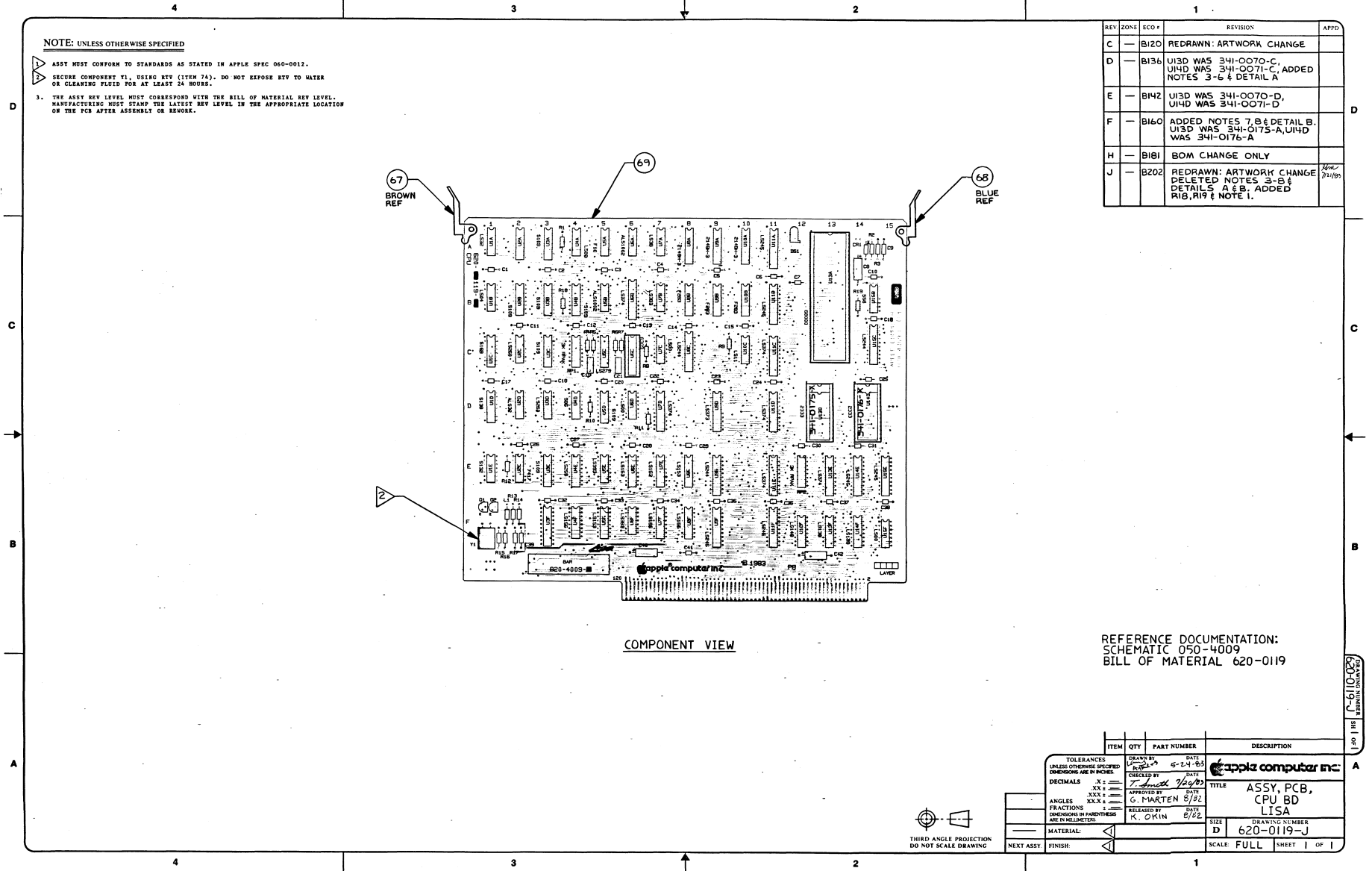
| REV | ZONE | ECO # | REVISION | DATE | APPD |
|-----|----------|-------|--|-------|------|
| A | - | B083 | INITIAL RELEASE | 1-25 | PB |
| B | D4 | B096 | ADDED NOTES 4-11 CORRECTED NOTE 2 | 2-26 | PB |
| C | C13 | B096 | ITEM 104 WAS ITEM 93, ITEM 93 WAS ITEM 104 | 2-26 | PB |
| D | B116 | | ADDED DETAIL A, ITEM 106, AND ADDED L1 & C12 TO NOTE 2. | 2-26 | PB |
| E | B116 | | ADDED NOTE 12 AND DETAIL B. | 2-26 | PB |
| F | B158 | | ADDED NOTES 13 & 14. NOTES 5 & 7 "TACK-PAD OR EQUIV" WAS RTV. | 2-26 | PB |
| H | - | B181 | BOM CHANGE ONLY | 7-2 | UTM |
| J | - | B211 | ADDED NOTES 15 16 + DETAIL C | 7-2 | PB |
| K | 4D 4C | B234 | NOTE 5: U7F-10 WAS U7F-12. ADDED NOTE 17. ITEMS 82 & 83 QTY WAS 2. | 6-18 | JBL |
| L | - | B303 | BOM CHANGE ONLY | 7-2 | PB |
| M | 4C | B338 | ADDED NOTES 18, 19 + 20. ADDED DETAIL D | 9-2 | PB |
| N | 3C | B453 | U1A; 341-0290 WAS 341-0138 | 10-2 | PB |
| P | 3D | B468 | ITEM 3 QTY WAS 6. ADDED NOTE 21. | 11-24 | TP |

PRODUCTION RELEASE
This document is the property of Apple Computer, Inc. It is loaned to you for your use only. It is not to be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Apple Computer, Inc.

REFERENCE DOCUMENTATION:
SCHEMATIC 050-4008
BILL OF MATERIAL 620-0117

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|-------------|-------------------------------|--|----------|------|--|--------------|-----------|---------|----------------|-------------|------|--------------|------------|---------|------------------|-------------|------|--|--|--|--|--|--------------|--|--|--|----------------------|--|--|--|
| <table border="1"> <tr> <td>TOLERANCES (UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES)</td> <td>DRAWN BY</td> <td>DATE</td> <td rowspan="4"> </td> </tr> <tr> <td>DECIMALS .XX</td> <td>Ken Inaba</td> <td>4/16/82</td> </tr> <tr> <td>FRACTIONS XX/1</td> <td>Approved by</td> <td>DATE</td> </tr> <tr> <td>ANGLES XXX.X</td> <td>P. Doherty</td> <td>4/16/82</td> </tr> <tr> <td>FRACCTIONS XXX/1</td> <td>RELEASED BY</td> <td>DATE</td> <td></td> </tr> <tr> <td>DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>MATERIAL N/A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>NEXT ASSY FINISH N/A</td> <td></td> <td></td> <td></td> </tr> </table> | | | | TOLERANCES (UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES) | DRAWN BY | DATE | | DECIMALS .XX | Ken Inaba | 4/16/82 | FRACTIONS XX/1 | Approved by | DATE | ANGLES XXX.X | P. Doherty | 4/16/82 | FRACCTIONS XXX/1 | RELEASED BY | DATE | | DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS | | | | MATERIAL N/A | | | | NEXT ASSY FINISH N/A | | | |
| TOLERANCES (UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES) | DRAWN BY | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DECIMALS .XX | Ken Inaba | 4/16/82 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS XX/1 | Approved by | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANGLES XXX.X | P. Doherty | 4/16/82 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FRACCTIONS XXX/1 | RELEASED BY | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MATERIAL N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NEXT ASSY FINISH N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TITLE | | | ASSEMBLY, PCB SYSTEM I/O LISA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRAWING NUMBER | | | D 620-0117-P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCALE | | | FULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET | | | 1 OF 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DRAWING NUMBER 620-0117-P



NOTE: UNLESS OTHERWISE SPECIFIED

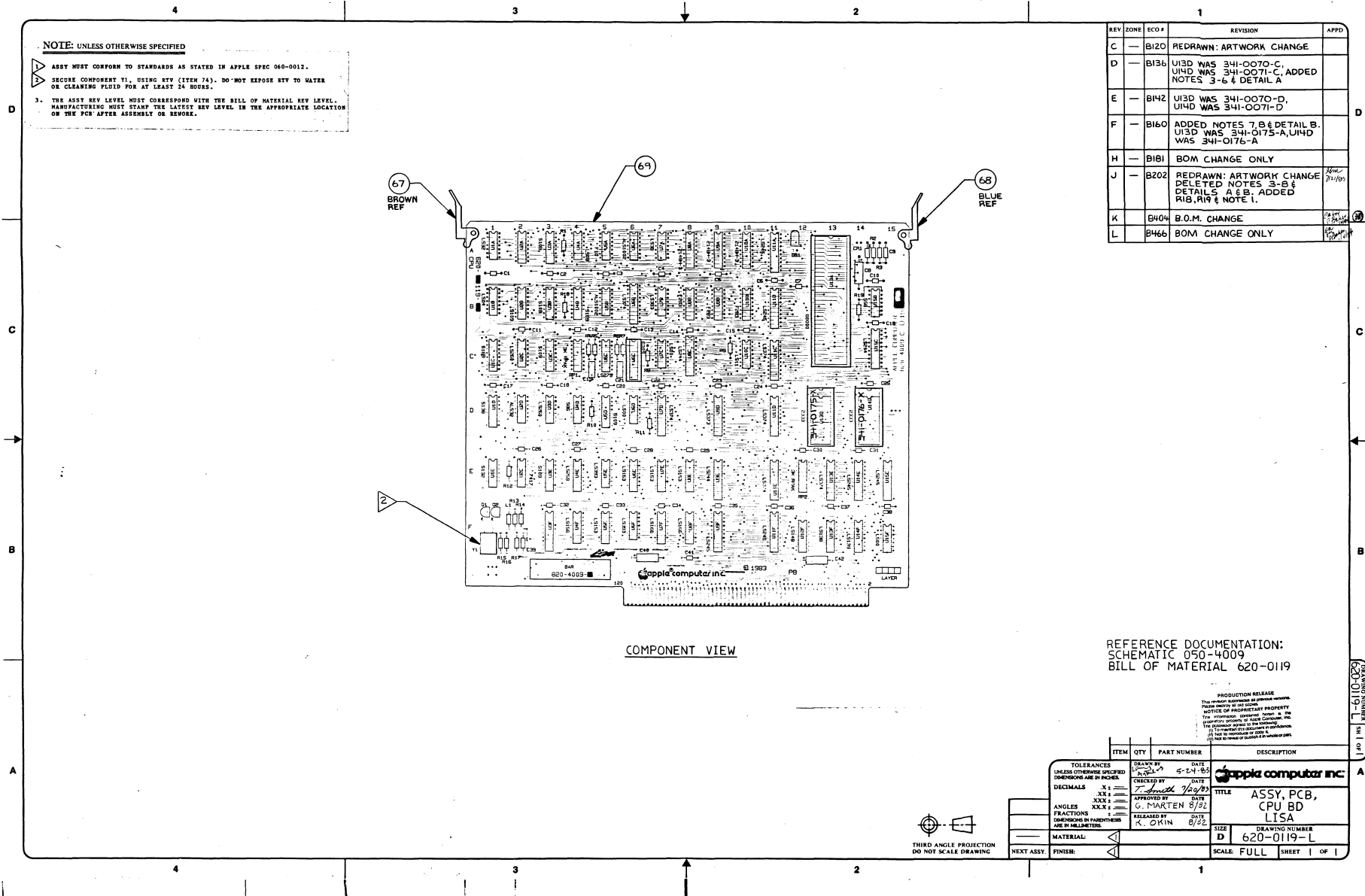
- ASST MUST CONFORM TO STANDARDS AS STATED IN APPLE SPEC 060-0012.
- SECURE COMPONENT T1, USING RTV (ITEM 7A). DO NOT EXPOSE RTV TO WATER OR CLEARING FLUID FOR AT LEAST 24 HOURS.
- THE ASST REV LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL REV LEVEL. MANUFACTURING MUST STAMP THE LATEST REV LEVEL IN THE APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REWORK.

| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|---|---------------|
| C | --- | B120 | REDRAWN: ARTWORK CHANGE | |
| D | --- | B136 | U13D WAS 341-0070-C, U14D WAS 341-0071-C, ADDED NOTES 3-6 & DETAIL A | |
| E | --- | B142 | U13D WAS 341-0070-D, U14D WAS 341-0071-D | |
| F | --- | B160 | ADDED NOTES 7,8 & DETAIL B. U13D WAS 341-0175-A, U14D WAS 341-0176-A | |
| H | --- | B181 | BOM CHANGE ONLY | |
| J | --- | B202 | REDRAWN: ARTWORK CHANGE DELETED NOTES 3-8 & DETAILS A & B. ADDED R18, R19 & NOTE 1. | Kml 7/1/89 |

COMPONENT VIEW

REFERENCE DOCUMENTATION:
SCHEMATIC 050-4009
BILL OF MATERIAL 620-0119

| ITEM | QTY | PART NUMBER | DESCRIPTION |
|--|-----|-------------|--|
| <p>TOLERANCES: DRAWN BY DATE UNLESS OTHERWISE SPECIFIED K. OKIN 5-24-82 DIMENSIONS ARE IN INCHES.</p> <p>DECIMALS .X ± .010 FRACTIONS XXX ± .005 ANGLES XXX ± .005 DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS.</p> <p>APPROVED BY DATE G. MARTEN 8/82</p> <p>RELEASED BY DATE K. OKIN 8/82</p> <p>MATERIAL: _____</p> <p>NEXT ASSY FINISH: _____</p> | | | |
| <p>apple computer inc.</p> | | | <p>TITLE ASSY, PCB, CPU BD, LISA</p> <p>SIZE D DRAWING NUMBER 620-0119-J</p> <p>SCALE: FULL SHEET 1 OF 1</p> |



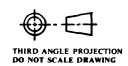
| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|---|---------|
| C | | B120 | REDRAWN: ARTWORK CHANGE | |
| D | | B136 | UI3D WAS 341-0070-C, UI4D WAS 341-0071-C, ADDED NOTES 3-6 & DETAIL A | |
| E | | B142 | UI3D WAS 341-0070-D, UI4D WAS 341-0071-D | |
| F | | B160 | ADDED NOTES 7, 8 & DETAIL B. UI3D WAS 341-0175-A, UI4D WAS 341-0176-A | |
| H | | B181 | BOM CHANGE ONLY | |
| J | | B202 | REDRAWN: ARTWORK CHANGE DELETED NOTES 3-8 & DETAILS A & B, ADDED R18, R19 & NOTE 1. | 3/1/83 |
| K | | B404 | B.O.M. CHANGE | 4/17/83 |
| L | | B466 | BOM CHANGE ONLY | 5/1/83 |

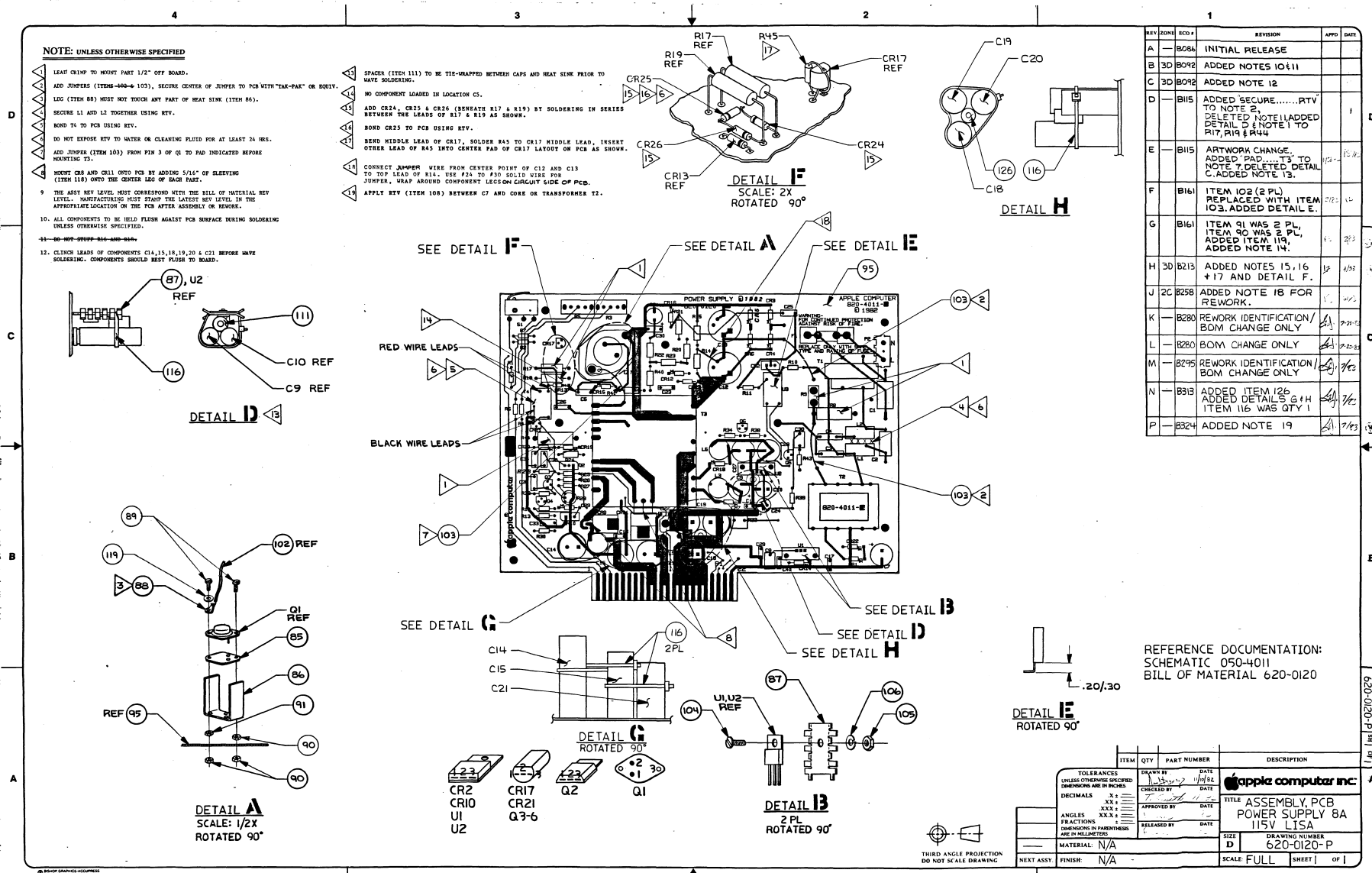
COMPONENT VIEW

REFERENCE DOCUMENTATION:
SCHEMATIC 050-4009
BILL OF MATERIAL 620-0119

PRODUCTION RELEASE
This release is approved for general distribution.
PLEASE ADVISE OF ANY REVISIONS TO THIS DOCUMENT.
NOTICE OF PROPRIETARY PROPERTY
This information is the property of Apple Computer, Inc.
The information contained herein is confidential.
The information herein is not to be distributed outside the Apple Computer, Inc. organization.
© 1983 Apple Computer, Inc. All rights reserved.

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | | | |
|--|---------------------------------|-----------------|--|--|-----------------------|-----------------|--|--------------------|------------------------|-----------------|-------------------|--------------------------|----------------|-----------------------|------------------------|--------------|-----------|---------------------------------|--|--|--------------------|-----------|--|
| <table border="1"> <tr> <td>TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</td> <td>DRAWN BY R. J. ...</td> <td>DATE 5-24-83</td> <td rowspan="4"> </td> </tr> <tr> <td>DECIMALS .X ± .001</td> <td>CHECKED BY T. Smith</td> <td>DATE 7/19/83</td> </tr> <tr> <td>ANGLES XXX ± .001</td> <td>APPROVED BY G. MARTEN</td> <td>DATE 8/1/83</td> </tr> <tr> <td>FRACTIONS 1/16 ± .001</td> <td>RELEASED BY K. OKIN</td> <td>DATE 8/82</td> </tr> <tr> <td>MATERIAL:</td> <td colspan="2">TITLE ASSY, PCB, CPU BD LISA</td> <td rowspan="2"> DRAWING NUMBER 620-0119-L SCALE: FULL SHEET 1 OF 1 </td> </tr> <tr> <td>NEXT ASSY. FINISH:</td> <td colspan="2">SIZE D</td> </tr> </table> | | | | TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY R. J. ... | DATE 5-24-83 | | DECIMALS .X ± .001 | CHECKED BY T. Smith | DATE 7/19/83 | ANGLES XXX ± .001 | APPROVED BY G. MARTEN | DATE 8/1/83 | FRACTIONS 1/16 ± .001 | RELEASED BY K. OKIN | DATE 8/82 | MATERIAL: | TITLE ASSY, PCB, CPU BD LISA | | DRAWING NUMBER 620-0119-L SCALE: FULL SHEET 1 OF 1 | NEXT ASSY. FINISH: | SIZE D | |
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY R. J. ... | DATE 5-24-83 | | | | | | | | | | | | | | | | | | | | | |
| DECIMALS .X ± .001 | CHECKED BY T. Smith | DATE 7/19/83 | | | | | | | | | | | | | | | | | | | | | |
| ANGLES XXX ± .001 | APPROVED BY G. MARTEN | DATE 8/1/83 | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS 1/16 ± .001 | RELEASED BY K. OKIN | DATE 8/82 | | | | | | | | | | | | | | | | | | | | | |
| MATERIAL: | TITLE ASSY, PCB, CPU BD LISA | | DRAWING NUMBER 620-0119-L SCALE: FULL SHEET 1 OF 1 | | | | | | | | | | | | | | | | | | | | |
| NEXT ASSY. FINISH: | SIZE D | | | | | | | | | | | | | | | | | | | | | | |





NOTE: UNLESS OTHERWISE SPECIFIED

- LEAD CR10 TO MOUNT PART 1/2" OFF BOARD.
- ADD JUMPERS (ITEMS 400-4 103), SECURE CENTER OF JUMPER TO PCB WITH "TAP-PAK" OR BODY.
- LOC (ITEM 88) MUST NOT TOUCH ANY PART OF HEAT SINK (ITEM 86).
- SECURE L1 AND L2 TOGETHER USING RTV.
- BOND T4 TO PCB USING RTV.
- DO NOT EXPOSE RTV TO WATER OR CLEANING FLUID FOR AT LEAST 24 HRS.
- ADD JUMPER (ITEM 103) FROM PIN 3 OF Q1 TO PAD INDICATED BEFORE MOUNTING T3.
- MOUNT CR2 AND CR11 ON PCB BY ADDING 5/16" OF SLEEVING (ITEM 118) OVER THE CENTER LEAD OF EACH PART.
- THE ASST REV LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL REV LEVEL. MANUFACTURING MUST STAMP THE LATEST REV LEVEL IN THE APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REMOVAL.
- ALL COMPONENTS TO BE HELD FLUSH AGAINST PCB SURFACE DURING SOLDERING UNLESS OTHERWISE SPECIFIED.
- DO NOT STUFF 806 AND 804.
- CLIP LEADS OF COMPONENTS C14, C15, C19, C20 & C21 BEFORE WAVE SOLDERING. COMPONENTS SHOULD REST FLUSH TO BOARD.

- SPACER (ITEM 111) TO BE TIE-WRAPPED BETWEEN CAPS AND HEAT SINK PRIOR TO WAVE SOLDERING.
- NO COMPONENT LOADED IN LOCATION C5.
- ADD CR24, CR25 & CR26 (GENERATE R17 & R19) BY SOLDERING IN SERIES BETWEEN THE LEADS OF R17 & R19 AS SHOWN.
- BOND CR25 TO PCB USING RTV.
- BEND MIDDLE LEAD OF CR17, SOLDER RAS TO CR17 MIDDLE LEAD. INSERT OTHER LEAD OF RAS INTO CENTER PAD OF CR17 LAYOUT ON PCB AS SHOWN.
- CONNECT JUMPER WIRE FROM CENTER POINT OF C12 AND C13 TO TOP LEAD OF R14. USE #24 TO #30 SOLID WIRE FOR JUMPER. WRAP AROUND COMPONENT LEG ON CIRCUIT SIDE OF PCB.
- APPLY RTV (ITEM 108) BETWEEN C7 AND CORE OR TRANSFORMER T2.

| REV | ZONE | ECO# | REVISION | APPD | DATE |
|-----|------|------|--|------|------|
| A | | B084 | INITIAL RELEASE | | |
| B | 3D | B092 | ADDED NOTES 10&11 | | |
| C | 3D | B092 | ADDED NOTE 12 | | |
| D | | B115 | ADDED SECURE.....RTV TO NOTE 2. DELETED NOTE 1 (ADDED DETAIL D & NOTE 1 TO R17, R19 & R44) | | |
| E | | B115 | ARTWORK CHANGE. ADDED PAD.....T3 TO NOTE 7. DELETED DETAIL C. ADDED NOTE 13. | | |
| F | | B161 | ITEM 102 (2 PL) REPLACED WITH ITEM 103. ADDED DETAIL E. | | |
| G | | B161 | ITEM 91 WAS 2 PL, ITEM 90 WAS 2 PL, ADDED ITEM 119, ADDED NOTE 14. | | |
| H | 3D | B213 | ADDED NOTES 15, 16 & 17 AND DETAIL F. | | |
| J | 2C | B258 | ADDED NOTE 18 FOR REWORK. | | |
| K | | B280 | REWORK IDENTIFICATION / BOM CHANGE ONLY | | |
| L | | B280 | BOM CHANGE ONLY | | |
| M | | B295 | REWORK IDENTIFICATION / BOM CHANGE ONLY | | |
| N | | B313 | ADDED ITEM 126 ADDED DETAIL G & H ITEM 116 WAS QTY 1 | | |
| P | | B324 | ADDED NOTE 19 | | |

DETAIL D SCALE: 1/2X ROTATED 90°

DETAIL A SCALE: 1/2X ROTATED 90°

DETAIL F SCALE: 2X ROTATED 90°

DETAIL H

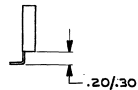
SEE DETAIL G

DETAIL G ROTATED 90°

DETAIL B 2 PL ROTATED 90°

DETAIL E ROTATED 90°

REFERENCE DOCUMENTATION:
SCHEMATIC 050-4011
BILL OF MATERIAL 620-0120



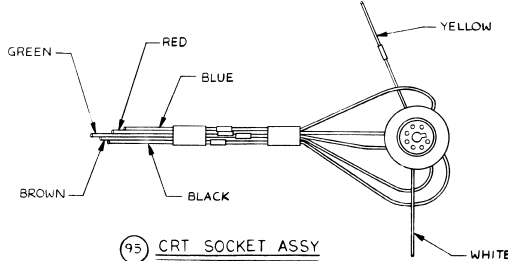
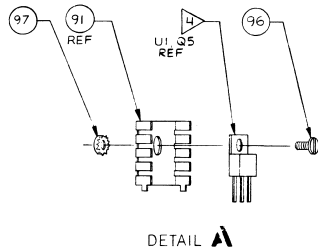
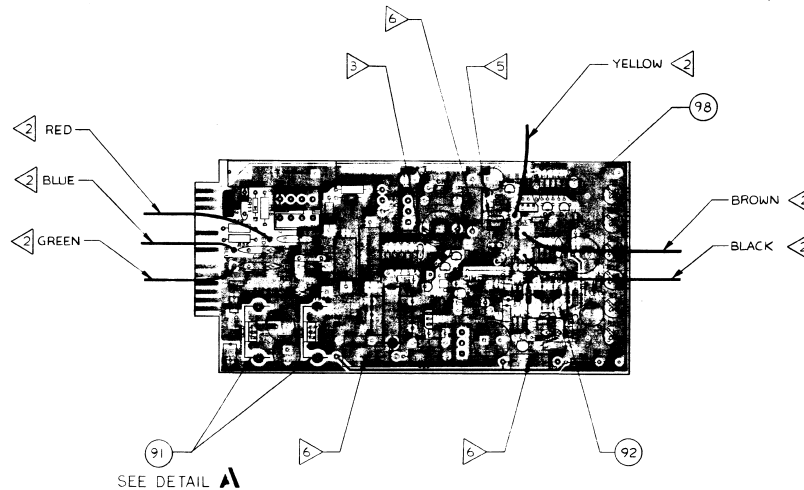
DETAIL E ROTATED 90°

| ITEM | QTY | PART NUMBER | DATE | DESCRIPTION |
|--|-----|-------------|--|-------------|
| <p>TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>DECIMALS .XX ±</p> <p>FRACTIONS XXX ±</p> <p>ANGLES FRACTIONS ±</p> <p>DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS</p> <p>MATERIAL: N/A</p> <p>FINISH: N/A</p> | | | | |
| <p>DRAWN BY: [Signature]</p> <p>CHECKED BY: [Signature]</p> <p>APPROVED BY: [Signature]</p> <p>RELEASED BY: [Signature]</p> | | | <p>DATE: 1/15/82</p> <p>DATE: 1/15/82</p> <p>DATE: 1/15/82</p> <p>DATE: 1/15/82</p> | |
| <p>apple computer inc.</p> <p>TITLE ASSEMBLY PCB POWER SUPPLY 8A 115V LISA</p> | | | <p>SIZE D</p> <p>DRAWING NUMBER 620-0120-P</p> <p>SCALE FULL</p> <p>SHEET 1 OF 1</p> | |

| REV | ZONE | ECO # | REVISION | APPD |
|-----|----------|-------|---|------|
| A | | B085 | INITIAL RELEASE | |
| B | 4D | B098 | ADDED NOTES 5, 6 & 7 | |
| C | | B156 | BOM CHANGE ONLY. | |
| D | | B177 | BOM CHANGE ONLY. | |
| E | | B203 | BOM CHANGE ONLY. | |
| F | | B250 | REPAIRED P55 WITH CIRCUITRY FROM 15010 | |
| H | 4C 4C | B356 | DELETED NOTE 7 ADDED NOTE 8 ITEM 4 VALUE WAS 0.034UF L1 L2 WIRE CHANGE DELETED L1 ITEM 25 | |

NOTE: UNLESS OTHERWISE SPECIFIED

1. THE ASSY REV LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL REV LEVEL. MANUFACTURING MUST STAMP THE LATEST REV LEVEL IN THE APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REWORK.
2. INDICATED COLORED WIRES ARE THE SAME AS THOSE SHOWN ON CRT SOCKET ASSEMBLY (ITEM 95)
3. DOT TO MATCH DOT ON "L2".
4. U1 AND Q5 BACK SURFACE TO BE COATED WITH HEATSINK COMPOUND BEFORE FASTENING TO HEAT SINK (ITEM 91).
5. L1 TO BE MOUNTED UPRIGHT (PERPENDICULAR TO PCB SURFACE) WITH INDUCTOR PACKAGE EXTENDED OVER L1 SILKSCREEN AREA.
6. R14, R24 & R39 MUST BE MOUNTED 0.100" MIN ABOVE PCB SURFACE.
7. L3 ADJUSTMENT HOLE TO BE FREE OF SOLDER.
8. NO COMPONENT TO BE STUFFED AT LOCATION L3.



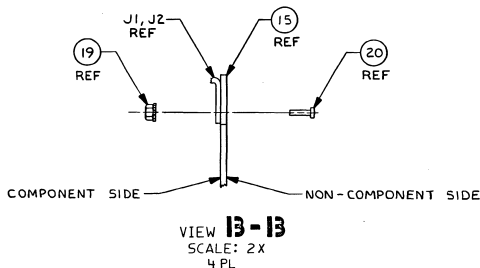
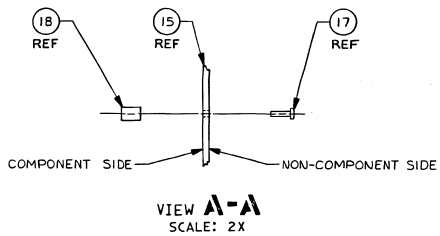
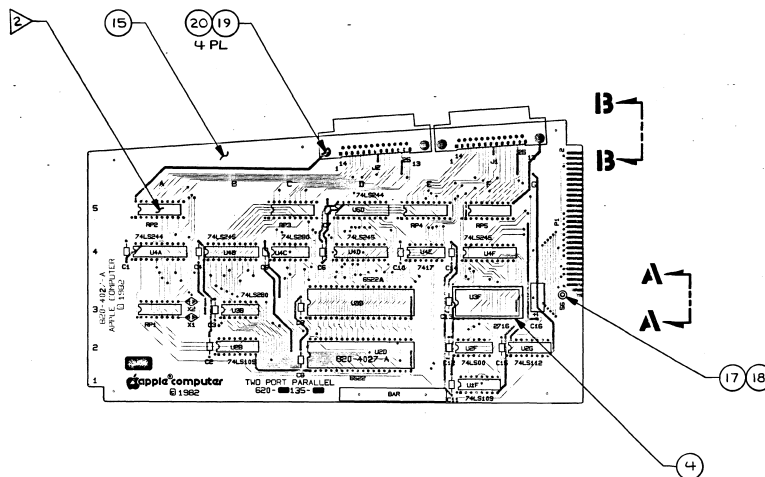
REFERENCE DOCUMENTATION:
SCHEMATIC 050 - 4012
BILL OF MATERIAL 620 - 0121

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | |
|--|------------------------------|----------------------------|--------------|---|------------------------------|---------------|--|-------------------|-------------|-------|---------------|--------------|-------|------------------|--------------|-------|---------------|--|----------------------------|--|------------------------|--|-------------|--------------|
| <table border="0"> <tr> <td>TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES</td> <td>DESIGNED BY: R ALLEN 4/24/85</td> <td>DATE: 4/24/85</td> <td rowspan="4"> </td> </tr> <tr> <td>DECIMALS .5 .2 .1</td> <td>CHECKED BY:</td> <td>DATE:</td> </tr> <tr> <td>ANGLES XXX .1</td> <td>APPROVED BY:</td> <td>DATE:</td> </tr> <tr> <td>FRACTIONS XX 1/2</td> <td>RELEASED BY:</td> <td>DATE:</td> </tr> <tr> <td colspan="2">MATERIAL: N/A</td> <td colspan="2">DRAWING NUMBER: 620-0121-H</td> </tr> <tr> <td colspan="2">NEXT ASSY: FINISH: N/A</td> <td>SCALE: FULL</td> <td>SHEET 1 OF 1</td> </tr> </table> | | | | TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES | DESIGNED BY: R ALLEN 4/24/85 | DATE: 4/24/85 | | DECIMALS .5 .2 .1 | CHECKED BY: | DATE: | ANGLES XXX .1 | APPROVED BY: | DATE: | FRACTIONS XX 1/2 | RELEASED BY: | DATE: | MATERIAL: N/A | | DRAWING NUMBER: 620-0121-H | | NEXT ASSY: FINISH: N/A | | SCALE: FULL | SHEET 1 OF 1 |
| TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES | DESIGNED BY: R ALLEN 4/24/85 | DATE: 4/24/85 | | | | | | | | | | | | | | | | | | | | | | |
| DECIMALS .5 .2 .1 | CHECKED BY: | DATE: | | | | | | | | | | | | | | | | | | | | | | |
| ANGLES XXX .1 | APPROVED BY: | DATE: | | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS XX 1/2 | RELEASED BY: | DATE: | | | | | | | | | | | | | | | | | | | | | | |
| MATERIAL: N/A | | DRAWING NUMBER: 620-0121-H | | | | | | | | | | | | | | | | | | | | | | |
| NEXT ASSY: FINISH: N/A | | SCALE: FULL | SHEET 1 OF 1 | | | | | | | | | | | | | | | | | | | | | |

NOTE: UNLESS OTHERWISE SPECIFIED

1. THE ASSY REF LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL REV LEVEL. MANUFACTURING MUST STAMP THE LATEST REV LEVEL IN THE APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REMOVAL.
2. THE 16 PIN 8 PAGES RPT-RP3 TO BE CENTERED ON 20 PIN PAD LAYOUT. REMAINING 4 HOLES GAF FILL WITH SOLIMER.
3. PCB ASSY MUST CONFORM TO APPLE WORKMANSHIP STD 060-0012.

| REV | ZONE | ECO # | REVISION | APP'D |
|-----|------|-------|-------------------------------|------------|
| A | | B17B | INITIAL RELEASE | |
| B | 3C | B250 | ITEM 20, 4PL WAS ITEM 17, 4PL | 1/8 VCS |



REFERENCE DOCUMENTATION:
BILL OF MATERIAL 620-0135
SCHEMATIC 050-4027

PRODUCTION RELEASE
This is the master copy of the master copy.
NOTICE OF PROPRIETARY PROPERTY
The information contained herein is the
property of Apple Computer, Inc.
The information contained herein is
not to be disclosed or copied in whole or
in part.

| ITEM | QTY | PART NUMBER | DESCRIPTION |
|---|------|-------------|-------------|
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | | | |
| DIMENSION | XX.X | DATE | |
| DECIMALS | XX.X | 12/14/83 | |
| FRACTIONS | XX.X | 1/83 | |
| ANGLES | XX.X | 803 | |
| CONDITIONS IN PARENTHESES | DATE | | |
| ARE IN PARENTHESES | DATE | | |
| MATERIAL | | | |
| FINISH | | | |

| | | | |
|--------------------------------|--|-----------------------|--|
| DRAWN BY: <i>Ken Perle</i> | | DATE: <i>12/14/83</i> | |
| CHECKED BY: <i>L. J. Hall</i> | | DATE: <i>1/83</i> | |
| APPROVED BY: <i>L. J. Hall</i> | | DATE: <i>8/83</i> | |
| RELEASED BY: <i>L. J. Hall</i> | | DATE: <i>8/83</i> | |

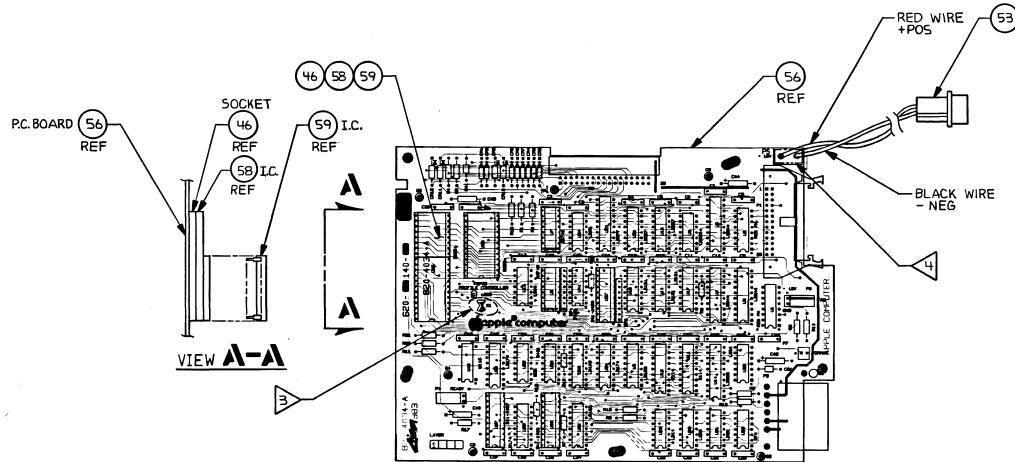
| | |
|---|------------|
| TITLE: ASSEMBLY, PCB PARALLEL I/F LISA | |
| DRAWING NUMBER: | 620-0135-B |
| SIZE: | FULL |
| SHEET: | 1 OF 1 |

THIRD ANGLE PROJECTION
FIRST ANGLE DRAWING

| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|-----------------|------|
| A | - | B419 | INITIAL RELEASE | |

NOTE: UNLESS OTHERWISE SPECIFIED

1. ASST MUST CONFORM TO STANDARDS AS STATED IN APPLE WORKMANSHIP STANDARD 060-0012.
 2. THE ASST. REV. LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL. REV. LEVEL. MANUFACTURING MUST STAMP THE LATEST REV. LEVEL IN THE APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REWORK.
- ▽ CUT PAD X1 TO COMPLETELY DISCONNECT CIRCUIT.
- ▽ SECURE WIRES TO PCB USING RTV. DO NOT EXPOSE RTV TO WATER OR CLEANING FLUID FOR AT LEAST 24 HRS.



COMPONENT SIDE

REFERENCE DOCUMENTATION:
SCHEMATIC - 050-4034
BILL OF MATERIAL-620-0140

| ITEM | QTY | PART NUMBER | DESCRIPTION |
|---|-----|-------------|-----------------------------|
| TOLERANCES: UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS: .0001 ANGLES: IN DEGREES FRACTIONS: DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS | | | |
| CHECKED BY: <i>[Signature]</i> DATE: 11-16-83 APPROVED BY: <i>[Signature]</i> DATE: 11/18/83 | | | |
| TITLE: ASSEMBLY PROFILE CONTROLLER, LISA-2.0 | | | DRAWING NUMBER: 620-0140 -A |
| MATERIAL: _____ FINISH: _____ | | | SCALE: FULL SHEET 1 OF 1 |

THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING

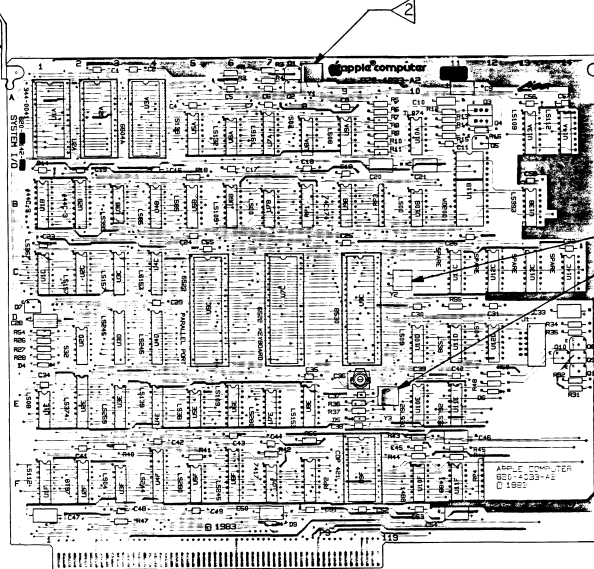
NOTE: UNLESS OTHERWISE SPECIFIED

- ASST MUST CONFORM TO STANDARDS AS STATED IN APPLE SPEC 060-0012.
 SECURE COMPONENT Y1, Y2 & Y3 USING RTV (ITEM 77). DO NOT EXPOSE RTV TO WATER OR CLEANING FLUID FOR AT LEAST 24 HOURS.
 3. THE ASST KEY LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL KEY LEVEL. MANUFACTURING MUST STRIP THE LATEST KEY LEVEL IN THE APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REMOVAL.

| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|-----------------|------|
| A | — | B335 | INITIAL RELEASE | — |
| B | — | B414 | BOM CHANGE | — |
| C | — | B429 | BOM CHANGE ONLY | — |
| D | — | B441 | BOM CHANGE ONLY | — |

76
RED REF

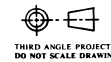
75
BROWN REF



COMPONENT VIEW

PRODUCTION RELEASE
 The herein contained information is the property of Apple Computer, Inc. and is not to be distributed outside of Apple Computer, Inc. without the express written permission of Apple Computer, Inc. © 1983

REFERENCE DOCUMENTATION:
 SCHEMATIC 050-4033
 BILL OF MATERIAL 620-0142



THIRD ANGLE PROJECTION
 DO NOT SCALE DRAWING

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | |
|--|---------------------------|-------------|--|--|---------------------------|-----------|---------------|---------------------------|-----------|-------------|---------------------------|-----------|---------------|---------------------------|-----------|--|----------------|--|-----------|-------------|--|
| <table border="1"> <tr> <td>TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</td> <td>DRAWN BY S. MINASIAN 9/83</td> <td>DATE 9/83</td> </tr> <tr> <td>DECIMALS .X ±</td> <td>APPROVED BY T. Smith 9/83</td> <td>DATE 9/83</td> </tr> <tr> <td>ANGLES XX ±</td> <td>APPROVED BY J. Baker 9/83</td> <td>DATE 9/83</td> </tr> <tr> <td>FRACTION XX ±</td> <td>DESIGNED BY J. Baker 9/83</td> <td>DATE 9/83</td> </tr> <tr> <td>DIMENSIONS IN MILLIMETERS ARE IN MILLIMETERS</td> <td>MATERIAL NOTED</td> <td></td> </tr> <tr> <td>NEXT ASSY</td> <td>FINISH: N/A</td> <td></td> </tr> </table> | | | | TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY S. MINASIAN 9/83 | DATE 9/83 | DECIMALS .X ± | APPROVED BY T. Smith 9/83 | DATE 9/83 | ANGLES XX ± | APPROVED BY J. Baker 9/83 | DATE 9/83 | FRACTION XX ± | DESIGNED BY J. Baker 9/83 | DATE 9/83 | DIMENSIONS IN MILLIMETERS ARE IN MILLIMETERS | MATERIAL NOTED | | NEXT ASSY | FINISH: N/A | |
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY S. MINASIAN 9/83 | DATE 9/83 | | | | | | | | | | | | | | | | | | | |
| DECIMALS .X ± | APPROVED BY T. Smith 9/83 | DATE 9/83 | | | | | | | | | | | | | | | | | | | |
| ANGLES XX ± | APPROVED BY J. Baker 9/83 | DATE 9/83 | | | | | | | | | | | | | | | | | | | |
| FRACTION XX ± | DESIGNED BY J. Baker 9/83 | DATE 9/83 | | | | | | | | | | | | | | | | | | | |
| DIMENSIONS IN MILLIMETERS ARE IN MILLIMETERS | MATERIAL NOTED | | | | | | | | | | | | | | | | | | | | |
| NEXT ASSY | FINISH: N/A | | | | | | | | | | | | | | | | | | | | |
| | | | TITLE ASSEMBLY, PCB, I/O BOARD LISA-2.0 SIZE D DRAWING NUMBER 620-0142-D SCALE: FULL SHEET 1 OF 1 | | | | | | | | | | | | | | | | | | |

620-0142-D

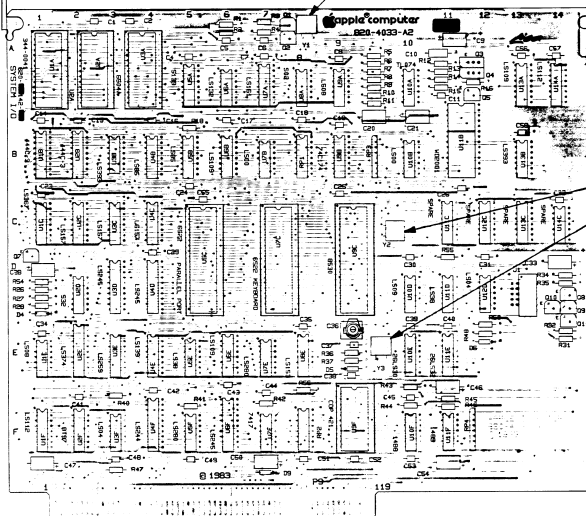
NOTE: UNLESS OTHERWISE SPECIFIED

1. ASSY MUST CONFORM TO STANDARDS AS STATED IN APPLE SPEC 060-0012. SECURE COMPONENT Y1, Y2 & Y3 USING RTV (ITEM 77). DO NOT EXPOSE RTV TO WATER OR CLEARING FLUID FOR AT LEAST 24 HOURS.
2. THE ASSY KEY LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL KEY LEVEL. MANUFACTURER MUST STAMP THE LATEST KEY LEVEL IN THE APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REMOVAL.

| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|-----------------|------|
| A | | B335 | INITIAL RELEASE | |
| B | | B414 | BOM CHANGE | |
| C | | B429 | BOM CHANGE ONLY | |
| D | | B441 | BOM CHANGE ONLY | |
| E | | B468 | BOM CHANGE ONLY | |

76
RED REF

75
BROWN REF



COMPONENT VIEW

PRODUCTION RELEASE
The above information is given in confidence.
Please report to the originator any
notice of proprietary property
the information contained herein, in the
proprietary interest of Apple Computer, Inc.
This document is the property of Apple Computer, Inc.
It is to be controlled and used
only for the purpose of production of goods or parts.
It is not to be released or published in whole or in part.

REFERENCE DOCUMENTATION:
SCHEMATIC 050-4033
BILL OF MATERIAL 620-0142

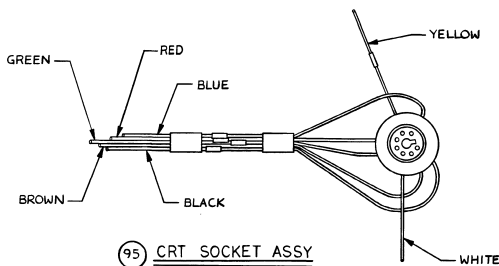
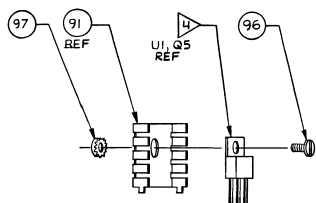
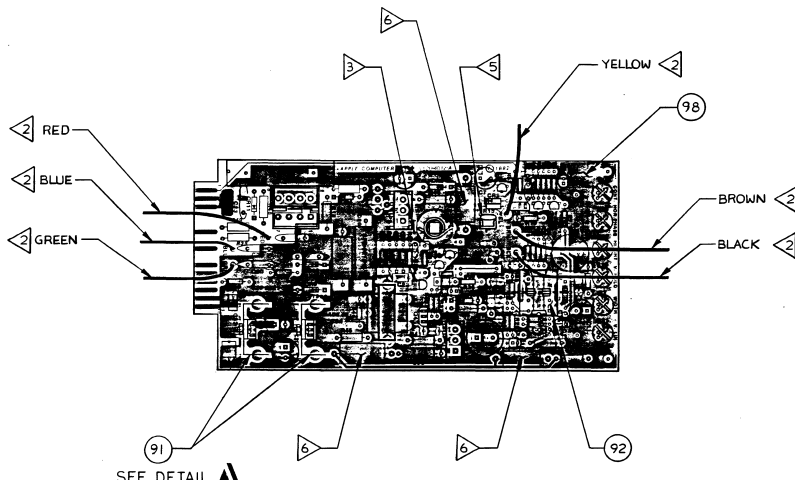
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------------------------------|-------------|---|--|-----------------------------------|-----------|---|--------------------|------------------------|-----------|------------------|-------------------------|-----------|----------------------|-------------------------|-----------|----------------|--|--|---|-------|-----------------------------------|------|---|----------------|------------|-------|------|-------|--------|-----------|--------|-----|--|
| <table border="1"> <tr> <td>TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</td> <td>DRAWN BY S. MINASIAN 9/83</td> <td>DATE 9/83</td> <td rowspan="4"> </td> </tr> <tr> <td>DECIMALS X.2 = .02</td> <td>CHECKED BY [Signature]</td> <td>DATE 9/83</td> </tr> <tr> <td>ANGLES XXX = 30°</td> <td>APPROVED BY [Signature]</td> <td>DATE 9/83</td> </tr> <tr> <td>FRACTIONS XX/4 = 1/2</td> <td>RELEASED BY [Signature]</td> <td>DATE 9/83</td> </tr> <tr> <td colspan="3">MATERIAL NOTED</td> <td> <table border="1"> <tr> <td>TITLE</td> <td>ASSEMBLY, PCB, I/O BOARD LISA-2.0</td> </tr> <tr> <td>SIZE</td> <td>D</td> </tr> <tr> <td>DRAWING NUMBER</td> <td>620-0142-E</td> </tr> <tr> <td>SCALE</td> <td>FULL</td> </tr> <tr> <td>SHEET</td> <td>1 OF 1</td> </tr> </table> </td> </tr> <tr> <td>NEXT ASSY</td> <td>FINISH</td> <td>N/A</td> <td></td> </tr> </table> | | | | TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY S. MINASIAN 9/83 | DATE 9/83 | | DECIMALS X.2 = .02 | CHECKED BY [Signature] | DATE 9/83 | ANGLES XXX = 30° | APPROVED BY [Signature] | DATE 9/83 | FRACTIONS XX/4 = 1/2 | RELEASED BY [Signature] | DATE 9/83 | MATERIAL NOTED | | | <table border="1"> <tr> <td>TITLE</td> <td>ASSEMBLY, PCB, I/O BOARD LISA-2.0</td> </tr> <tr> <td>SIZE</td> <td>D</td> </tr> <tr> <td>DRAWING NUMBER</td> <td>620-0142-E</td> </tr> <tr> <td>SCALE</td> <td>FULL</td> </tr> <tr> <td>SHEET</td> <td>1 OF 1</td> </tr> </table> | TITLE | ASSEMBLY, PCB, I/O BOARD LISA-2.0 | SIZE | D | DRAWING NUMBER | 620-0142-E | SCALE | FULL | SHEET | 1 OF 1 | NEXT ASSY | FINISH | N/A | |
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY S. MINASIAN 9/83 | DATE 9/83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DECIMALS X.2 = .02 | CHECKED BY [Signature] | DATE 9/83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANGLES XXX = 30° | APPROVED BY [Signature] | DATE 9/83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS XX/4 = 1/2 | RELEASED BY [Signature] | DATE 9/83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MATERIAL NOTED | | | <table border="1"> <tr> <td>TITLE</td> <td>ASSEMBLY, PCB, I/O BOARD LISA-2.0</td> </tr> <tr> <td>SIZE</td> <td>D</td> </tr> <tr> <td>DRAWING NUMBER</td> <td>620-0142-E</td> </tr> <tr> <td>SCALE</td> <td>FULL</td> </tr> <tr> <td>SHEET</td> <td>1 OF 1</td> </tr> </table> | TITLE | ASSEMBLY, PCB, I/O BOARD LISA-2.0 | SIZE | D | DRAWING NUMBER | 620-0142-E | SCALE | FULL | SHEET | 1 OF 1 | | | | | | | | | | | | | | | | | | | | | |
| TITLE | ASSEMBLY, PCB, I/O BOARD LISA-2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIZE | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DRAWING NUMBER | 620-0142-E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCALE | FULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET | 1 OF 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NEXT ASSY | FINISH | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

NOTE: UNLESS OTHERWISE SPECIFIED

1. THE ASSY REV LEVEL MUST CORRESPOND WITH THE BILL OF MATERIAL REV LEVEL. MANUFACTURING MUST STAMP THE LATEST REV LEVEL IN THE APPROPRIATE LOCATION ON THE PCB AFTER ASSEMBLY OR REWORK.
2. INDICATED COLORED WIRES ARE THE SAME AS THOSE SHOWN ON CRT SOCKET ASSEMBLY (ITEM 95)
3. DOT TO MATCH DOT ON "L2".
4. U1 AND Q5 BACK SURFACE TO BE COATED WITH HEATSINK COMPOUND BEFORE FASTENING TO HEAT SINK (ITEM 91).
5. L1 TO BE MOUNTED UPRIGHT (PERPENDICULAR TO PCB SURFACE) WITH INDUCTOR PACKAGE EXTENDED OVER L1 SILKSCREEN AREA.
6. R14, R24 & R39 MUST BE MOUNTED 0.100" MIN ABOVE PCB SURFACE.
7. L3 ADJUSTMENT HOLE TO BE FREE OF SOLDER.
8. NO COMPONENT TO BE STUFFED AT LOCATIONS: L3, CR6 THRU CR8, C21, C22, R38, R42 & R43.

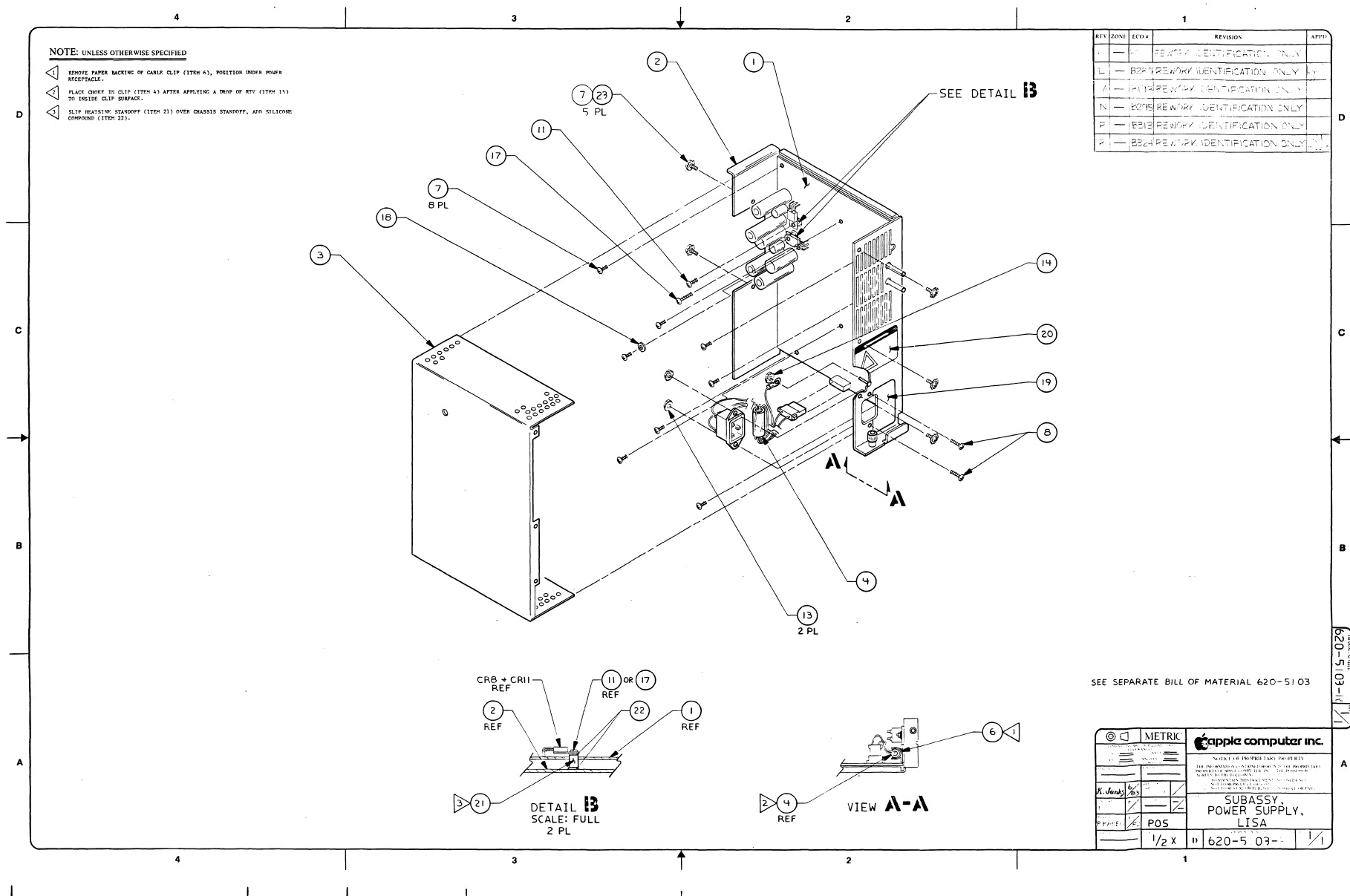
| REV | ZONE | ECO # | REVISION | APPRO |
|-----|------|-------|--|-------|
| A | — | B085 | INITIAL RELEASE | — |
| B | 4D | B098 | ADDED NOTES 5, 6 & 7 | — |
| C | — | B156 | BOM CHANGE ONLY. | — |
| D | — | B176 | BOM CHANGE ONLY | — |
| E | — | B203 | BOM CHANGE ONLY. | — |
| F | — | B230 | REPLACED R55 WITH CR12; R24 WAS 150 Ω | — |
| H | 4C | B356 | DELETED NOTE 7 ADDED NOTE 8; ITEM 6 VALUE WAS 0.03µF U1 & L2 VALUE CHANGE. DELETED L3 (ITEM 23) | — |
| J | 4C | B400 | DELETED CR6-8 & CR12; C21 AND C22; R38, R42 AND R43. ADDED R18, R38 & R55. TDA1170 WAS TDA117D. | — |

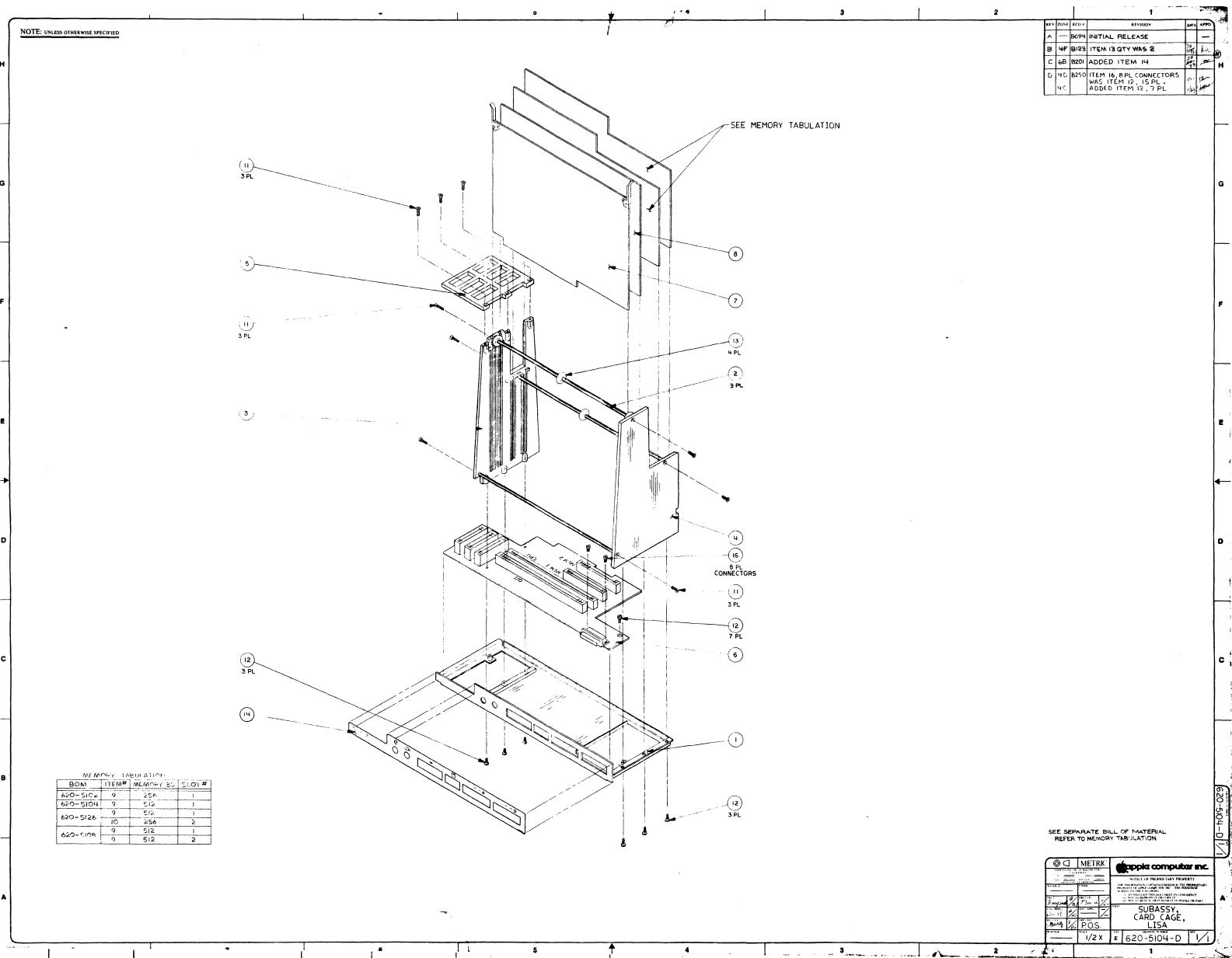


PRODUCTION RELEASE
This document contains all product information.
It is the property of Apple Computer, Inc.
The information contained herein is the
exclusive property of Apple Computer, Inc.
The information contained herein is confidential.
It is to be controlled and protected as such.

REFERENCE DOCUMENTATION:
SCHEMATIC 050 - 4012
BILL OF MATERIAL 620 - 0121

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------------|---|-------------|--|-------------------|--------------|--|----------------|------------------------|--------------|------------------|-------------------------|--------------|---------------|------------------------|--------------|---------------|--|---|--|------------------------|--|----------------------------|--|--|--|--------------------------|--|
| <table border="1"> <tr> <td>TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</td> <td>DRAWN BY R. ALLEN</td> <td>DATE 4/24/82</td> <td rowspan="4"> </td> </tr> <tr> <td>DECIMALS .XX ±</td> <td>CHECKED BY T. S. BAKER</td> <td>DATE 4/28/82</td> </tr> <tr> <td>FRACTIONS .XXX ±</td> <td>APPROVED BY C. L. BAKER</td> <td>DATE 4/28/82</td> </tr> <tr> <td>ANGLES .XXX ±</td> <td>RELEASED BY P. DOUGLAS</td> <td>DATE 5/11/82</td> </tr> <tr> <td colspan="2">MATERIAL: N/A</td> <td colspan="2">TITLE: ASSEMBLY, PCB, VIDEO BOARD, LISA</td> </tr> <tr> <td colspan="2">NEXT ASSY: FINISH: N/A</td> <td colspan="2">DRAWING NUMBER: 620-0121-J</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">SCALE: FULL SHEET 1 OF 1</td> </tr> </table> | | | | TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY R. ALLEN | DATE 4/24/82 | | DECIMALS .XX ± | CHECKED BY T. S. BAKER | DATE 4/28/82 | FRACTIONS .XXX ± | APPROVED BY C. L. BAKER | DATE 4/28/82 | ANGLES .XXX ± | RELEASED BY P. DOUGLAS | DATE 5/11/82 | MATERIAL: N/A | | TITLE: ASSEMBLY, PCB, VIDEO BOARD, LISA | | NEXT ASSY: FINISH: N/A | | DRAWING NUMBER: 620-0121-J | | | | SCALE: FULL SHEET 1 OF 1 | |
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | DRAWN BY R. ALLEN | DATE 4/24/82 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DECIMALS .XX ± | CHECKED BY T. S. BAKER | DATE 4/28/82 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FRACTIONS .XXX ± | APPROVED BY C. L. BAKER | DATE 4/28/82 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANGLES .XXX ± | RELEASED BY P. DOUGLAS | DATE 5/11/82 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MATERIAL: N/A | | TITLE: ASSEMBLY, PCB, VIDEO BOARD, LISA | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NEXT ASSY: FINISH: N/A | | DRAWING NUMBER: 620-0121-J | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SCALE: FULL SHEET 1 OF 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |





NOTE: UNLESS OTHERWISE SPECIFIED

| REV | DATE | DESCRIPTION | BY | APP |
|-----|--------|---|----|-----|
| A | 2009 | INITIAL RELEASE | | |
| B | 4F B23 | ITEM 13 QTY WAS 2 | | |
| C | 6B B20 | ADDED ITEM 14 | | |
| D | 4C B20 | ITEM 16, 8 PL CONNECTORS WAS ITEM 12, 15 PL | | |
| 4C | | ADDED ITEM 12, 7 PL | | |

MEMORY TABULATION

| BOM # | ITEM # | MEMORY | SLOT # |
|----------|--------|--------|--------|
| 620-5104 | 9 | 256 | 1 |
| 620-5104 | 7 | 512 | 1 |
| 620-5126 | 9 | 512 | 1 |
| | 10 | 256 | 2 |
| | 9 | 512 | 1 |
| 620-5108 | 9 | 512 | 2 |

SEE SEPARATE BILL OF MATERIAL REFER TO MEMORY TABULATION

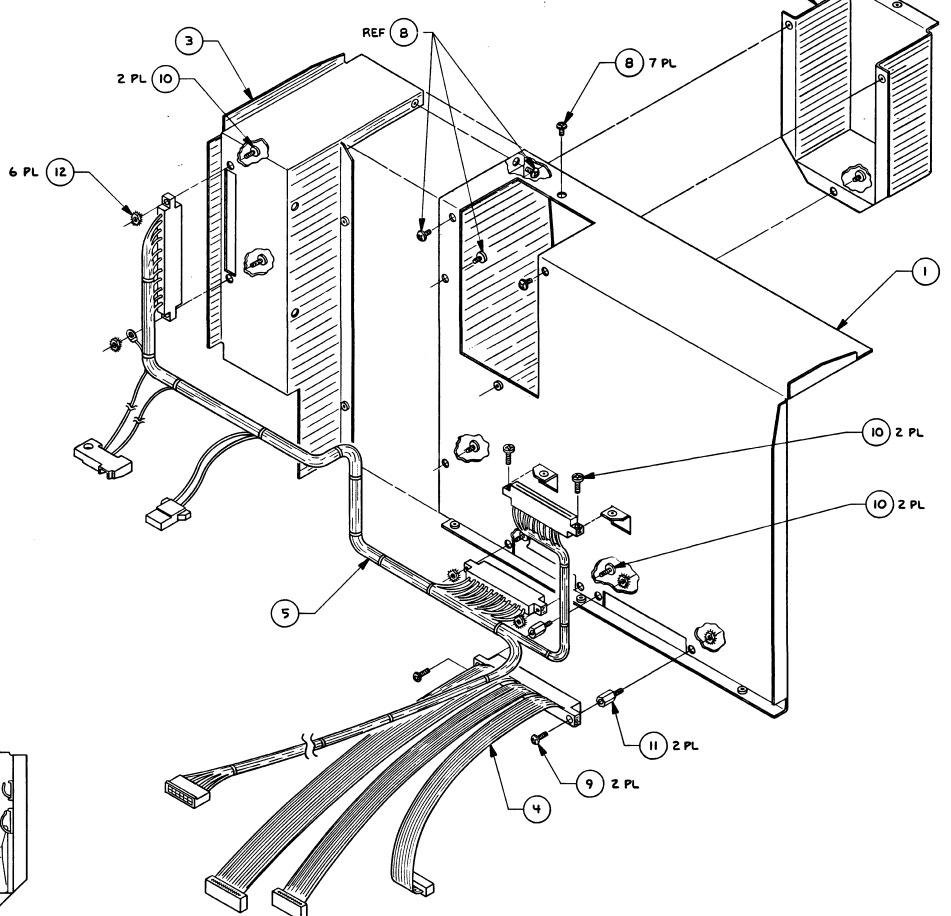
| | |
|--|--------------|
| | |
| TITLE: INTERNAL PROPERTY NOT TO BE REPRODUCED OR DISSEMINATED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF APPLE COMPUTER, INC. © 1983 APPLE COMPUTER, INC. ALL RIGHTS RESERVED. | |
| SUBASSY: CARD CAGE, LISA | |
| PART: 1/2 X | E 620-5104-D |

NOTE: UNLESS OTHERWISE SPECIFIED

1. INSTALL CLIPS (ITEMS 6 & 7) INTO CRT CUP (ITEM 2) AS SHOWN.

| REV | ZONE | ECO # | REVISION | APPRO | DATE |
|-----|------|-------|-----------------|-------|------|
| A | | B421 | INITIAL RELEASE | | |

SEE DETAIL A 2



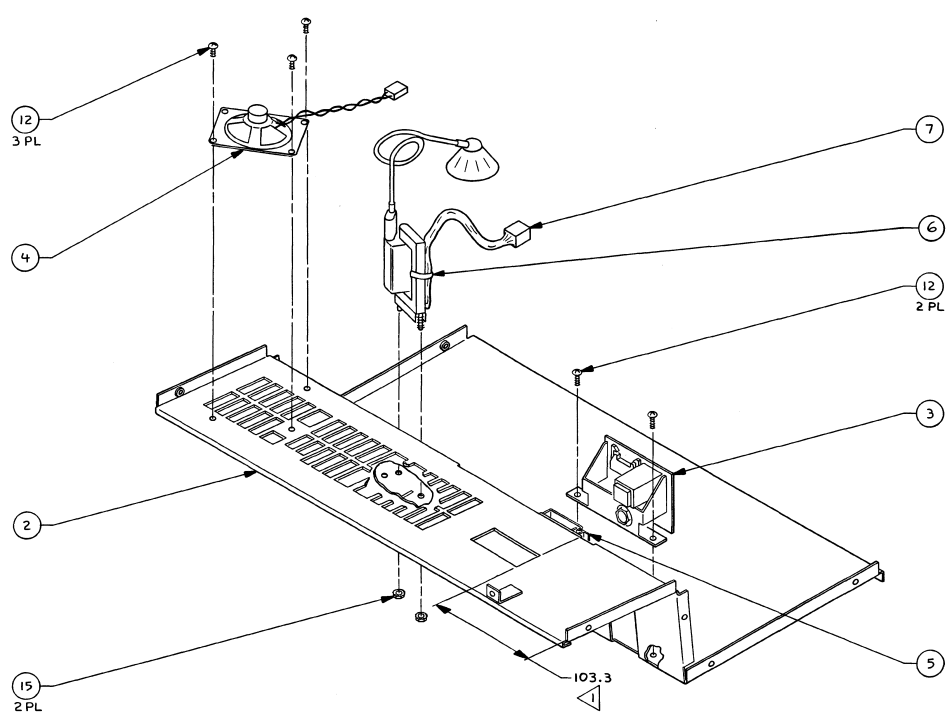
SEE SEPARATE BILL OF MATERIAL 620-5128

| | | | |
|---|------|---|------------|
| METRIC | | apple computer inc. | |
| NOTICE OF PROPRIETARY PROPERTY | | NOTICE OF PROPRIETARY PROPERTY | |
| THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THIS DOCUMENT IS TO BE KEPT IN CONFIDENCE AND NOT TO BE REPRODUCED OR DISCLOSED TO ANY OTHER PERSON OR ENTITY WITHOUT THE WRITTEN PERMISSION OF APPLE COMPUTER, INC. | | THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THIS DOCUMENT IS TO BE KEPT IN CONFIDENCE AND NOT TO BE REPRODUCED OR DISCLOSED TO ANY OTHER PERSON OR ENTITY WITHOUT THE WRITTEN PERMISSION OF APPLE COMPUTER, INC. | |
| DATE | BY | DATE | BY |
| 1/28/83 | W/MS | 1/28/83 | W/MS |
| DESIGNED BY | W/MS | DESIGNED BY | W/MS |
| W/MS | | W/MS | |
| REVISED BY | W/MS | REVISED BY | W/MS |
| W/MS | | W/MS | |
| LISA | | SUBASSEMBLY, CHASSIS ONE-A LISA 2.0 | |
| SCALE | 1/2X | QTY | D |
| REV | | DATE | 620-5128-A |

NOTE: UNLESS OTHERWISE SPECIFIED

- ▶ ADHERE DSK CLAMP (ITEM 5) TO CHASSIS (ITEM 2) PER DIMENSION.
- ▶ ROUTE CABLES THROUGH DSK CLAMP (ITEM 5).
- ▶ SECURE TIE-WRAP (ITEM 6) TO FIFTH CHASSIS SLOT FROM PEN.

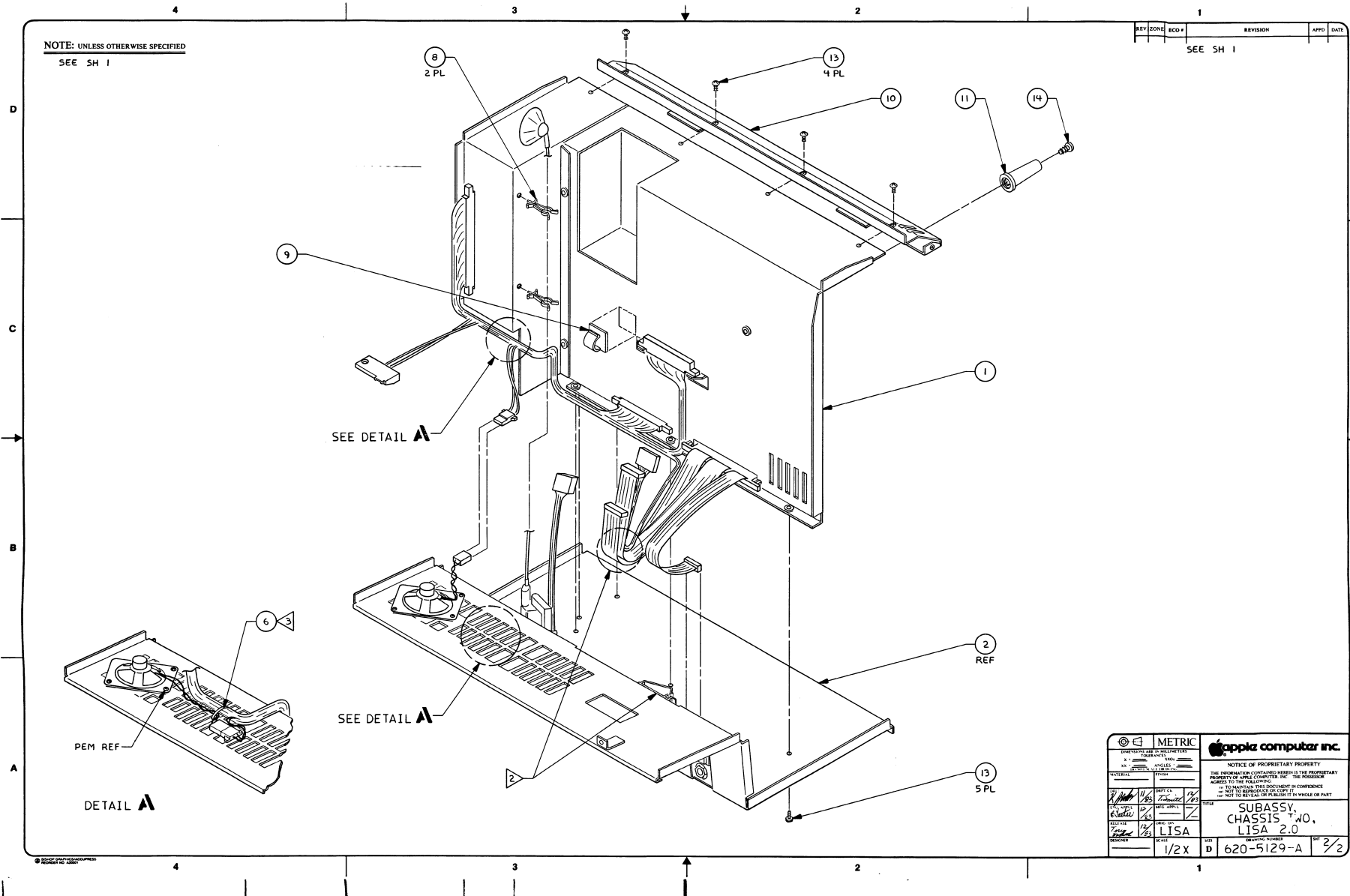
| REV | ZONE | ECO # | REVISION | APPD | DATE |
|-----|------|-------|-----------------|------|------|
| A | | B422 | INITIAL RELEASE | | |



SEE SEPARATE BILL OF MATERIAL 620-5129

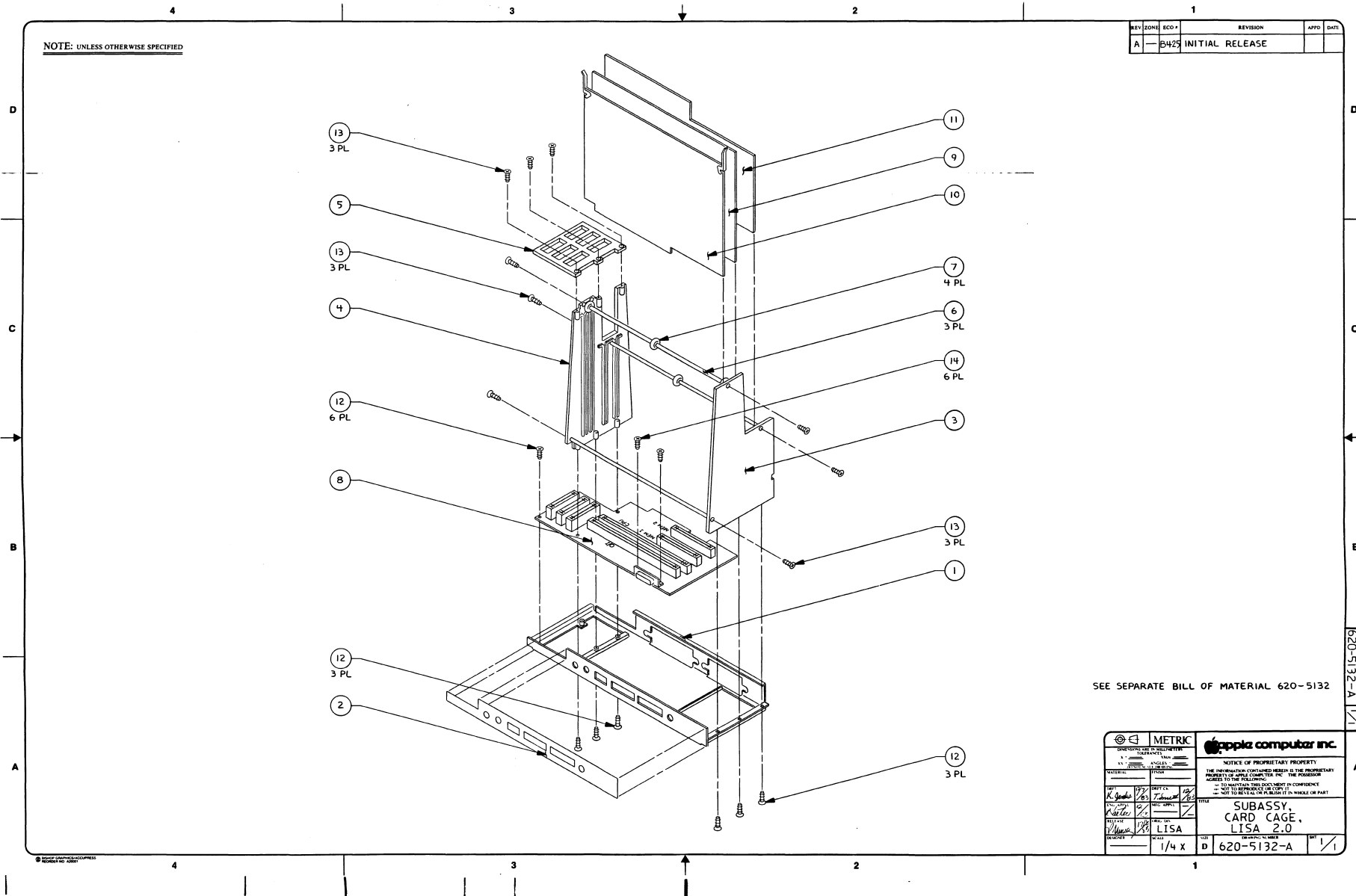
620-5129-A 1/2

| | | | |
|---|--|--|---|
| METRIC DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED | | apple computer inc. NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING: 1. TO MAINTAIN THE INFORMATION IN CONFIDENCE 2. NOT TO REPRODUCE OR COPY IT 3. NOT TO DETACH OR REMOVE IT IN WHOLE OR PART | |
| DESIGNED BY: <i>K. G. ...</i> CHECKED BY: <i>...</i> DATE: <i>...</i> | DRAWN BY: <i>...</i> DATE: <i>...</i> | TITLE: SUBASSY, CHASSIS TWO, LISA 2.0 | SIZE: 1/2X SHEET: D PART NUMBER: 620-5129-A QTY: 1/2 |



620-5129-A 2/2

| | | | |
|--|---|---|--|
| METRIC <small>DIMENSIONS ARE IN MILLIMETERS FRACTIONS ARE IN INCHES</small> | | | |
| <small>NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE PROVISION HEREIN IS TO MAINTAIN THIS DOCUMENT IN CONFIDENCE AND NOT TO REPRODUCE OR DISSEMINATE IT IN WHOLE OR IN PART</small> | | | |
| <small>DATE</small> 1/28/83 <small>BY</small> E. J. ... <small>APPROVED</small> 1/28/83 <small>DESIGNED</small> LISA <small>SCALE</small> 1/2 X <small>PROBES</small> D | <small>REV</small> 1 <small>DATE</small> 1/28/83 <small>BY</small> ... <small>APPROVED</small> 1/28/83 <small>DESIGNED</small> LISA <small>SCALE</small> 1/2 X <small>PROBES</small> D | <small>TITLE</small> SUBASSY, CHASSIS TWO, LISA 2.0 <small>REVISION NUMBER</small> 620-5129-A <small>REV</small> 2/2 | <small>DATE</small> 1/28/83 <small>BY</small> ... <small>APPROVED</small> 1/28/83 <small>DESIGNED</small> LISA <small>SCALE</small> 1/2 X <small>PROBES</small> D |



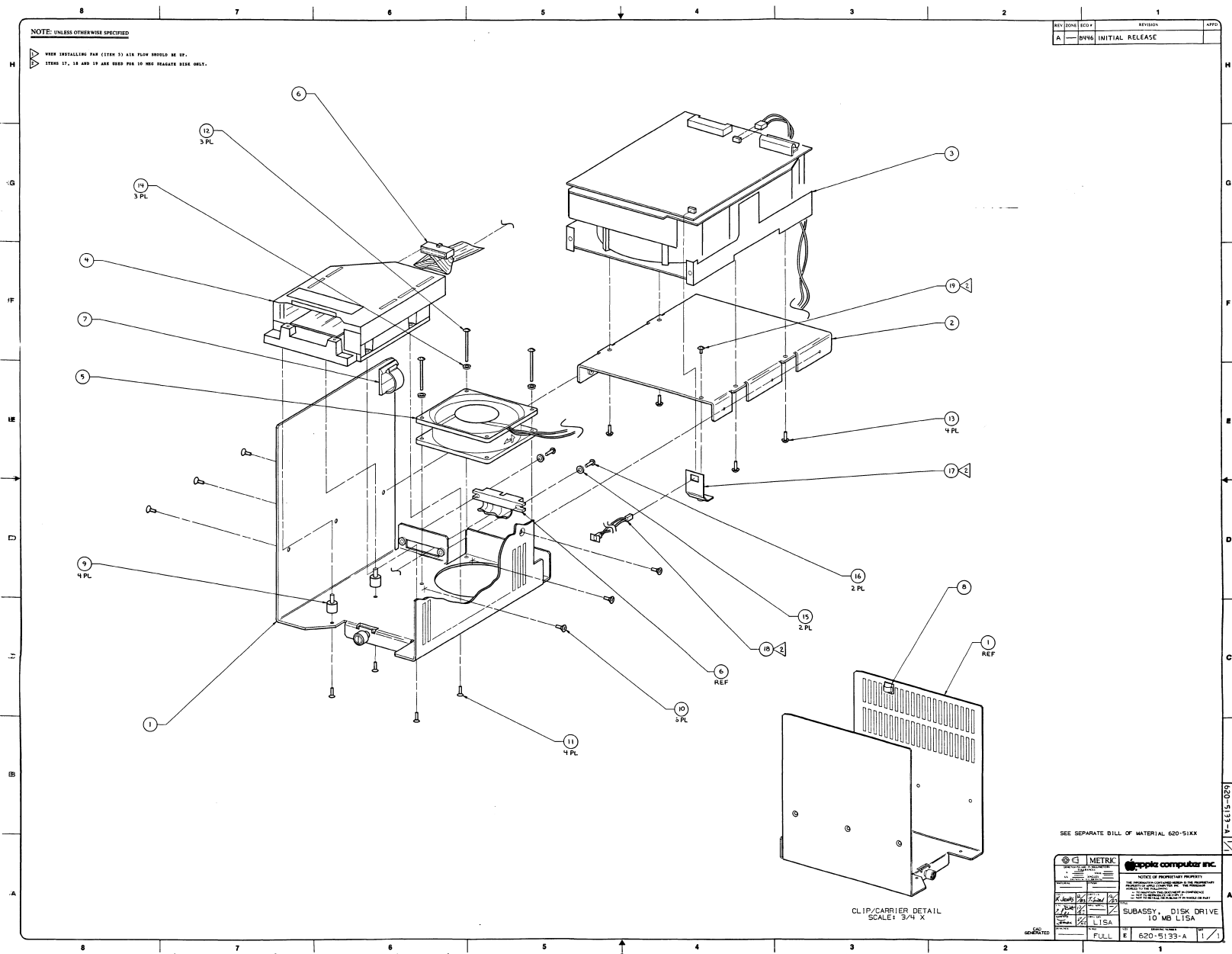
NOTE: UNLESS OTHERWISE SPECIFIED

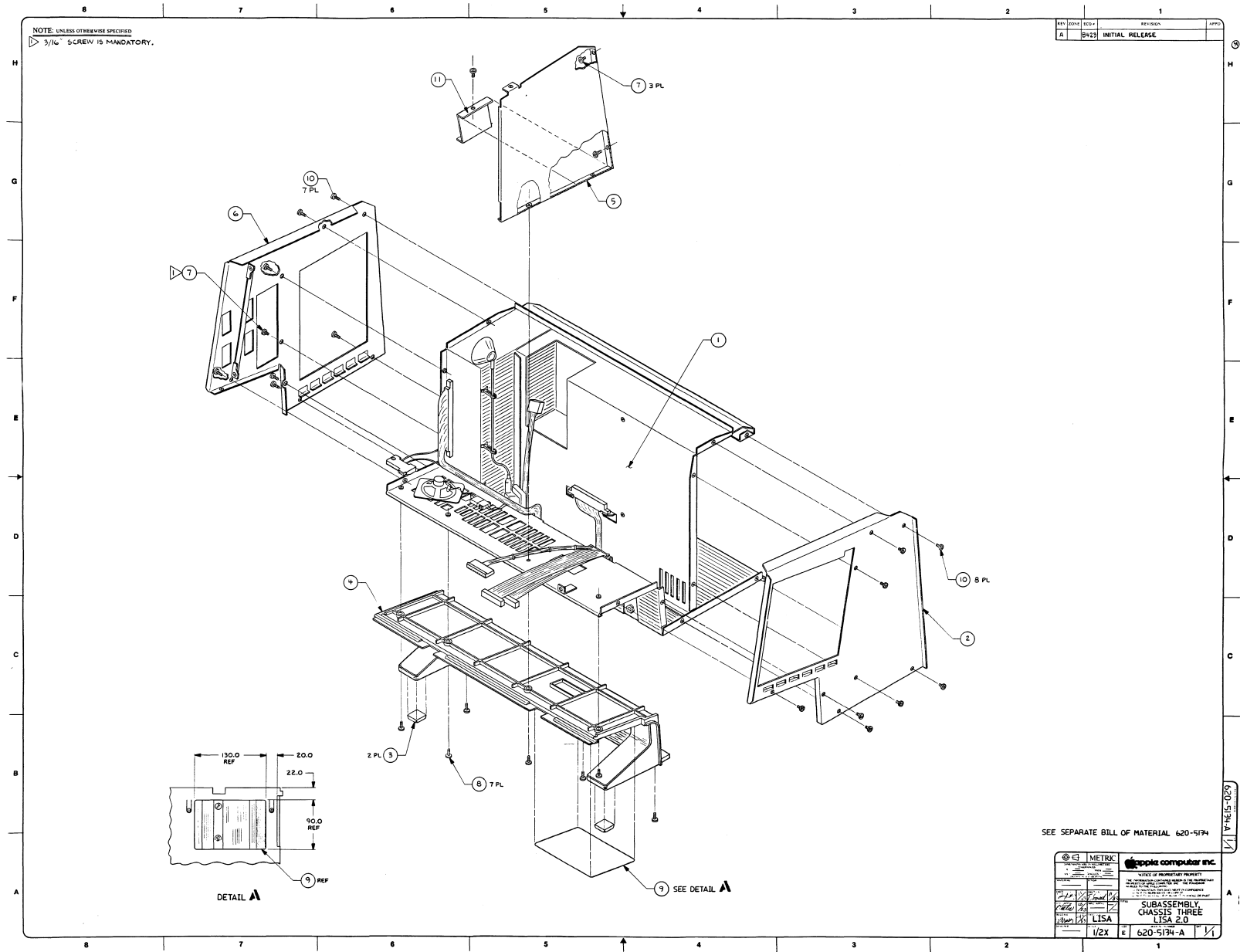
| REV | ZONE | ECO | REVISION | APPD | DATE |
|-----|------|------|-----------------|------|------|
| A | | B425 | INITIAL RELEASE | | |

SEE SEPARATE BILL OF MATERIAL 620-5132

| | | | |
|---|--|--|--|
| METRIC DIMENSIONS IN MILLIMETERS TOLERANCES: ANGLES: | | apple computer inc. NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE REPRODUCER AGREES TO THE FOLLOWING: 1. TO MAINTAIN THIS DOCUMENT IN CONFIDENCE 2. NOT TO REPRODUCE OR TRANSMIT IN ANY MANNER OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. | |
| DRAWN: R. G. ... CHECKED: ... DESIGNED: ... APPROVED: ... DATE: ... | DEPT: ... DIV: ... PROJ: ... LISA | TITLE: SUBASSY. CARD CAGE. LISA 2.0 QTY: 1/4 X ID: 620-5132-A REV: 1/1 | |

620-5132-A 1/1

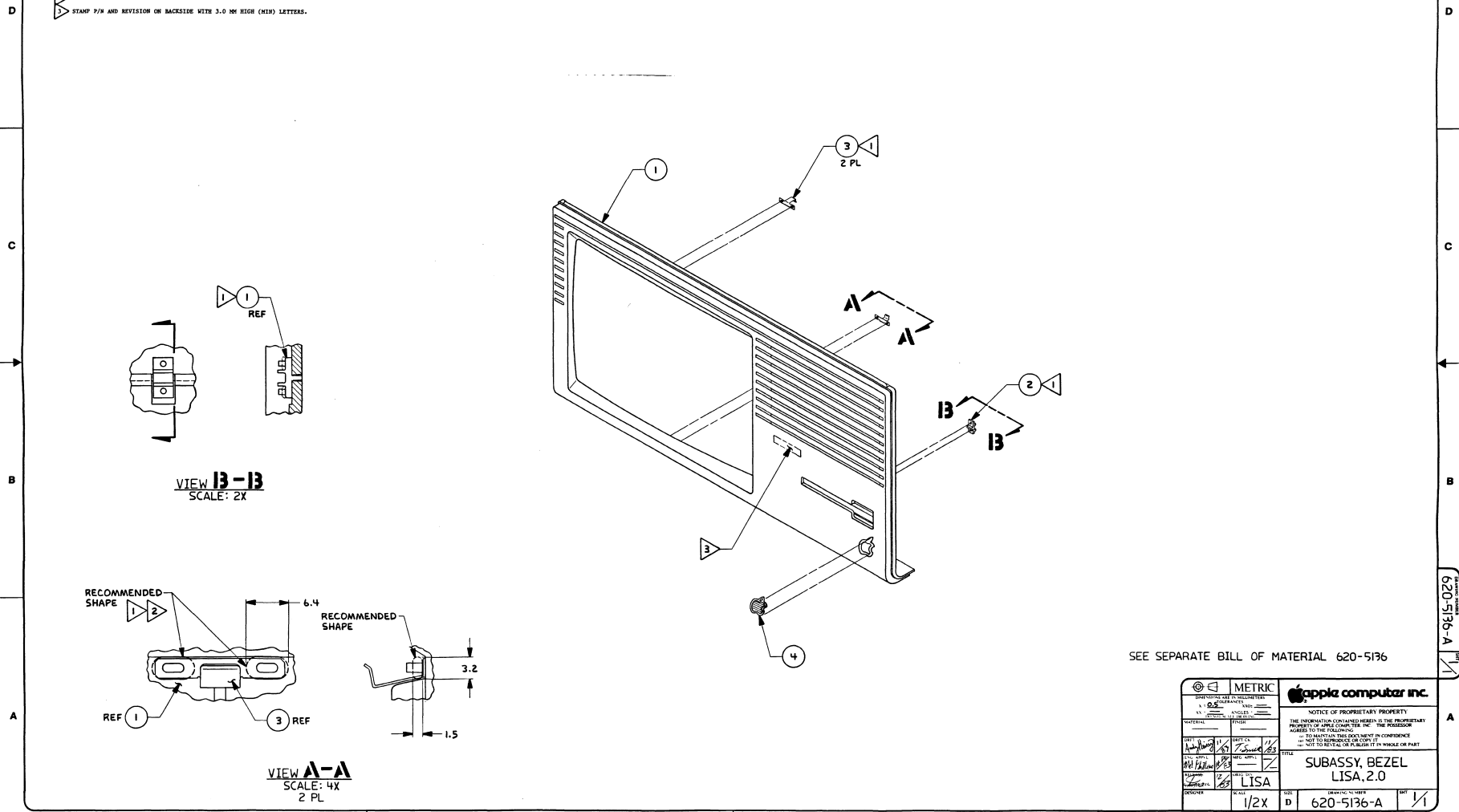




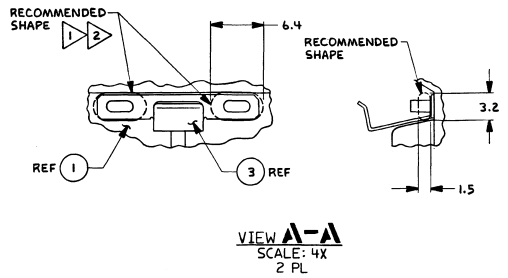
| REV | EDN | ECO # | REVISION | APPD | DATE |
|-----|-----|-------|-----------------|------|------|
| A | | B439 | INITIAL RELEASE | | |

NOTE: UNLESS OTHERWISE SPECIFIED

- ▶ HEAT STAKE/ULTRA SONIC WELD RETENTION CLIPS (ITEM 3) AND LED LENS (ITEM 2) TO BEZEL SECURELY SO THEY ARE TIGHT AGAINST INSIDE BEZEL SURFACE.
- ▶ MATERIAL DISPLACEMENT AROUND PINS SHALL BE UNIFORM.
- ▶ STAMP P/N AND REVISION ON BACKSIDE WITH 3.0 MM HIGH (MIN) LETTERS.



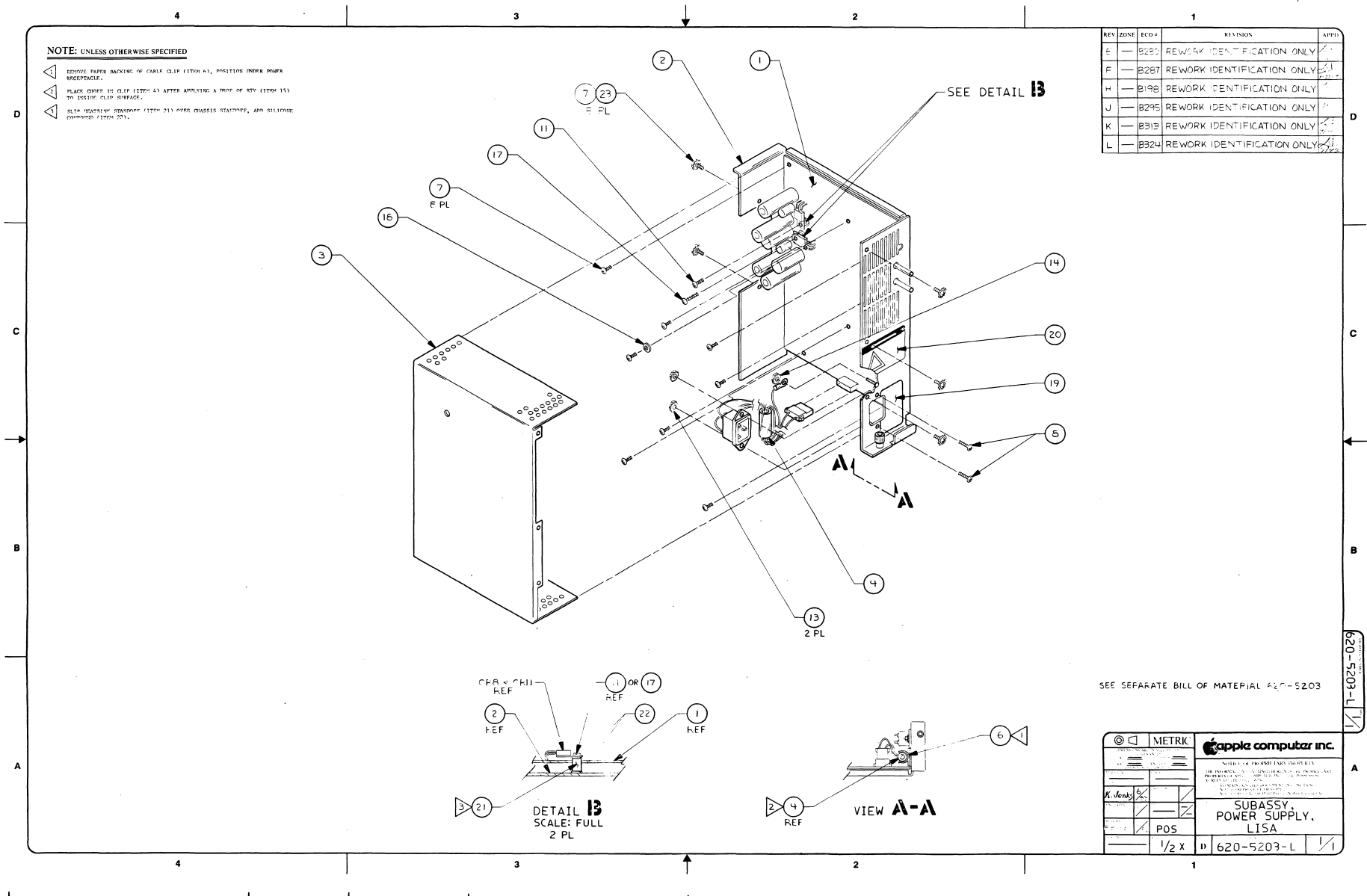
VIEW B-B
SCALE: 2X

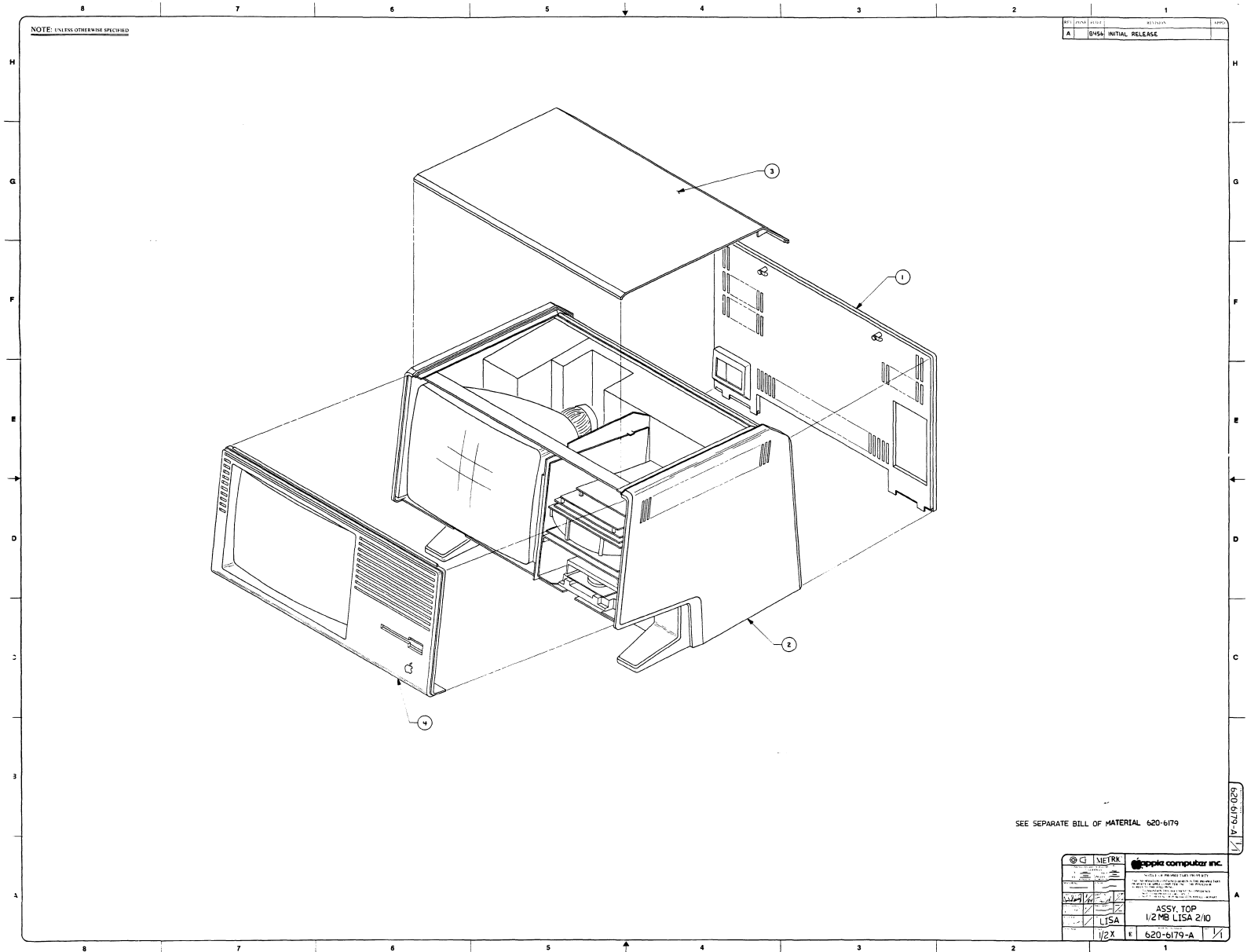


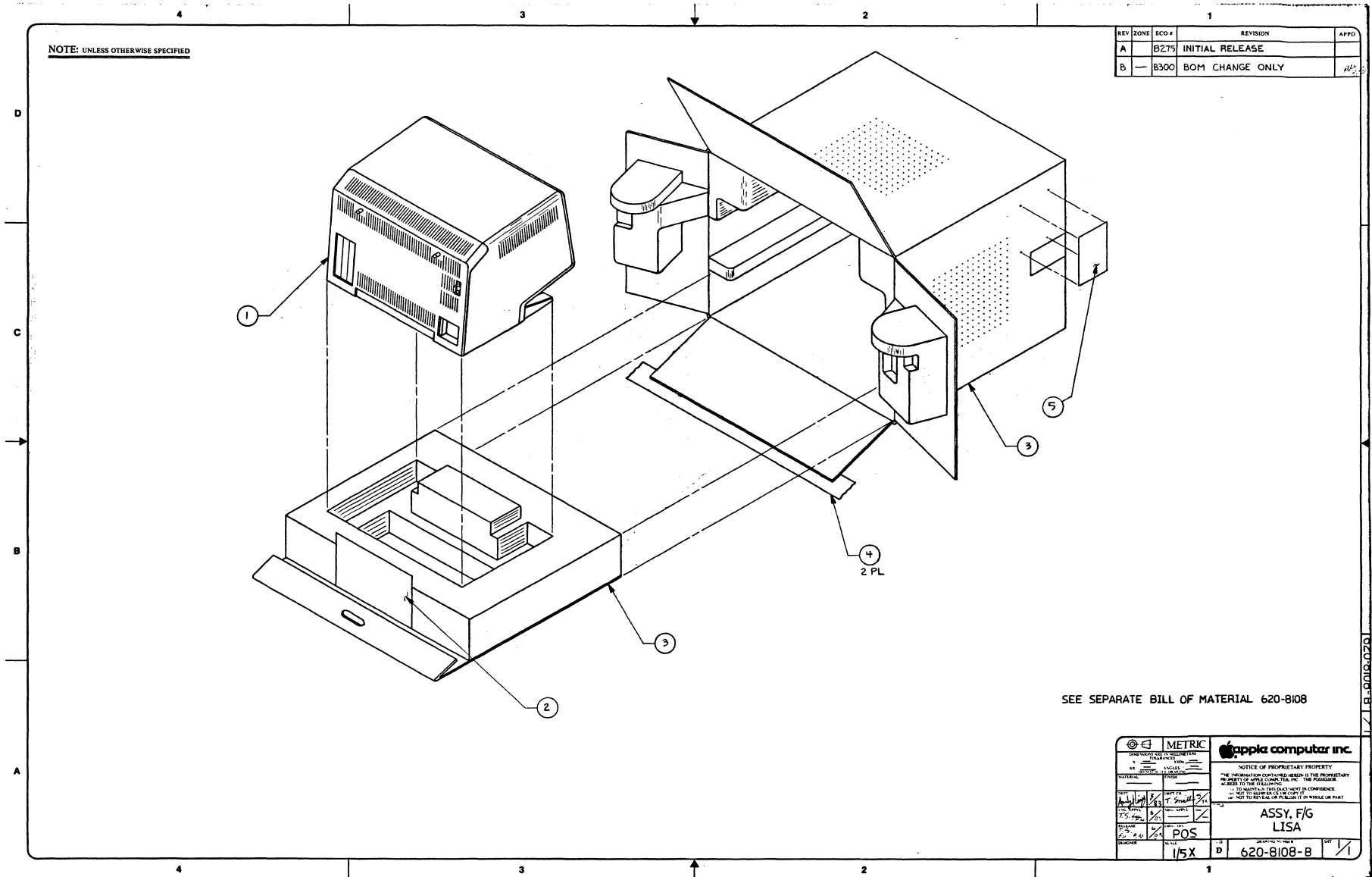
VIEW A-A
SCALE: 4X
2 PL

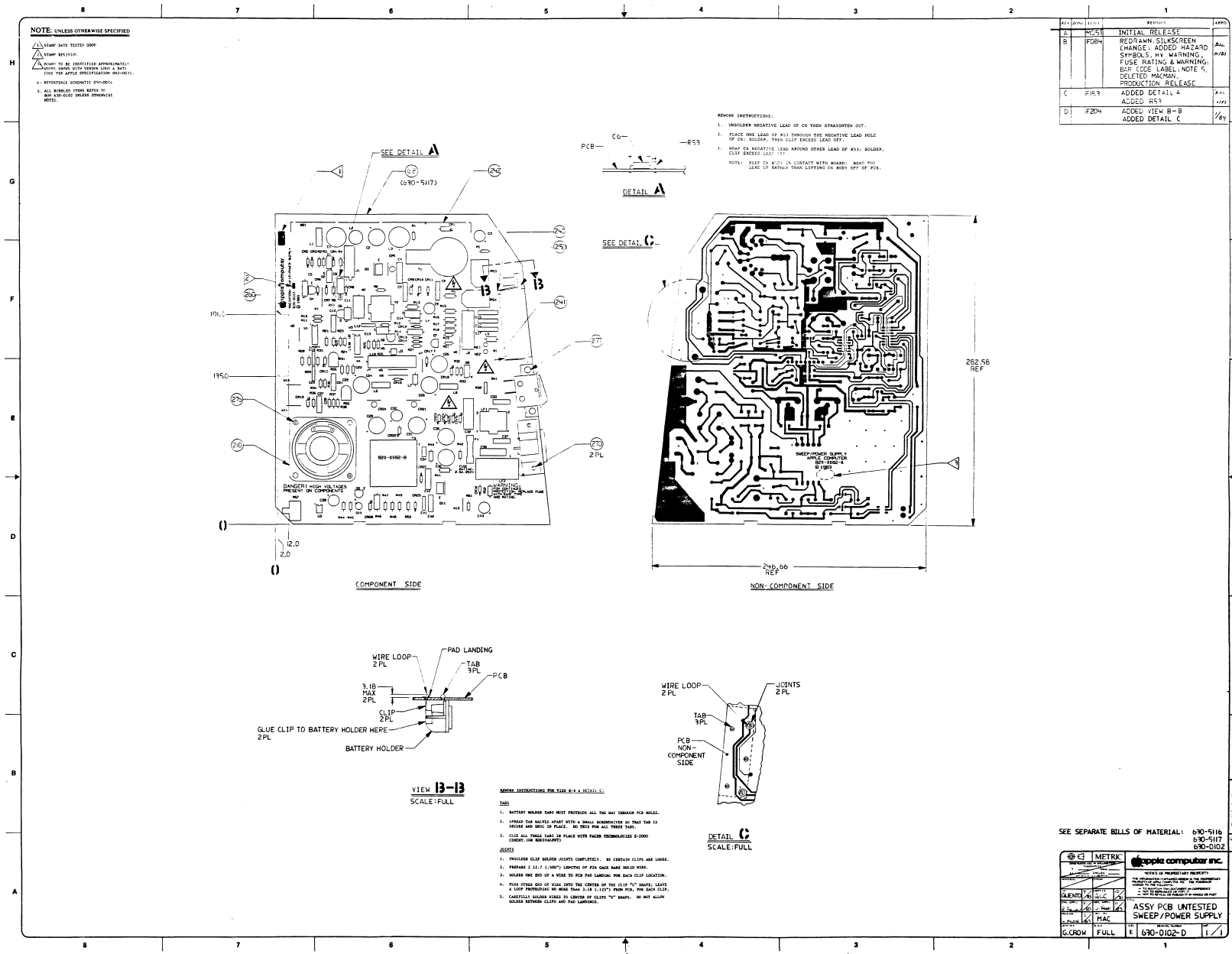
SEE SEPARATE BILL OF MATERIAL 620-5136

| METRIC | | apple computer inc. | |
|----------------|------|--|--|
| UNITS | mm | NOTICE OF PROPRIETARY PROPERTY | |
| SCALE | 1/2X | THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE PROVISION | |
| TITLE | LISA | AGREES TO THE FOLLOWING: | |
| DATE | | 1. TO MAINTAIN THIS DOCUMENT IN CONFIDENCE | |
| APPROVED | | 2. NOT TO REPRODUCE OR COPY IT | |
| DESIGNED | | 3. NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART | |
| SUBASSY, BEZEL | | LISA 2.0 | |
| PART NO. | | 620-5136-A | |







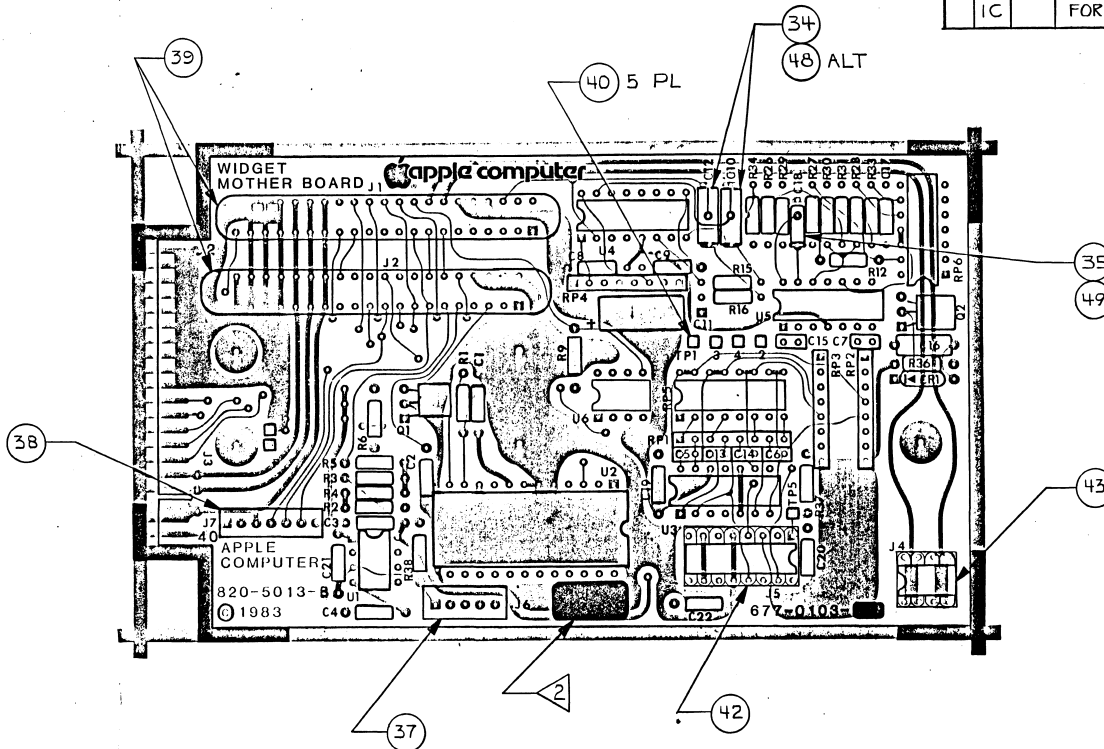


NOTE: UNLESS OTHERWISE SPECIFIED

I. REFERENCE SCHEMATIC: 050-5024

2 STAMP DATE TESTED GOOD

| REV | ZONE | ECO # | REVISION | APP'D |
|-----|------|-------|---|---------|
| A | | P581 | INITIAL RELEASE | ISK |
| B | 4B | P604 | REVISED PCB TO ACCOMMODATE KEYED EDGE CONNECTOR, ADDED ALTERNATE ITEMS 48 & 49 FOR ITEMS 34 & 35 RESP | SKR/LSH |
| 2D | IC | | | |



PRODUCTION RELEASE
This revision supersedes all previous versions. Please destroy all old copies.
NOTICE OF PROPRIETARY PROPERTY
The information contained herein is the proprietary property of Apple Computer, Inc. The licensee agrees to the following:
(i) To maintain this document in confidence.
(ii) Not to reproduce or copy it.
(iii) Not to reveal or publish it in whole or part.

SEE SEPARATE BILL OF MATERIAL: 677-0103

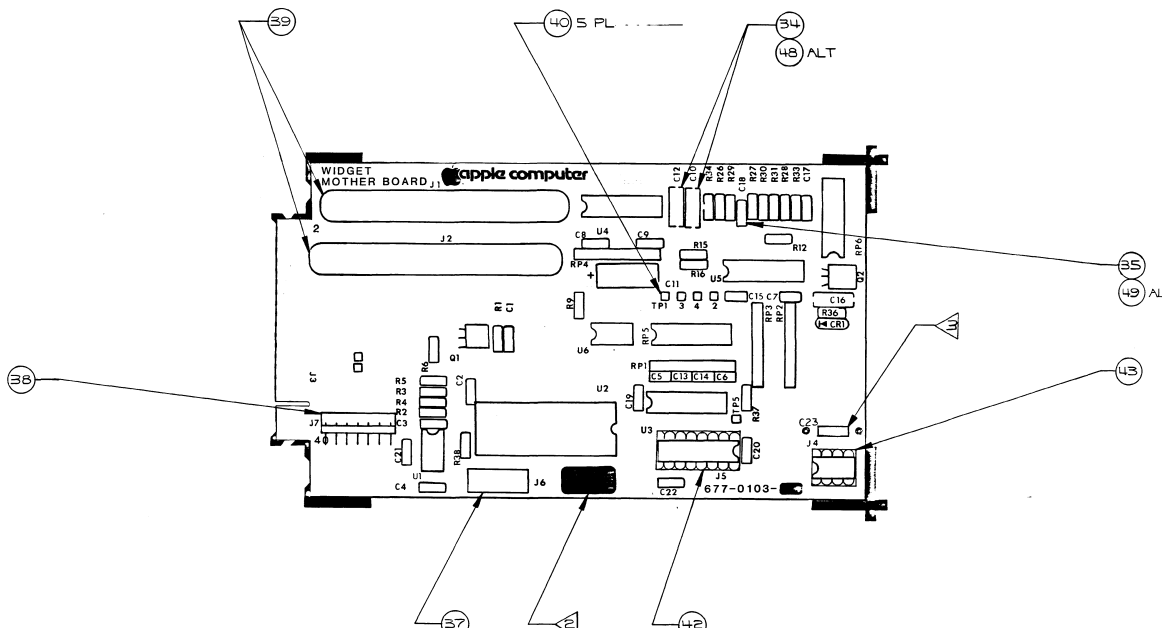
| ITEM | QTY | PART NUMBER | DESCRIPTION |
|---|-----|-------------|--|
| | | | Apple computer inc. |
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. | | | DRAWN BY W. LEACH DATE 9-9-83 CHECKED BY [Signature] DATE 9-16-83 APPROVED BY [Signature] DATE 9/83 RELEASED BY [Signature] DATE 9/83 |
| DECIMALS .X ± = .XX ± = .XXX ± = ANGLES XX.X ± = FRACTIONS ± = DIMENSIONS IN PARENTHESIS ARE IN MILLIMETERS. | | | |
| MATERIAL: N/A | | | TITLE ASSY, PCB, UNTESTED MOTHER BOARD, WIDGET |
| NEXT ASSY FINISH: N/A | | | SIZE C DRAWING NUMBER 677-0103-B |
| | | | SCALE: 2:1 SHEET 1 OF 1 |

THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING

NOTE: UNLESS OTHERWISE SPECIFIED

- 1. REFERENCE SCHEMATIC : 050-5024 .
- 2. STAMP DATE TESTED GOOD .
- 3. NO CAPACITOR REQUIRED FOR C23 LEAVE EMPTY (DO NOT LOAD)!

| REV | ZONE | ECO | REVISION | APP'D | DATE |
|------|------|------|--|-------|------|
| C 28 | | P633 | REVISED & REDRAWN WITH CHANGE, ADDED ITEM 30, ADDED NOTE 3 | | |

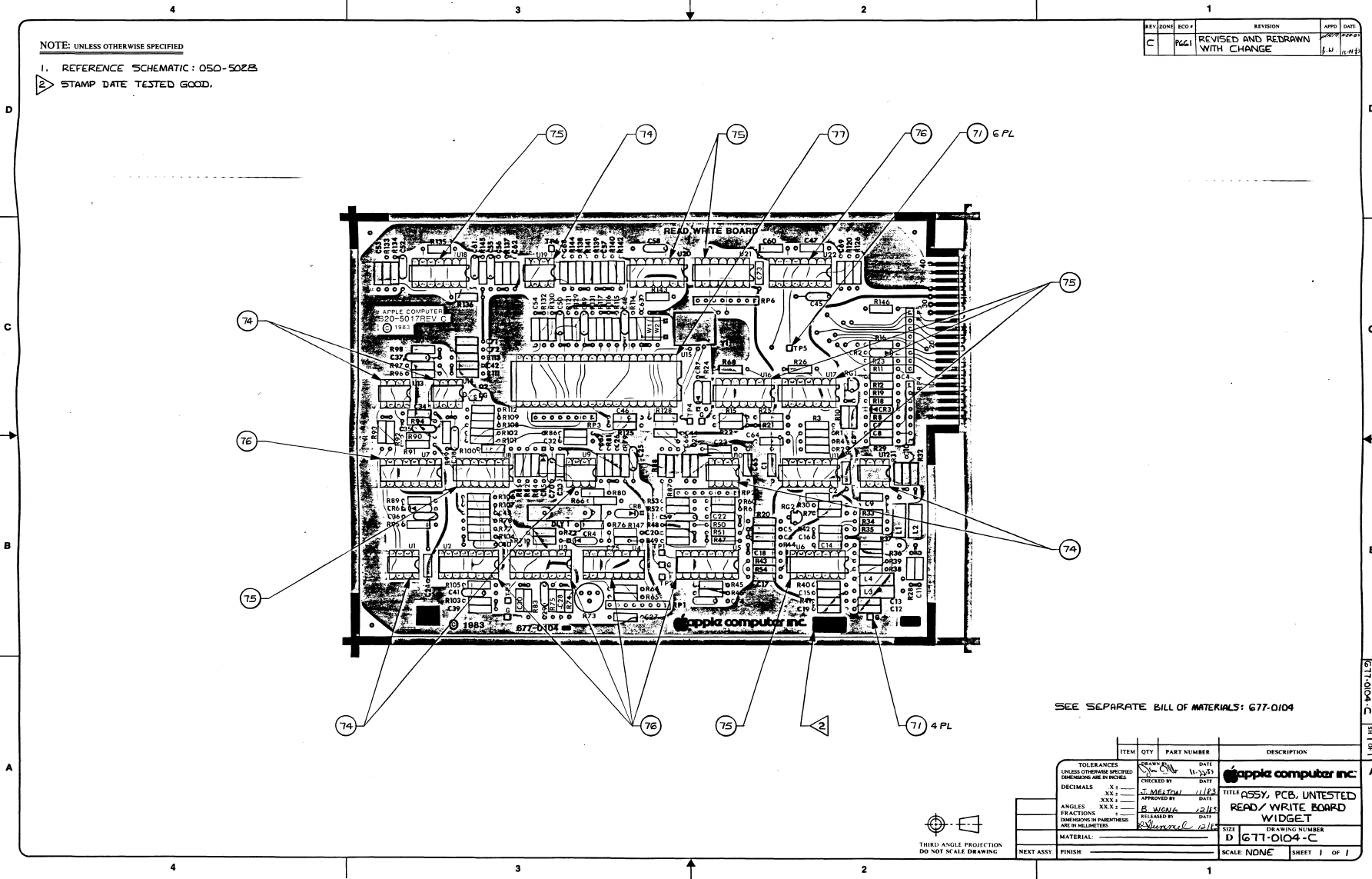


INDUSTRIAL RELEASE
The information contained herein is the property of Apple Computer, Inc. and is intended for use only in connection with the products and services identified herein. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Apple Computer, Inc.

SEE SEPARATE BILL OF MATERIAL: 677-0103

| ITEM | QTY | PART NUMBER | DESCRIPTION |
|--|-----|----------------------------|-------------|
| TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES DECIMALS .XX ± .005 ANGLES XX ± .5° FRACTIONS XX ± .005 DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS | | | |
| DRAWN BY: W. EACH 9-83 | | DATE: 11-5-83 | |
| CHECKED BY: [Signature] | | DATE: 11-5-83 | |
| APPROVED BY: W. NEER 12-13 | | DATE: 12-13-83 | |
| RELEASED BY: [Signature] | | DATE: 12-13-83 | |
| MATERIAL: _____ | | DRAWING NUMBER: 677-0103-C | |
| NEXT ASSY: _____ | | SCALE: 2:1 | |
| FINISH: _____ | | SHEET 1 OF 1 | |

THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING.



| REV | DATE | ECO | REVISION | APPD | DATE |
|-----|------|------|---------------------------------|----------|----------|
| C | | PC61 | REVISED AND REDRAWN WITH CHANGE | J. L. J. | 11-22-81 |

NOTE: UNLESS OTHERWISE SPECIFIED
 1. REFERENCE SCHEMATIC: 050-502B
 2. STAMP DATE TESTED GOOD.

SEE SEPARATE BILL OF MATERIALS: 677-0104

| ITEM | QTY | PART NUMBER | DESCRIPTION |
|--|----------|-------------|----------------------|
| TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS .X1 FRACTIONS XX/XX ANGLES XXX.X DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS MATERIAL: _____ NEXT ASSY: _____ FINISH: _____ | | | |
| DATE | 11-22-81 | CHECKED BY | J. W. J. |
| DATE | 11-22-81 | APPROVED BY | J. W. J. |
| DATE | 12-11-81 | RELEASED BY | J. W. J. |
| apple computer inc. TITLE ASSY, PCB, UNTESTED READ/WRITE BOARD WIDGET DRAWING NUMBER D 677-0104-C SCALE NONE SHEET 1 OF 1 | | | 677-0104-C 1 OF 1 |

NOTE: UNLESS OTHERWISE SPECIFIED

SEE SHEET 2 FOR INSTALLATION OF FLEXIBLE (ITEM 6) AND ASSOCIATED HARDWARE.

2. BEND FLEXIBLE (ITEM 6) AS SHOWN, PRIOR TO ASSEMBLY. REMOVE ALL COVERING TO EXPOSE ADHESIVE EXCEPT WHERE NOTED - SEE NOTE 5.

COVERING OVER ADHESIVE TO REMAIN INTACT IN INDICATED AREAS.

MOUNTING HOLES TO BE CONCENTRIC AFTER BENDING.

ELECTRICAL SPECIFICATION

CONNECTOR:

- PIN 1 LED:**
 1 SENSOR CHIP, SEGMENT B
 2 SENSOR CHIP, GROUND
 3 SENSOR CHIP, SENSOR B
 4 GROUND SHIELDS, COMMON WITH 12
 5 HEAD 1 CENTER
 6 HEAD 2 CENTER
 7 HEAD 3 CENTER
 8 HEAD 4 CENTER
 9 HEAD 5 CENTER
 10 GROUND SHIELDS, COMMON WITH 5
 11 SENSOR CHIP, SEGMENT A
 12 SENSOR CHIP, FEED-BACK SEGMENT FOR AGC
 13 SENSOR CHIP, SENSOR CHIP, SEGMENT A
 14 LED +

INPUT PIN - PIN OUTPUT PIN - PIN

MINIMUM OUTPUT (THROUGH RETICLE)

| | | |
|------------------|-----|-------|
| (-) 16 (+) 25 mA | 1 2 | 7 μA |
| 16 | 3 4 | 20 μA |
| 16 | 5 6 | 20 μA |
| 16 | 7 8 | 20 μA |

FORWARD BIASING (INTERNAL IMPEDANCE)

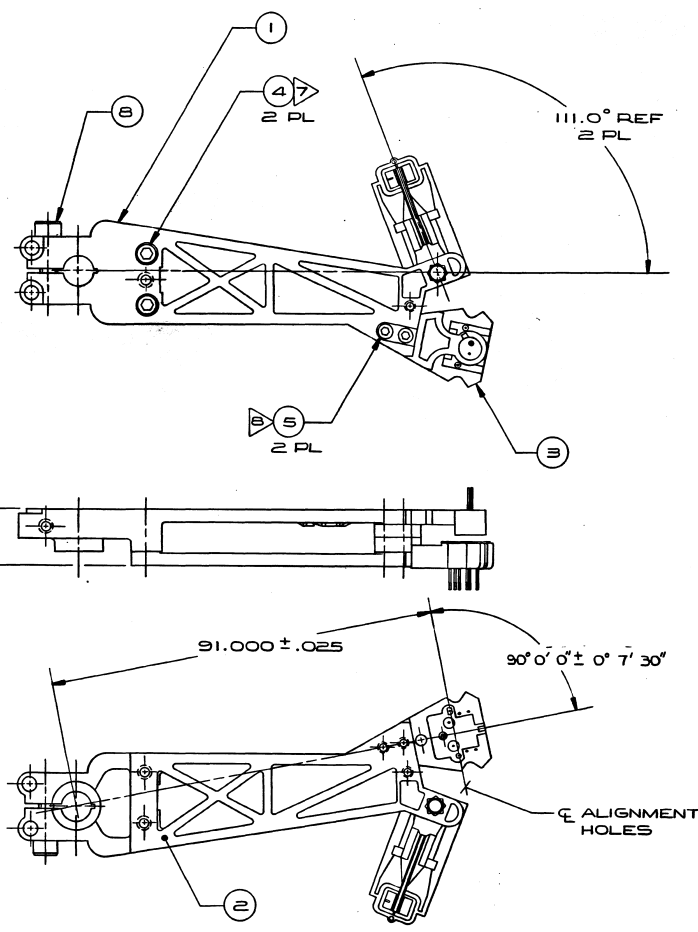
| | |
|----------------|--------|
| (+) 2 (-) 10mA | } ≤ 2V |
| 1 | |
| 16 | |
| 16 | |

REVERSE BIASING (DARK CURRENT)

| | |
|----------------|------------|
| (-) 2 (+) 0.5V | } ≤ 0.5 μA |
| 1 | |
| 16 | |
| 16 | |

TRIM LEADS TO DIMENSIONS SHOWN AFTER SOLDERING.
 TORQUE SCREWS (ITEM 4) TO 5.5 IN./LBS.
 TORQUE SCREWS (ITEM 5) TO 3.0 IN./LBS.

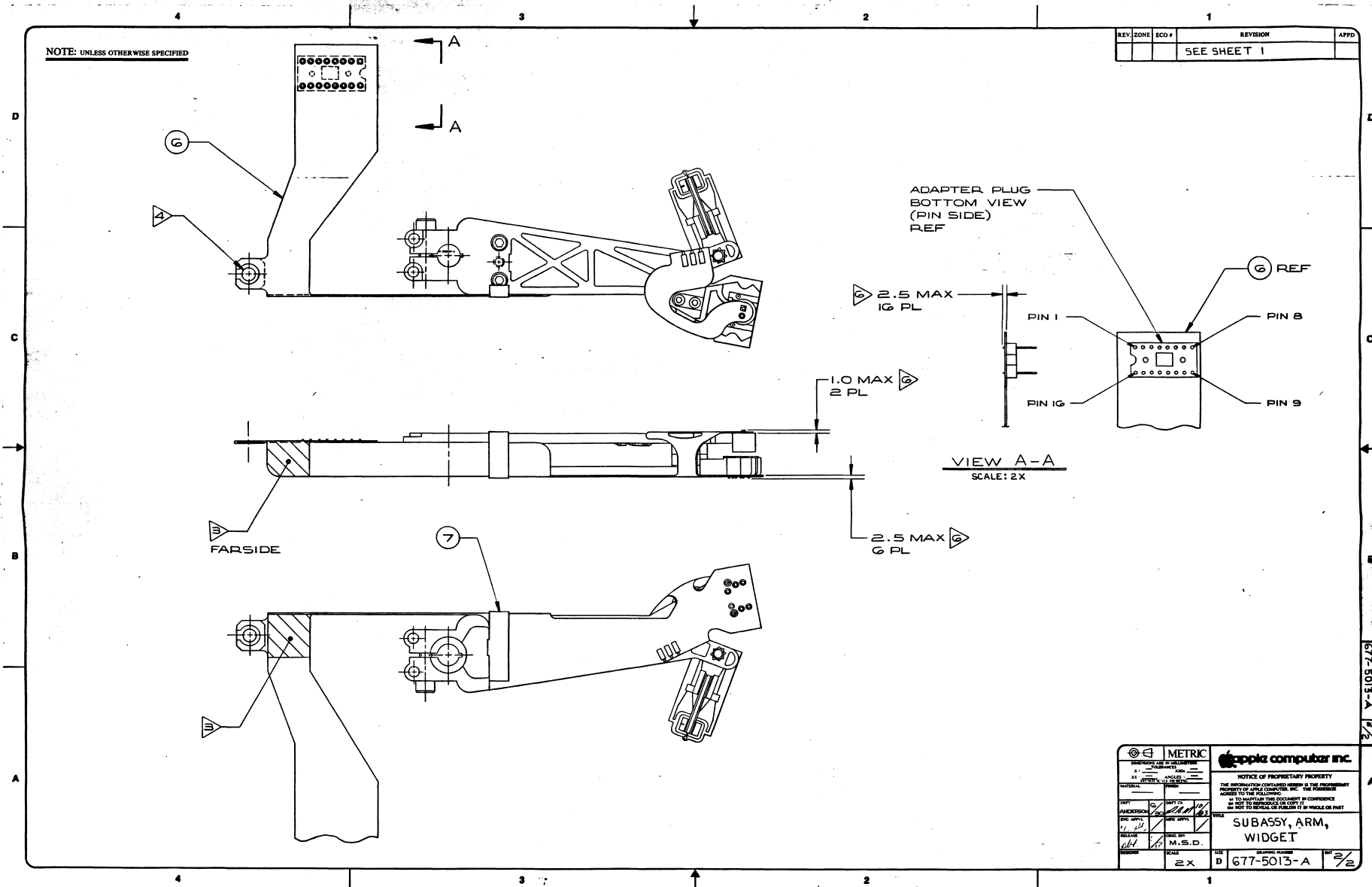
| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|---|------|
| A | | P565 | INITIAL RELEASE (SK-W159-02) | HR |
| A | HC | | REVISED NOTE 5: | |
| A | HB | R630 | FORWARD BIASING ≤ 2V WAS ≥ 2V & REVERSE BIASING ≤ 0.5V WAS ≥ 0.5V | HR |



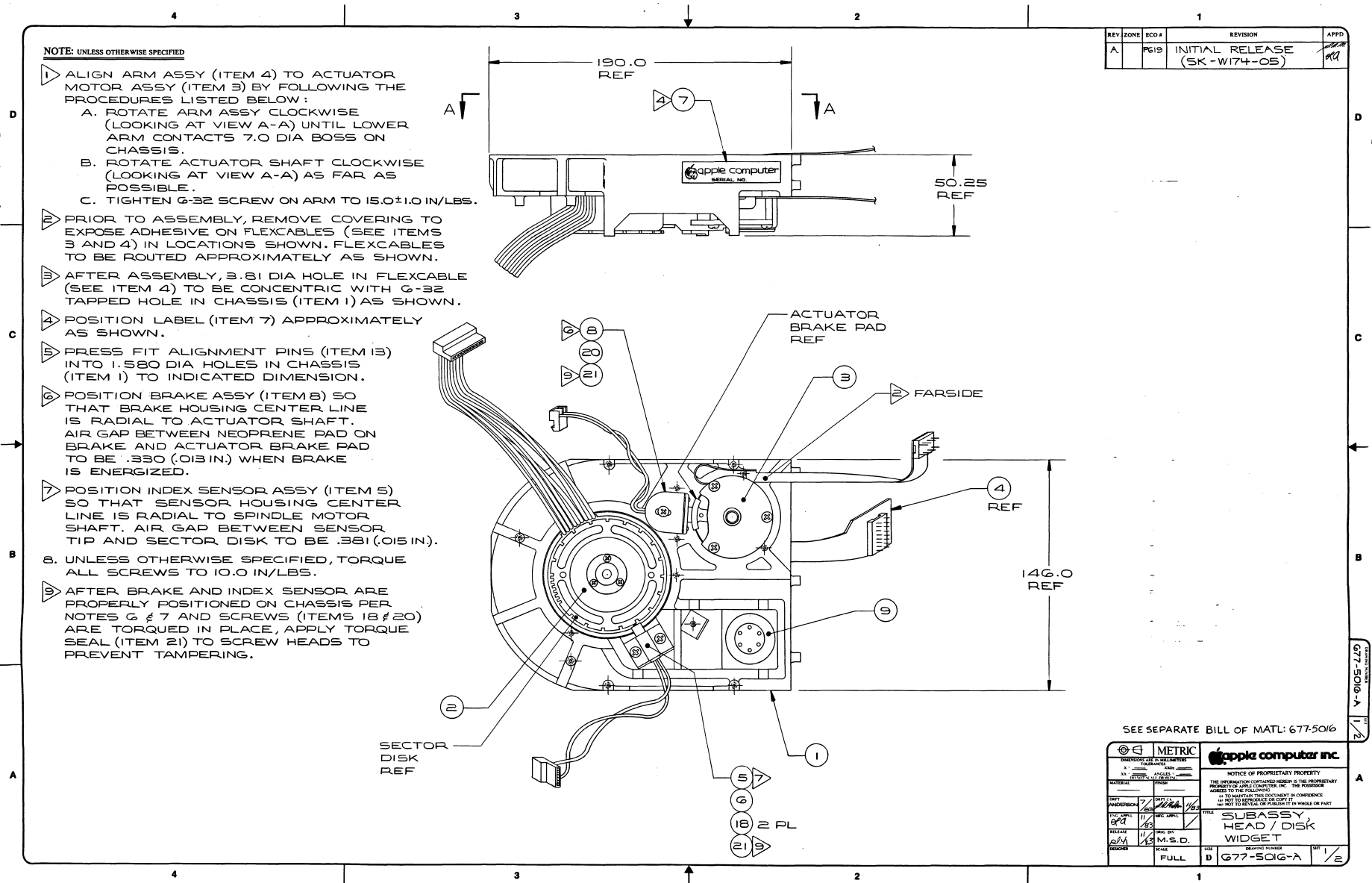
▶ FLEXCABLE (ITEM 6) OMITTED FOR CLARITY

SEE SEPARATE BILL OF MATERIAL : 677-5013

| | | | |
|---|--|---|--|
| METRIC DIMENSIONS IN MILLIMETERS UNITS: MILLIMETERS | | | |
| NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. AND IS TO BE KEPT IN CONFIDENCE AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE WRITTEN PERMISSION OF APPLE COMPUTER, INC. | | | |
| DATE: 1/13/83 DRAWN BY: M.S.D. CHECKED BY: M.S.D. APPROVED BY: M.S.D. | | SUBASSY, ARM, WIDGET PART NUMBER: 677-5013-A QUANTITY: 2X | |



| | | |
|---|--|--|
| METRIC DIMENSIONS ARE IN MILLIMETERS A: ANGLES B: DIMENSIONS C: ANGLES D: DIMENSIONS | | NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. AND IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE WRITTEN PERMISSION OF APPLE COMPUTER, INC. |
| DATE: 11/82 DESIGNED BY: J. J. J. CHECKED BY: J. J. J. DRAWN BY: J. J. J. SCALE: 2X | TITLE: SUBBASSY, ARM, WIDGET PART NUMBER: 677-5013-A REV: 2/82 | |



SEE SEPARATE BILL OF MATL: 677-5016

| | | | |
|---|--|----------------------------|--|
| METRIC | | apple computer inc. | |
| NOTICE OF PROPRIETARY PROPERTY | | | |
| THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE REPRODUCING OR TRANSMITTING IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF APPLE COMPUTER, INC. IS PROHIBITED. | | | |
| TITLE | | SUBASSY HEAD / DISK WIDGET | |
| PART NO. | | G77-5016-A | |
| REV. | | 1/2 | |
| DATE | | 11/83 | |
| BY | | M.S.D. | |
| CHECKED | | FULL | |

NOTE: UNLESS OTHERWISE SPECIFIED

| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|---------------------------------|------|
| A | | FG20 | INITIAL RELEASE (SK-W175-04) | grr |

▷ PRIOR TO ASSEMBLY, REMOVE COVERING FROM GASKET (ITEM 3) TO EXPOSE ADHESIVE AND PRESS ONTO UNDERSIDE OF COVER (ITEM 2). CARE MUST BE TAKEN TO ENSURE THAT HOLE PATTERNS LINE UP.

▷ INSTALL PLUG (ITEM 5) IN COVER (ITEM 2) IN LOCATION SHOWN. PLUG MUST NOT EXTEND BEYOND TOP SURFACE OF COVER.

▷ TO LOAD HEADS ONTO DISK (ITEM 4) SLIDE HEAD LOADING TOOL BETWEEN UPPER AND LOWER ARMS TO GENTLY FORCE HEADS APART. ROTATE ARM ASSY UNTIL HEADS ARE OVER DISK AND CAREFULLY REMOVE HEAD LOADING TOOL. HEADS ARE NOW PROPERLY POSITIONED ON DISK.

▷ INSTALL SHIMS (ITEMS 15 THRU 21) AS REQUIRED IN LOCATION SHOWN TO ACHIEVE THE INDICATED GAP BETWEEN BOTTOM SURFACE OF SCALE (ITEM 8) AND TOP SURFACE OF RETICLE.

▷ TORQUE SCREWS (ITEM 11) TO 10.0 IN/LBS.

▷ TORQUE SCREWS (ITEM 12) TO 3.0 IN/LBS.

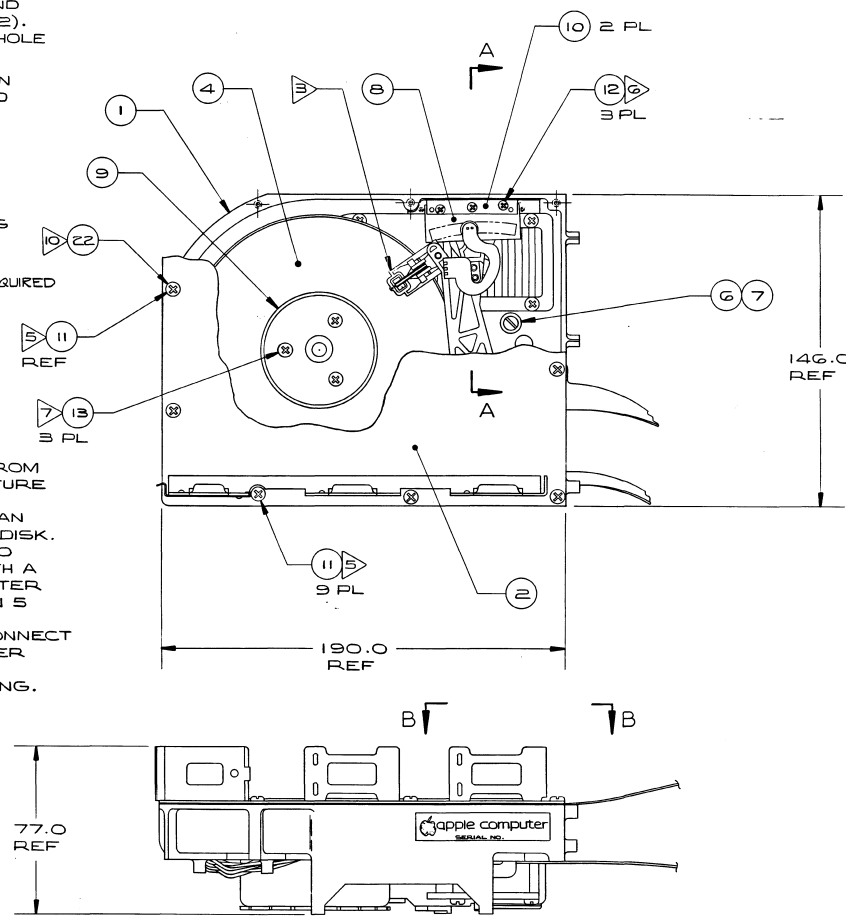
▷ TORQUE SCREWS (ITEM 13) TO 5.0 IN/LBS.

B. PARTICLE COUNT PROCEDURE:

▷ AFTER ASSY, REMOVE PLUG (ITEM 5) FROM COVER AND INSERT AIR SAMPLING FIXTURE FROM PARTICLE COUNTER INTO HOLE. CONNECT SPINDLE MOTOR HARNESS TO AN EXTERNAL POWER SUPPLY TO ROTATE DISK. PARTICLE COUNT READING SHOULD BE 50 PARTICLES PER CUBIC FT OR LESS WITH A MAX PARTICLE SIZE OF .3 MICRONS AFTER RUNNING THE UNIT FOR NO MORE THAN 5 MINUTES. AFTER TEST IS COMPLETED, INSTALL PLUG PER NOTE 2 AND DISCONNECT SPINDLE MOTOR HARNESS FROM POWER SUPPLY. DO NOT MOVE CHASSIS UNTIL SPINDLE MOTOR HAS STOPPED ROTATING.

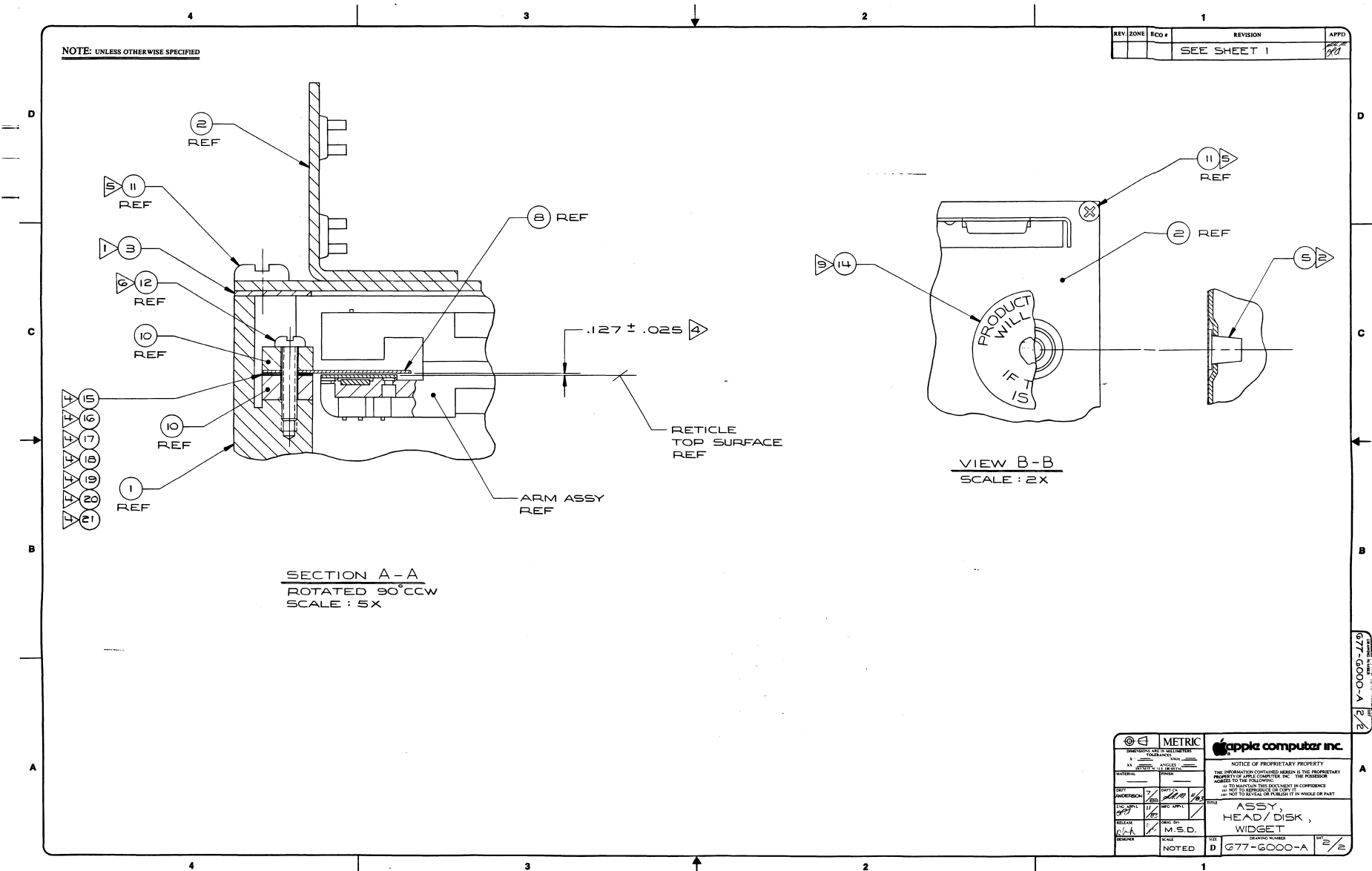
▷ AFTER PARTICLE COUNT TESTING PER NOTE B, POSITION LABEL (ITEM 14) OVER PLUG APPROXIMATELY AS SHOWN.

▷ AFTER COVER IS IN PLACE AND ALL SCREWS (ITEM 11) ARE PROPERLY TORQUED PER NOTE 5, APPLY TORQUE SEAL (ITEM 22) TO SCREW HEAD TO PREVENT TAMPERING (ONE PLACE ONLY IN LOCATION SHOWN).

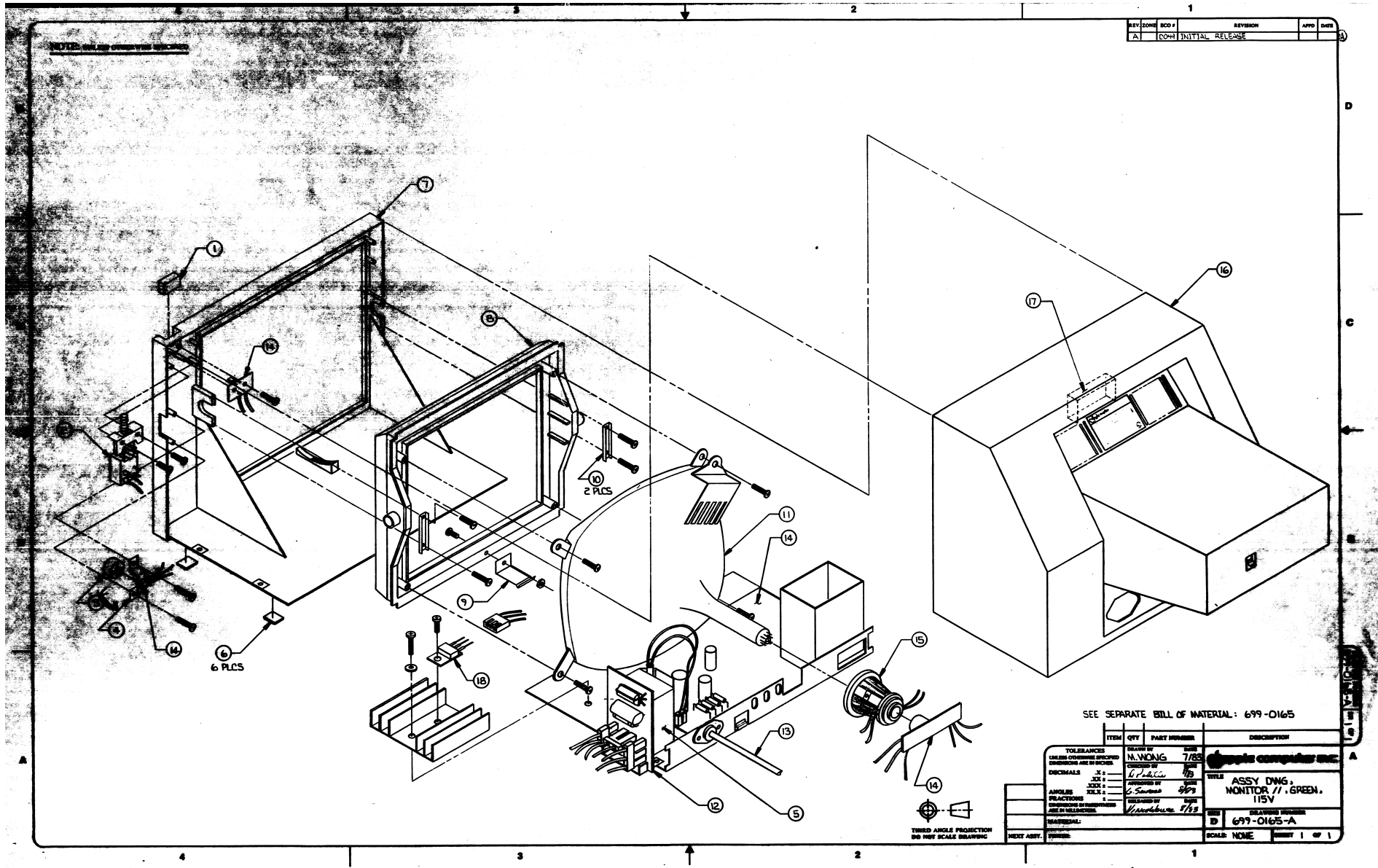


SEE SEPARATE BILL OF MAT'L 677-6000

| | | | |
|--|---|--|--------------------------|
| METRIC <small>CONVERSION TO METRIC DIMENSIONS</small> 1. METRIC DIMENSIONS SHALL BE USED. 2. METRIC DIMENSIONS SHALL BE USED TO DETERMINE TOLERANCES. 3. METRIC DIMENSIONS SHALL BE USED TO DETERMINE DIMENSIONS OF PARTS. 4. METRIC DIMENSIONS SHALL BE USED TO DETERMINE DIMENSIONS OF PARTS. | | NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING: 1. TO REPRODUCE THIS DOCUMENT IN CONFIDENCE 2. TO NOT REPRODUCE OR COPY 3. TO NOT REVEAL OR ALLOW IT IN WHOLE OR PART | |
| DESIGNED BY: ANDERSON DATE: 7/82 CHECKED BY: M.S.D. DATE: 7/82 RELEASED BY: M.S.D. DATE: 7/82 DRAWN BY: M.S.D. DATE: 7/82 | TITLE: ASSY, HEAD/DISK WIDGET PART: D QUANTITY: 1/2 | PART: D QUANTITY: 1/2 | PART: D QUANTITY: 1/2 |



| | | | |
|--|------|-------------------------|-----|
| METRIC | | apple computer inc. | |
| NOTICE OF PROPRIETARY PROPERTY | | | |
| THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR HEREBY AGREES TO THE FOLLOWING: | | | |
| 1. TO MAINTAIN THIS DOCUMENT IN CONFIDENCE | | | |
| 2. NOT TO REPRODUCE OR COPY IT IN WHOLE OR PART | | | |
| 3. NOT TO REVEAL OR PURSUE IT IN WHOLE OR PART | | | |
| DATE | BY | TITLE | |
| 1/28/77 | JK | ASSY, HEAD/DISK, WIDGET | |
| SCALE | SIZE | DRAWING NUMBER | REV |
| NOTED | D | 677-6000-A | 2 |



| REV | ZONE | BY | DATE | REVISION | APP'D | DATE |
|-----|------|-----|------|-----------------|-------|------|
| A | | COH | | INITIAL RELEASE | | |

SEE SEPARATE BILL OF MATERIAL: 699-0165

| ITEM | QTY | PART NUMBER | DESCRIPTION | | | |
|---|---|--|-------------|--|---|--|
| <table border="0"> <tr> <td> TOLERANCES: UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS .125 FRACTIONS 1/16 ANGLES 30, 45, 60, 90 DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES </td> <td> DESIGNED BY: M. WONG DATE: 7/83 CHECKED BY: [Signature] DATE: 8/83 APPROVED BY: [Signature] DATE: 7/83 </td> <td> Apple Computer Inc. TITLE: ASSY DWG, MONITOR // .GREEN, 115V REV: A REV. NO.: 699-0165-A SCALE: NONE SHEET: 1 OF 1 </td> </tr> </table> | | | | TOLERANCES: UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS .125 FRACTIONS 1/16 ANGLES 30, 45, 60, 90 DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES | DESIGNED BY: M. WONG DATE: 7/83 CHECKED BY: [Signature] DATE: 8/83 APPROVED BY: [Signature] DATE: 7/83 | Apple Computer Inc. TITLE: ASSY DWG, MONITOR // .GREEN, 115V REV: A REV. NO.: 699-0165-A SCALE: NONE SHEET: 1 OF 1 |
| TOLERANCES: UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS .125 FRACTIONS 1/16 ANGLES 30, 45, 60, 90 DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES DIMENSIONS BETWEEN DIMENSION LINES | DESIGNED BY: M. WONG DATE: 7/83 CHECKED BY: [Signature] DATE: 8/83 APPROVED BY: [Signature] DATE: 7/83 | Apple Computer Inc. TITLE: ASSY DWG, MONITOR // .GREEN, 115V REV: A REV. NO.: 699-0165-A SCALE: NONE SHEET: 1 OF 1 | | | | |

DRAWING NUMBER
699-0285-A

SHT
1 / 39

| REV. ZONE | ECO # | REVISION | APPD | DATE |
|-----------|-------|--|------------|-------|
| A | F083 | INITIAL RELEASE | | |
| A | F185 | PAGE 9: ADDED WET BULB TEMP. PAGE 29: ADDED DATE LABEL SHAPE, SIZE, MONTH AND YEAR. REMOVED REFERENCE TO FIGURE 4.3. PAGE 31: ADDED APPLE TO PART NUMBER 1.0 HIGH. | <i>SLC</i> | 12/83 |
| A | F207 | PRODUCTION RELEASE | <i>SLC</i> | 11/84 |

SPECIFICATION FOR 3.5 INCH SINGLE SIDED DISK DRIVE
APPLE PART NUMBER 699-0285

SHEET 39 IS E SIZE DRAWING

| | | | |
|--|---|---|-----------|
| METRIC DIMENSIONS ARE IN MILLIMETERS X - TOLERANCES Y - ANGLES Z - DIMENSIONS IN INCHES MATERIAL: | | apple computer inc NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO MAINTAIN THE DOCUMENT IN CONFIDENCE AND NOT TO REPRODUCE OR COPY IT IN WHOLE OR PART. | |
| DRAFT ENG APPROV RELEASE DESIGNED | DRAFT CK GLC 10/83 11/83 11/83 11/83 | TITLE DISK DRIVE. 3 1/2 INCH | SIZE A |
| SCALE MAC | | DRAWING NUMBER 699-0285-A | |
| | | SHT 1 / 39 | |

CONTENTS

- 1.0 Description
- 2.0 Specification
- 2.1 Configuration
- 2.2 Mechanical Dimensions
- 2.3 Performance
 - 2.3.1 Capacity and Encoding Method
 - 2.3.2 Transfer Rate
 - 2.3.3 Access Time
 - 2.3.4 Functional
 - 2.3.5 Weight
- 2.4 Input Power Requirements
- 2.5 Environmental Limits
 - 2.5.1 Temperature
 - 2.5.2 Humidity
 - 2.5.3 Vibration
 - 2.5.4 Shock
- 2.6 Noise
- 2.7 Orientation
- 2.8 Reliability
- 2.9 Overwrite Characteristics
- 2.10 Time Margin
 - 2.10.1 Definition of Time Margin
 - 2.10.2 Self Read/Write Time Margin
 - 2.10.3 Off-Track Time Margin
- 2.11 Alignment Accuracy
- 2.12 Azimuth Angle



SIZE
A
SCALE:

DRAWING NUMBER
699-0285-A

SHEET 2 OF 39

- 2.13 Off Track Error Rate
- 2.14 Temperature Inside Drive
- 2.15 Head Life
- 2.16 Media Wear
- 2.17 Disk Motor
 - 2.17.1 Speed Control Range
 - 2.17.2 Linearity
 - 2.17.3 Jitter
 - 2.17.4 Thermal Drift
 - 2.17.5 Initial Drift
 - 2.17.6 Speed Torque Characteristics
- 2.18 Eject Mechanism
 - 2.18.1 Eject Timing
 - 2.18.2 Eject Mechanism Life
 - 2.18.3 Manual Eject
- 3.0 Interface
- 3.1 General Description
 - 3.1.1 Reading Status or Data from Drive
 - 3.1.2 Sending Control Commands to Drive
- 3.2 Signal Descriptions
 - 3.2.1 /CSTIN
 - 3.2.2 /WRTPRT
 - 3.2.3 /TKO
 - 3.2.4 /TACH
 - 3.2.5 /DIRTN
 - 3.2.6 /STEP
 - 3.2.7 /MOTORON
 - 3.2.8 EJECT
 - 3.2.9 SIDES
 - 3.2.10 /DRVIN
 - 3.2.11 RDDATA
 - 3.2.12 /FWM
 - 3.2.13 CAO, CAL, CA2, SEL
 - 3.2.14 /ENBL
 - 3.2.15 LSTEB
 - 3.2.16 RD
 - 3.2.17 WRTDATA
 - 3.2.18 /WRTGATE

| | |
|-----------|------------------------------|
| SIZE A | DRAWING NUMBER 699-0285-A |
| SCALE: | SHEET 3 OF 39 |



3.3 DC Characteristics of Interface Signals

- 3.3.1 Output Drive
- 3.3.2 Input Loading

3.4 Timing Requirements

- 3.4.1 Reading one of the Status Signals
- 3.4.2 Sending one of the Control Commands
- 3.4.3 /WRITE, WRDATA and /ERASE Timing
- 3.4.4 /DIRTN and /STEP Timing
- 3.4.5 /TKO Timing
- 3.4.6 RDDATA Valid Timing (1)
- 3.4.7 RDDATA Valid Timing (2)
- 3.4.8 /PUM Waveform

3.5 Power On and Power Off Requirements

- 3.5.1 Data Protection
- 3.5.2 Power Supply Sequencing
- 3.5.3 Head Position Initialization at Power On


3.6 Interface Connector and Pin Assignment

4.0 Labelling

- 4.1 Label Position
- 4.2 Label Contents

Appendix A. Jitter Generator Schematic

Appendix B. Format Description

| | | |
|---|------|----------------|
|  apple computers inc. | SIZE | DRAWING NUMBER |
| | A | 699-0285-A |
| SCALE: | | SHEET 4 OF 39 |

1.0 Description

This specification defines a single sided 3.5 inch Micro-Floppy disk Drive, Apple part number 699-0285.

2.0 Specification

The drive shall satisfy the following specifications when a diskette meeting the Apple disk specification, specification number 003-0001, is used.

2.1 Configuration

The drive consists of a read/write head, head positioning mechanism, disk motor, interface logic circuit, read/write circuit, and auto eject, and uses a 3.5 inch microfloppy diskette, as shown in Figure 2.1. The drive itself shall meet UL 478 and CSA C22.2 No. 154-1983 requirements for safety.

2.2 Mechanical Dimensions

The mounting holes are shown in Figure 2.2, and the complete mechanical dimensions are shown in Apple drawing number 699-0285 page 39, which is an addendum to this specification available on request.

2.3 Performance

2.3.1 Capacity and Encoding Method - see Appendix B

2.3.2 Transfer Rate

Detected flux transitions shall occur not less than 1.89 usec nor more than 6.36 usec apart.

2.3.3 Access Time

- a. Track to track slew rate : 12 msec Max
- b. Track to track step settling time : 30 msec Max
(These times are satisfied when the head is positioned and stable within 0.035 mm of its absolute position as defined in 2.11.)
- c. Speed group to speed group motor settling time : 150 msec Max
- d. Motor start time : 400 msec Max
(These times are satisfied when the motor speed has settled to within +/- 1% of its final average rpm.)



SIZE
A

DRAWING NUMBER
699-0285-A

SCALE:

SHEET 5 OF 39

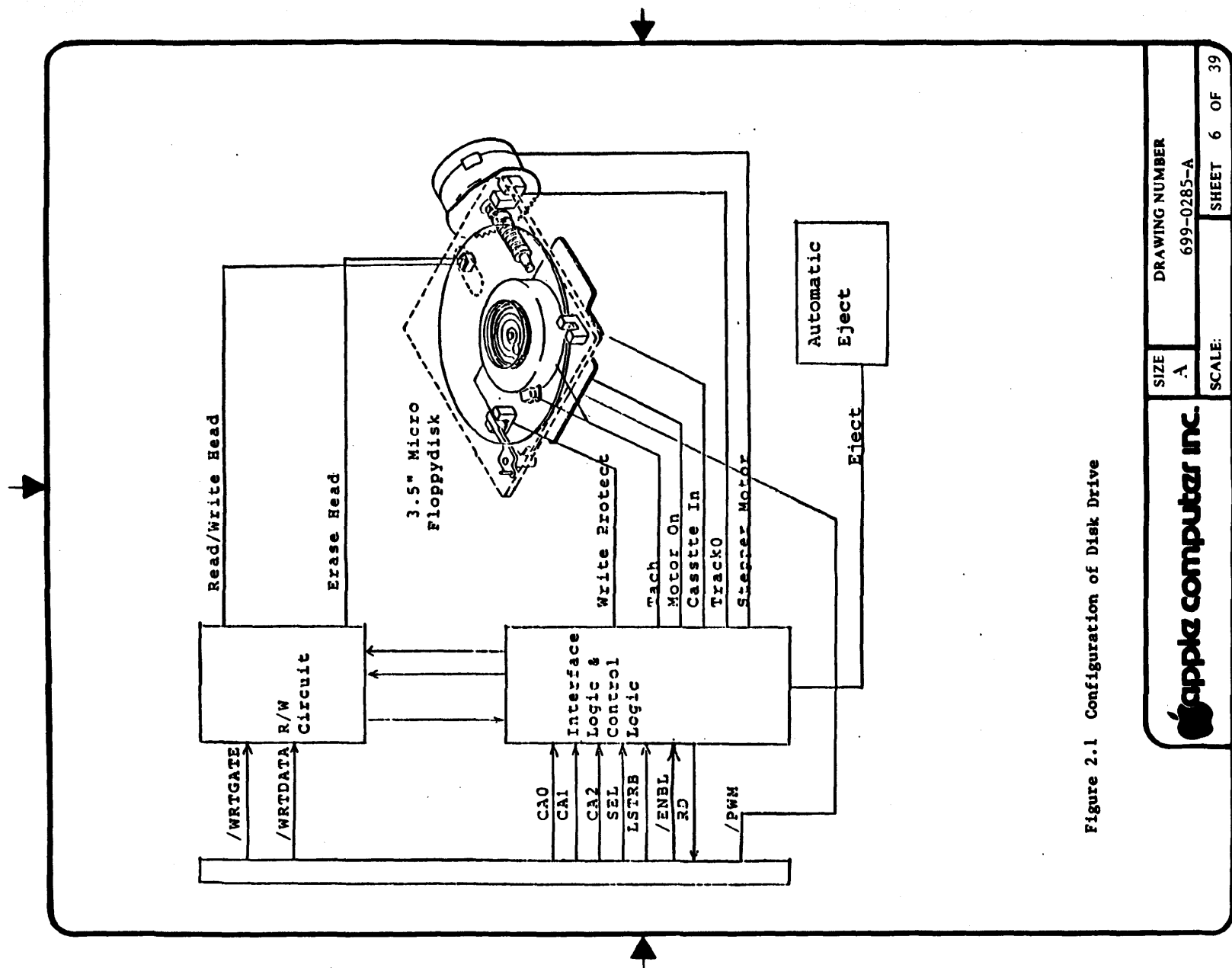


Figure 2.1 Configuration of Disk Drive

apple computers inc.

| | | | |
|-------|---|----------------|------------|
| SIZE | A | DRAWING NUMBER | 699-0285-A |
| SCALE | | SHEET | 6 OF 39 |

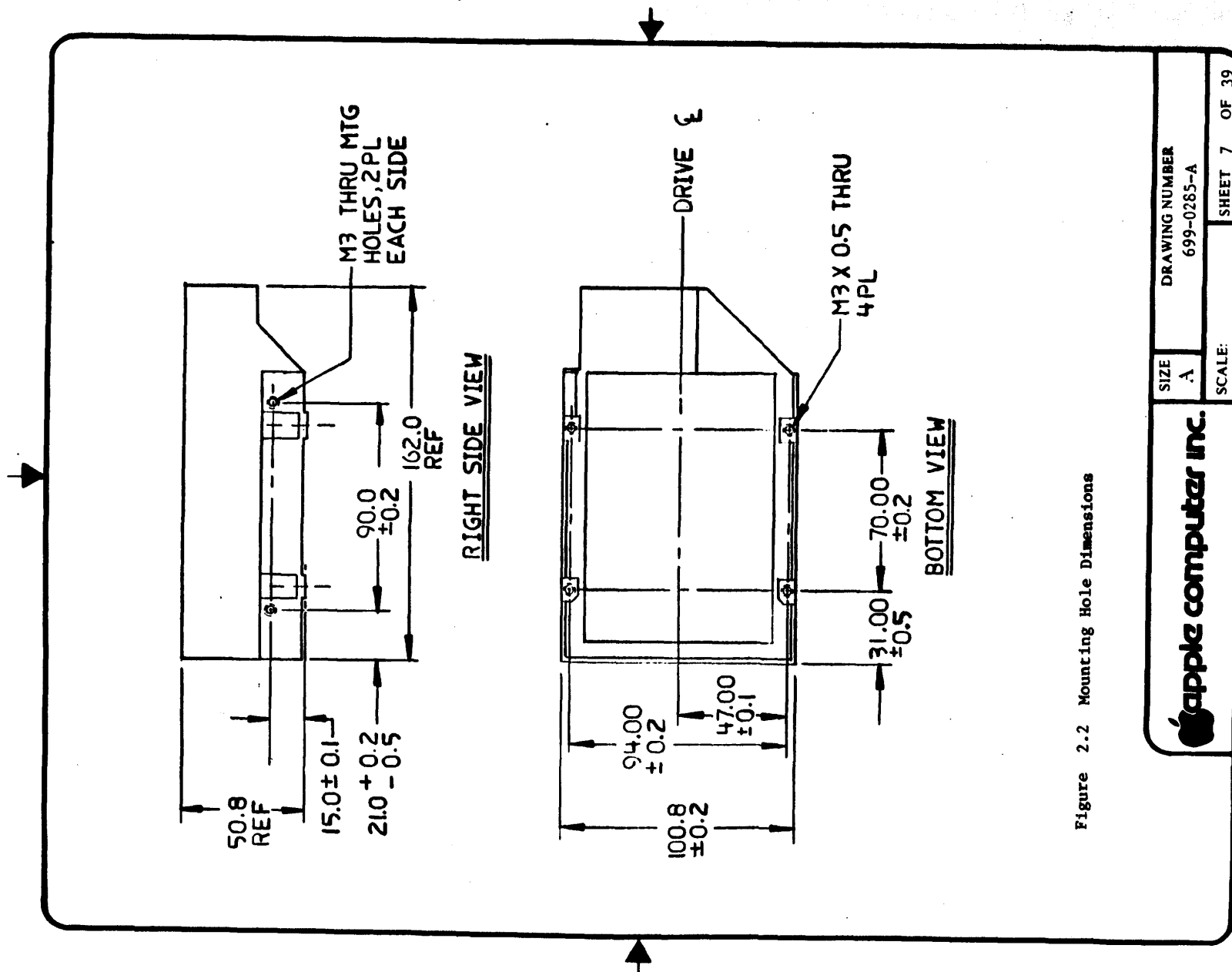


Figure 2.2 Mounting Hole Dimensions

apple computer inc.

| | |
|-----------|------------------------------|
| SIZE A | DRAWING NUMBER 699-0285-A |
| SCALE: | SHEET 7 OF 39 |

2.3.4 Functional

a. Rotational Speed:

The motor speed is variable to allow recording to be done at fixed density as the head moves from the outer edge of the diskette toward the center. The speed is continuously variable from 390 to 605 rpm using a pulse width modulated signal input.

The detailed specifications on disk motor speed are given in 2.17.

b. Recording Density

The maximum recording density assumes all 2 usec transitions while the minimum density assumes all 6 usec transitions even though the format doesn't allow more than one 6 usec interval to be written at a time.

Maximum : 8472 FCI
 Minimum : 2365 FCI

c. Track Density : 0.1875mm Track - Track

d. Tracks : 80

e. R/W Head : 1

2.3.5 Weight: 750g Max

2.4 Input Power Requirements

| Voltage | Max. Ripple | Current |
|--------------|-------------|--|
| +12.0V +/-5% | 0.1Vpp | Standby 0.15A (motor off) Average 0.3A (motor on) Peak 1.0A (stepping) |
| +5.0V +/-5% | 0.1Vpp | 0.5A maximum |



SIZE
A

DRAWING NUMBER
699-0285-A

SCALE:

SHEET 8 OF 39

2.5 Environmental limits

2.5.1 Temperature

Operating : 5 C to 50 C (40 F to 122 F) ambient

Non-Operating: -40 C to 60 C (-40 F to 140 F)

The temperature cycling shall not result in condensation.

2.5.2 Humidity

Operating : 20% to 80% relative humidity with a wet bulb temperature of 29 C (85 F), with no condensation.

5% to 90% relative humidity with a wet bulb temperature of 37.8 C (100 F) if the track alignment specification (Section 2.11) is relaxed to +/-0.040 mm from +/-0.035 mm, with no condensation.

Non-Operating: 5% to 95% relative humidity with no condensation.

2.5.3 Vibration

Operating : The unit shall perform read/write operation without errors with continuous vibration from 5 to 100 Hz at a maximum of 0.5G along each of the three mutually perpendicular axes.

Non-Operating: The unit shall be able to withstand continuous vibration from 5Hz to 300Hz with a maximum level of 2.0G along each of the three mutually perpendicular axes without any degradation of any characteristics below the performance specification.

2.5.4 Shock

Operating : The unit shall be able to withstand a 1.0G shock for 11 milliseconds with a 1/2 sine wave shape in each of the three mutually perpendicular axis while performing normal read/write functions without damage or any loss of data.

Non-Operating: The unit when unpacked shall withstand a shock of 60G on any of the three mutually perpendicular axis.



SIZE
.A

DRAWING NUMBER
699-0285-A

SCALE:

SHEET 9 OF 39

2.6 Noise

Operating : Noise from the drive shall be less than 55 Dba at a point 50cm from the drive.

2.7 Orientation

The drive may be used in the three orientations shown in Figure 2.3.

2.8 Reliability

- a. Mean Time Between Failure (MTBF): 8000POH
 - b. Mean Time to Repair (MTR) : 30 minutes
 - c. Preventive Maintenance (PM) : Not Required
 - d. Component life : 5 years
 - e. Error Rate
1. Soft Read : 1 per 10⁹ bits read
 2. Hard Read : 1 per 10¹² bits read
 3. Seek Error : 1 per 10⁶ seeks

2.9 Overwrite Characteristics

The residual level of 1F (125 KHz) measured as follows shall be greater than 30 db.

To measure, first record the 1F signal on TK0, then write over the track once with a 2F (250 KHz) signal, and measure the residual level of 1F at the read head.

Residual signal level ratio (db):

2F signal level (db) - residual level of 1F (db)



| | |
|--------|----------------|
| SIZE | DRAWING NUMBER |
| A | 699-0285-A |
| SCALE: | SHEET 10 OF 39 |

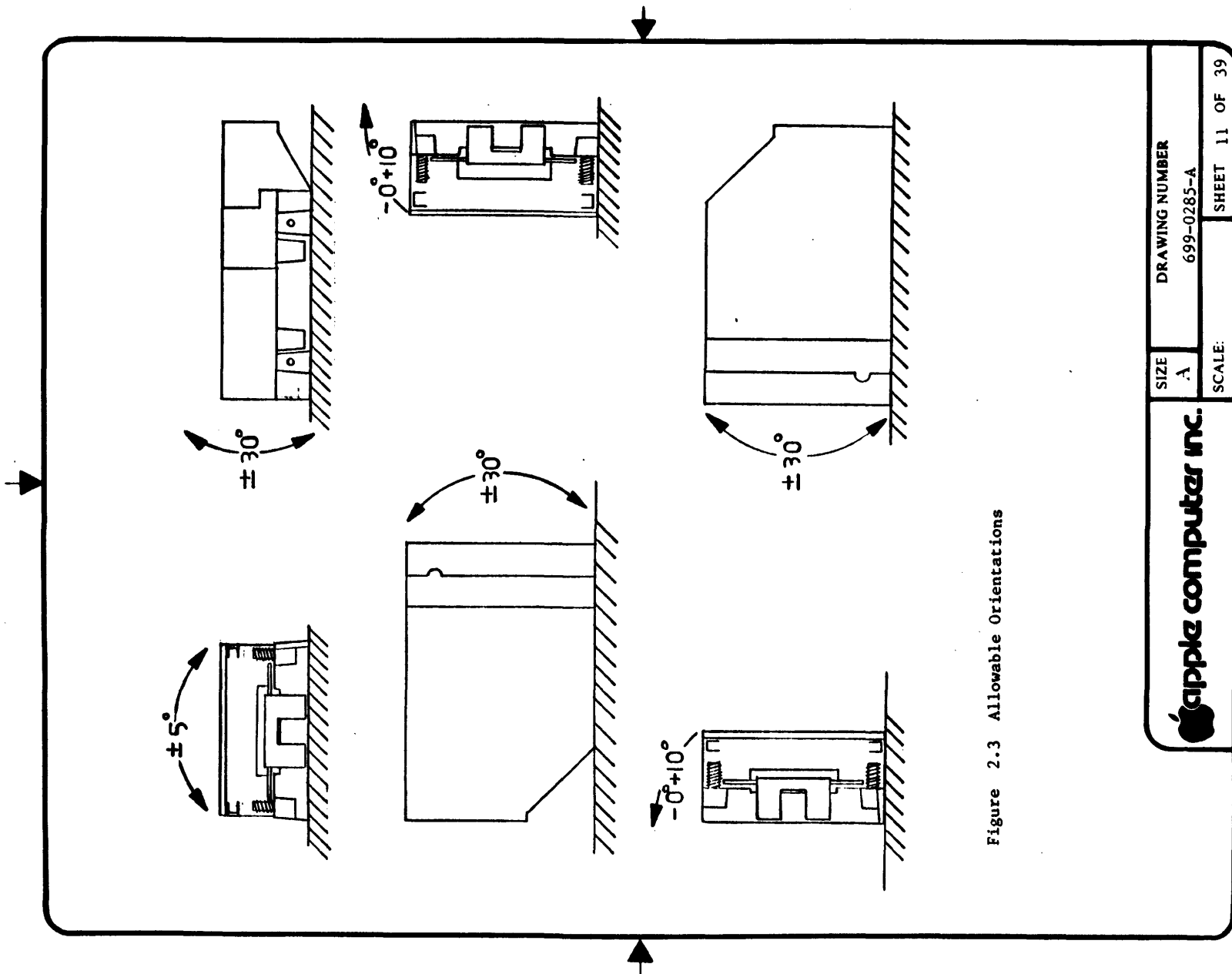



Figure 2.3 Allowable Orientations

| | |
|--|------------------------------|
|  apple computer inc. | |
| SIZE A | DRAWING NUMBER 699-0285-A |
| SCALE: | SHEET 11 OF 39 |

2.10 Time Margin

2.10.1 Definition of time margin

Time margin is measured using the Apple jitter generating fixture. This circuit jitters the read pulse coming from the drive under test randomly. The time margin is defined as the largest value of time that the read pulse can be jittered while still allowing the controller to read with fewer than one error in ten million bits read. The schematic of the jitter generator, Apple part number 890-2002, is shown in Appendix A.

The data read is comprised of a random pattern of flux changes including all legal combinations of 2, 4, & 6 usec periods between flux changes.

Track format and Sector format is defined in Appendix B.

2.10.2 Self read/write time margin

The self read/write time margin shall be: >300 nS

2.10.3 Off-track Time Margin

The time margin using a reference disk on which random data is written +0.035 mm and -0.035 mm off track shall be >300 ns.



SIZE
A

DRAWING NUMBER
699-0285-A

SCALE:

SHEET 12 OF 39

2.11 Alignment Accuracy

Track position is defined by:
 $RN = 39.5 - 0.1875 \times N$

Where RN: Absolute track position from disk center
 N: Track number from 0 to 79

Alignment Accuracy at track 40 shall be: ± 0.020 mm

Alignment Accuracy at all other tracks shall be: ± 0.035 mm

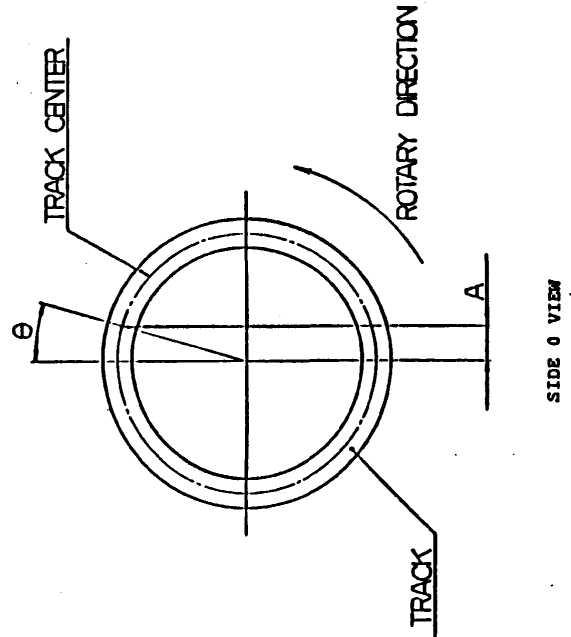
2.12 Azimuth Angle

Azimuth Angle shall be:

$$\text{Angle} = \arcsin(0.35 / (X - YN)) \quad \pm 0 \text{ degrees } 30'$$


where : X = 39.5
 Y = 0.1875
 N = Track number (0 to 79)

Azimuth angle is defined in Figure 2-4.



SIDE 0 VIEW

Figure 2.4 Azimuth Angle

| | | |
|--|------|----------------|
|  apple computer inc. | SIZE | DRAWING NUMBER |
| | A | 699-0285-A |
| SCALE: | | SHEET 13 OF 39 |

2.13 Off Track Error Rate

- a. Using the plus-off-tracked disk on which random flux transitions are recorded off-track +35um from the reference position on all tracks, the drive shall meet the error rate specification.
- b. Using the minus-off-tracked disk on which random flux transitions are recorded off-track -35um from the reference position on all tracks, the drive shall meet the error rate specification.

2.14 Temperature Inside Drive

The temperature rise above ambient at the disk surface inside of the drive shall not exceed 10 degrees C when the drive is used at 50% duty cycle Random Seek with random reads and writes. The drive shall be set in free air at an ambient temperature of 50 degrees C maximum.

2.15 Head Life

Head life shall be more than (20,000,000) passes. Measured as follows:

- a. Using a new disk, which is used as the reference disk for signal level, and a new drive, move the head to Track 35, then record 2F signal. Measure the output signal level (Lr).
- b. Insert another new disk into the drive. Move the head from Track 0 to Track 79 and back to Track 0 about 3,000,000 passes.
- c. Change the disk to another new disk.
- d. Repeat (b) and (c) until total number of passes is 20,000,000.
- e. Change the disk to the reference level disk used in (a). Move the head to Track 35, measure the output signal level (Lx).
- f. The ratio of Lx over Lr shall be > 80% as follows:

$$\frac{Lx}{Lr} \times 100\% > 80\%$$



SIZE
.A

DRAWING NUMBER
699-0285-A

SCALE:

SHEET 14 OF 39

2.16 Media Wear

Write the 2F signal on every track of a new disk, and read the output level of all of the tracks and record. After 3,000,000 read passes on track 35, the output level of all tracks should be 80% minimum of the originally measured value of each track.

2.17 Disk Motor

The disk motor speed shall be controlled by a PWM signal from the host computer. The specifications of the disk motor are as follows:

2.17.1 Speed Control Range

- a. Speed at 9.4% duty cycle of PWM with the diskette in place and head at TK0 (measured at 25 +/- 3 degrees C) shall be:
 $305 < V < 380\text{rpm}$
 low
- b. Speed at 91% duty cycle of PWM with diskette in place and head at TK79 (measured at 25 +/- 3 degrees C) shall be:

$$625 < V < 780\text{rpm}$$

high

- c. Over the full environmental range as specified in Section 2.5, and with a diskette in place the following speeds must be guaranteed including all jitter and drift effects:

With the head positioned at TK0 and the PWM set to 9.4%, the motor speed must be less than 390 rpm.

With the head positioned at TK79 and the PWM set to 91%, the motor speed must be greater than 605 rpm.

2.17.2 Linearity

Non-linearity of the disk motor speed shall be less than 2.0%.

Linearity is defined as,

$$\text{Linearity} = \left| \frac{V_x - V_r}{V_r} \right| \times 100\%$$

where :

$$V_r = \frac{(V_a - V_b)}{81.6} (x - 9.4) + V_b$$

V_x : Measured speed at a PWM duty cycle of x %.

V_a : Measured speed at a PWM duty cycle of 91%.

V_b : Measured speed at a PWM duty cycle of 9.4%.



SIZE

.A

DRAWING NUMBER

699-0285-A

SCALE:

SHEET 15 OF 39

2.17.3 Jitter

Jitter of the disk motor speed shall be less than 1.8% peak - peak when measured at a motor speed of between 390 and 605 RPM. Jitter is defined as:

$$\text{Jitter} = \frac{4 S_x}{S_m} \times 100\%$$

where : S_x is the standard deviation of the TACH pulse period sampled randomly 100 points and S_m is the mean of Tach pulse period.

2.17.4 Thermal drift

Thermal drift of disk motor speed for any speed between 390 and 605 rpa shall be less than 3%. The definition of the thermal drift:

$$\text{Thermal drift} = \left| \frac{V_x - V_r}{V_r} \right| \times 100\%$$

where : V_r : Disk motor speed at 25 C ambient temperature.

V_x : Disk motor speed between 5 C to 50 C ambient temperature.

2.17.5 Initial drift

Initial drift of disk motor speed shall be less than 1.0%. Initial drift is defined as:

$$\text{Initial drift} = \left| \frac{V_x - V_r}{V_r} \right| \times 100\%$$

where : V_r : Disk motor speed at 1 sec after disk motor is turned on.

V_x : Disk motor speed at 120 sec after disk motor is turned on.

2.17.6 Speed - Torque characteristics

The change of speed with torque is:

Ratio of speed/torque : -0.25% /gram cm



| | |
|--------|----------------|
| SIZE | DRAWING NUMBER |
| A | 699-0285-A |
| SCALE: | SHEET 16 OF 39 |

2.18 Eject Mechanism

2.18.1 Eject Timing

From the leading edge of the eject signal which is 750 +/- 25 milliseconds in duration, the total eject time shall be less than 1.5 seconds. Note that the "cassette in" signal is not guaranteed to indicate no cassette in place until the eject operation is complete.

2.18.2 Eject Mechanism Life

The eject mechanism shall be capable of at least 20,000 disk insertions and ejections using the auto eject mechanism without degradation of specifications or failure. Both insertion and ejection shall be smooth and quiet.

2.18.3 Manual Eject

A mechanism shall be provided which allows manual eject of the diskette. The maximum pressure necessary to eject the diskette using this mechanism shall be 1.3 Kg.



SIZE
A

DRAWING NUMBER
699-0285-A

SCALE:

SHEET 17 OF 39

3.0 Interface

3.1 General Description

The interface between the host system and the drive consists of 6 input signals (SEL, CA2, CA1, CAO, /ENBL, and LSTRB) and one output signal (RD). For any communication with the drive, the /ENBL line must be low.

3.1.1 Reading Status or Data from Drive.

The host system can read the status of the drive or data on the disk using the RD line by setting the CAO, CA1, CA2 and SEL signals as shown in the table (the RD line is a tristate line which is in the high impedance state unless /ENBL is low).

| SEL | CA2 | CA1 | CAO | Output signal on RD line |
|-----|-----|-----|-----|--------------------------|
| 0 | 0 | 0 | 0 | /DIRTN |
| 0 | 0 | 0 | 1 | /STEP |
| 0 | 0 | 1 | 0 | /MOTORON |
| 0 | 0 | 1 | 1 | (EJECT) |
| 0 | 1 | 0 | 0 | RDDATA (Head0) |
| 0 | 1 | 1 | 0 | SIDES |
| 0 | 1 | 1 | 1 | /DRVIN |
| 1 | 0 | 0 | 0 | /CSTIN |
| 1 | 0 | 0 | 1 | /WKTROT |
| 1 | 0 | 1 | 0 | /TKO |
| 1 | 0 | 1 | 1 | /TACH |
| 1 | 1 | 0 | 0 | RDDATA (Head1) |
| 1 | 1 | 1 | 0 | Reserved |
| 1 | 1 | 1 | 1 | Reserved |

3.1.2 Sending Control Commands to Drive.

The host system can send four commands: /DIRTN, /STEP, /MOTORON and EJECT. To send one of the control commands to the drive, set CA2 to the value (a zero or a one) to which the host system wishes the command to be set, and then set CAO, CA1 and SEL to the value which selects the desired command. Finally, bring LSTRB first high and then low.

Note 1: EJECT is an unlatched output only: EJECT is a signal which cannot be read (it always reads the value one). To eject a disk, set SEL, CA2, CA1 and CAO as 0111, then hold LSTRB high for 750 msec.

Note 2: CAO, CA1, CA2 and SEL must not change value while LSTRB is high and CAO and CA1 must be returned to a one level before changing SEL.



SIZE A
DRAWING NUMBER 699-0285-A

SCALE: SHEET 18 OF 39

3.2 Signal Descriptions

3.2.1 /CSTIN

This signal goes to a zero only when a disk is in the drive.

3.2.2 /WRIFKI

This signal goes to a zero only when a write-protected disk is in the drive, or when no disk is in the drive.

3.2.3 /TKO

This signal goes to a zero only when the head is located at track 0. From the time the /STEP signal is set to a zero, a delay of 12msec is required before TKO is valid.

3.2.4 /TACH

This signal is used to monitor the disk motor speed. /TACH signal specification is as follows:

Number of pulses per rotation : 60
 Duty cycle : 50% +/- 10%
 Accuracy of pulse period : +/- 0.2%

3.2.5 /DIRTN

This signal sets the direction of head motion for stepping from one track to another. A zero sets the direction towards the center of the disk. A one sets the direction towards the outer edge of the disk. When the drive is disabled (/ENBL high), /DIRTN is set to a zero.

3.2.6 /STEP

At falling edge of this signal, the head starts to move to the adjacent track. When the step sequence is complete, /STEP is set to a one by the drive. The direction is determined by /DIRTN. When the drive is disabled (/ENBL high), /STEP is set to a one.

3.2.7 /MOTORON

When this signal is set low, the disk motor is turned on if a disk is in the drive. When the drive is disabled (/ENBL high), /MOTORON is set to a one.



SIZE
A
SCALE:

DRAWING NUMBER
699-0285-A

SHEET 19 OF 39

3.2.8 EJECT

Setting EJECT to a one causes the disk to be ejected from the drive. The EJECT must be a one for 750 msec +/-25 msec to eject a disk. When the drive is disabled (/ENBL high), the EJECT is set to a zero.

3.2.9 SIDES

This status bit is read as a zero if the drive is single-sided, or a one if the drive is double-sided.

3.2.10 /DRVIN

This status bit is read as a zero only if the selected drive is actually connected to the host system.

3.2.11 RDATA


RDATA is the actual data read from the disk.

3.2.12 /PWM

The /PWM signal is used by the host computer to adjust the speed of the drive motor. This TTL level signal transmits timing information in the form of a fixed pulse rate of from 20 KHz to 40 KHz. The duty cycle of each pulse is defined as the percentage of time the signal is at a logic zero level. The disk motor speed control is specified to operate at the correct speed for duty cycles between 10% and 90%. One implementation of the speed control uses a PWM rate of 22 KHz, and gains extra resolution by "dithering" the pulse duty cycle such that each set of 10 successive pulses varies in duty cycle. This method increases the resolution by a factor of 10 but also results in decreasing the effective frequency of the control signal to 2.2 KHz.

3.2.13 CA0, CA1, CA2, SEL

These signals are used to multiplex inputs from the drive to the MD line during a read operation. During a command write operation these signals select addressable latches in the drive (except for EJECT). CA2 serves the special purpose of selecting a one or a zero to be set into the addressable latches during a write. SEL is used as "Head Select" for a double sided drive during a read.

| | | |
|--|----------------|----------------|
|  apple computer inc. | REV | DRAWING NUMBER |
| | A | 699-0285-A |
| SCALE | SHEET 20 OF 39 | |

3.2.14 /ENBL

This line enables all communication with the drive. When /ENBL is high (drive disabled), the RD output goes into a high impedance state, and the control latches in the drive are preset to their inactive states.

3.2.15 LSTRB

This line is used to send a command to the drive. After setting CAO, CAL, CA2 and SEL to the desired state, LSTRB is brought first high and then low.

3.2.16 RD

This line is the only output line from the drive. It is multiplexed by the control lines and allows the host to read disk status information as well as data.

3.2.17 WRTDATA

This line is used for data that is to be written on the disk. The magnetized pattern on the disk is same as the level of WRTDATA. Each change in the level of WRTDATA causes a flux transition to be written on the disk. WRTDATA is allowed to record on the disk only when /WRTGATE is a zero.

3.2.18 /WRTGATE

This signal enables data to be written on the disk and turns on the erase head.



SIZE

A

DRAWING NUMBER

699-0285-A

SCALE:

SHEET 21 OF 39

3.3 DC Characteristics of Interface Signals

3.3.1 Output Drive

| Name | Output Current (milliamps) | | Output Voltage (volts) | |
|------|----------------------------|----------|------------------------|----------|
| | I_{OH} | I_{OL} | V_{OH} | V_{OL} |
| RD* | -1.0 | 6.5 | 2.4 | 0.5 |

3.3.2 Input Loading

| Name | Input Current (milliamps) | | Input Voltage threshold (volts) | |
|---------------------|---------------------------|----------|---------------------------------|----------|
| | I_{IH} | I_{IL} | V_{IH} | V_{IL} |
| WRDATA*, /WRTGATE* | -0.9 | -1.5 | 2.0 | 0.8 |
| CA0-CA2, LSTRB, SEL | 0.1 | -0.25 | 2.0 | 0.8 |
| /ENBL | 0.125 | -0.75 | 2.2 | 0.8 |
| /PWH | 0.01 | -0.04 | 2.0 | 0.8 |

*These signal lines include a 3.3K pull-up resistor to +5v.

3.4 Timing Requirements

The following sections contain timing diagrams which show the relationship between the input and output signals.



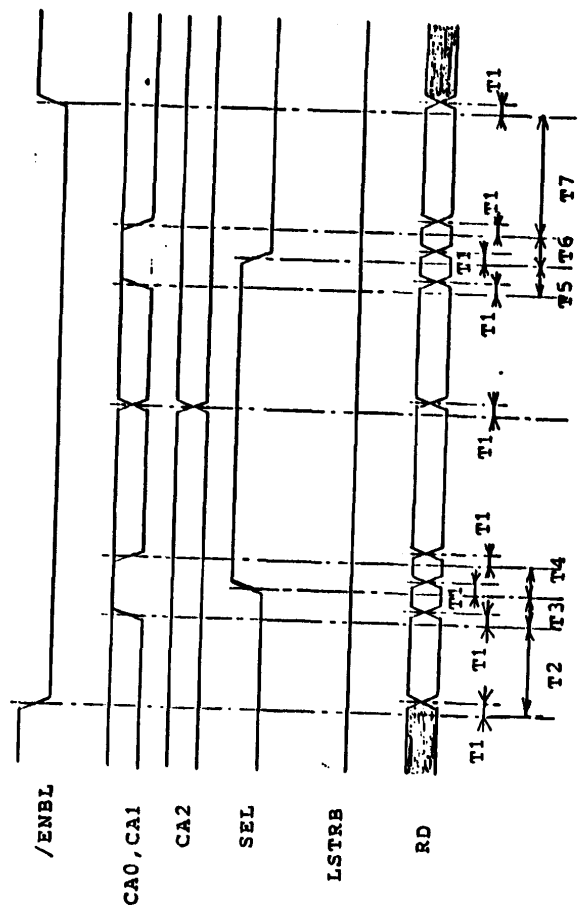
apple computers inc.

SIZE
A
SCALE:

DRAWING NUMBER
699-0285-A

SHEET 22 OF 39

3.4.4.1 Reading one of the status signals

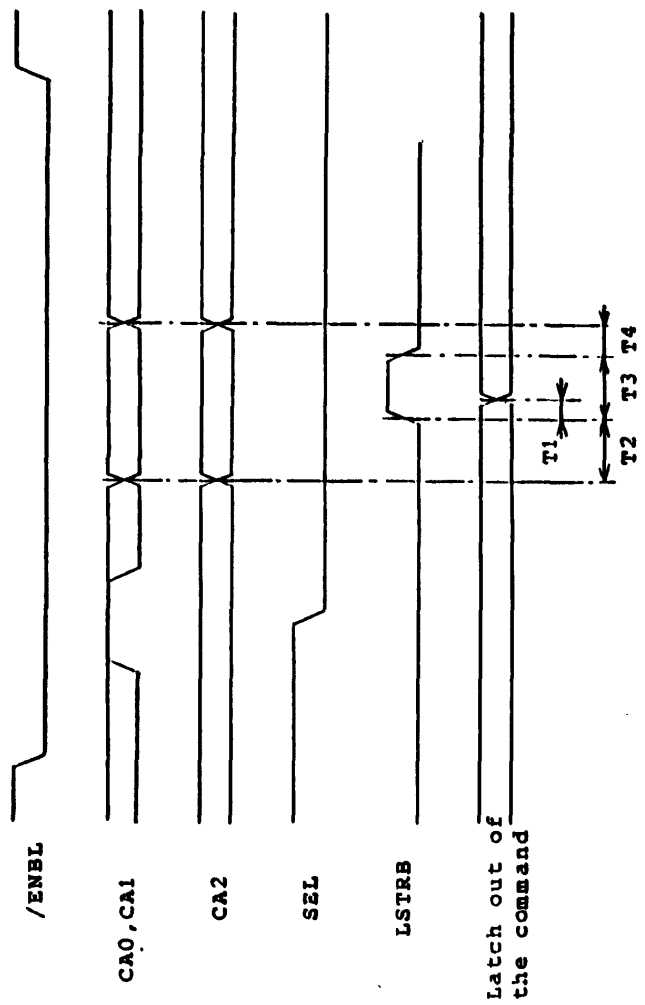


- T1 : 0.5 us Max
- T2 : 0.5 us Min
- T3 : 0.5 us Min
- T4 : 0.5 us Min
- T5 : 0.5 us Min
- T6 : 0.5 us Min
- T7 : 1 us Min

apple computer inc.

| | | |
|-----------|------------------------------|----------------|
| SIZE A | DRAWING NUMBER 699-0285-A | SHEET 23 OF 39 |
| SCALE: | | |

3.4.2 Sending one of the control commands

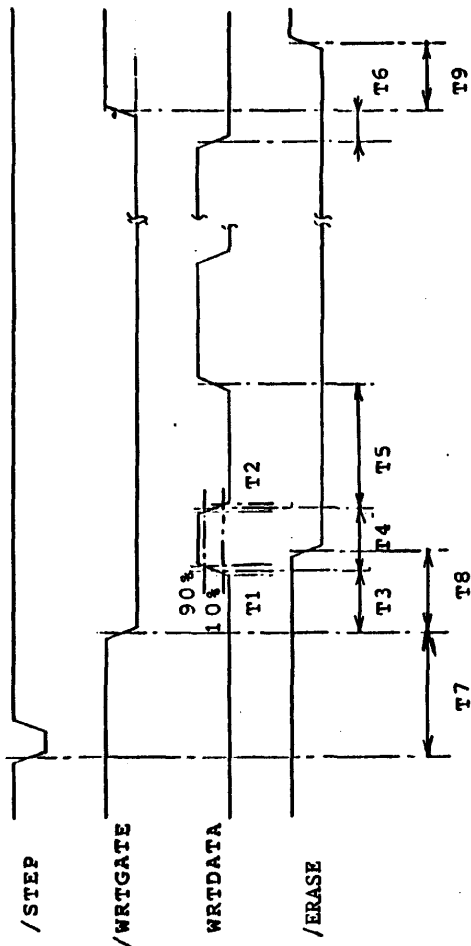


- T1 : 1 us
- T2 : 0.5 us
- T3 : 1 us Min except for EJECT
- T4 : 0.75 us for EJECT
- T4 : 0.5 us

apple computers inc.

| | | | |
|------|----------------|--------|----------------|
| SIZE | DRAWING NUMBER | SCALE: | SHEET 24 OF 39 |
| A | 699-0285-A | | |

3.4.3 /WRTGATE, WRWDATA and /ERASE Timing



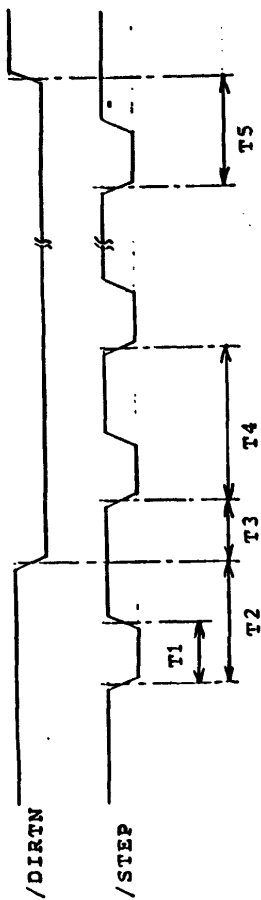
| | | |
|------|------------------|--------------------|
| T1 : | 100 ns | Max |
| T2 : | 100 ns | Max |
| T3 : | 1.8 us | |
| T4 : | 2 us +/- 0.05 us | for 2 usec period* |
| | 4 us +/- 0.05 us | for 4 usec period* |
| | 6 us +/- 0.05 us | for 6 usec period* |
| T5 : | 2 us +/- 0.05 us | for 2 usec period* |
| | 4 us +/- 0.05 us | for 4 usec period* |
| | 6 us +/- 0.05 us | for 6 usec period* |
| T6 : | 2 us | |
| T7 : | 12 ms + 30 ms | Min |
| T8 : | 250 us +/- 6 us | |
| T9 : | 884 us +/- 5 us | |

*These numbers will be different if the system clock frequency is different, however, since the disk controller controls both read and write frequency, no decrease in time margin is experienced due to this effect. For disks recorded on different systems to be interchangeable, the data density on the disk must be the same.



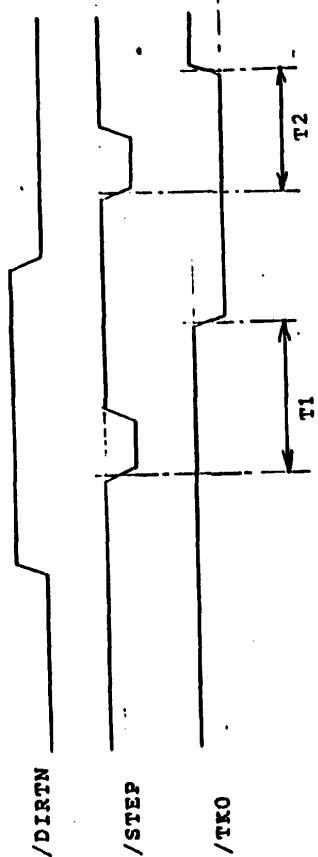
| | |
|--------|----------------|
| SIZE | DRAWING NUMBER |
| A | 699-0285-A |
| SCALE: | SHEET 25 OF 39 |

3.4.4 /DIRTN and /STEP Timing



- T1 : 10 us Min 12 ms Max
- T2 : 10 ms Min
- T3 : 2 us Min
- T4 : 12 ms Min
- T5 : 11 us Min

3.4.5 /TKO Timing

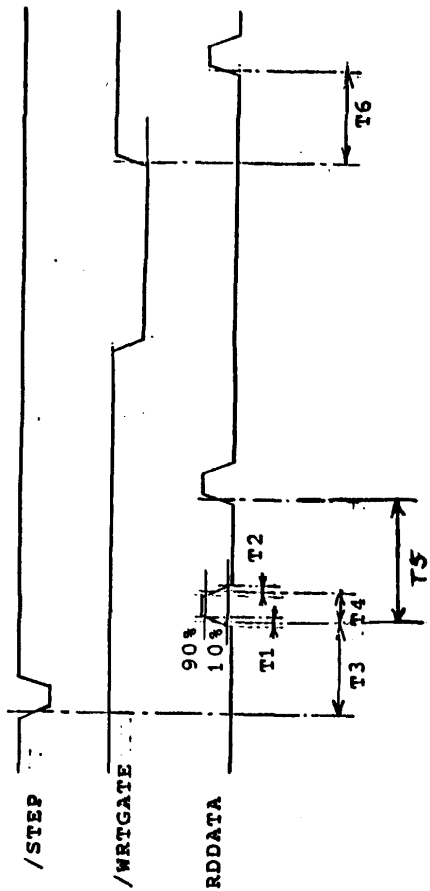


- T1 : 12 ms Max
- T2 : 12 ms Max

apple computers inc.

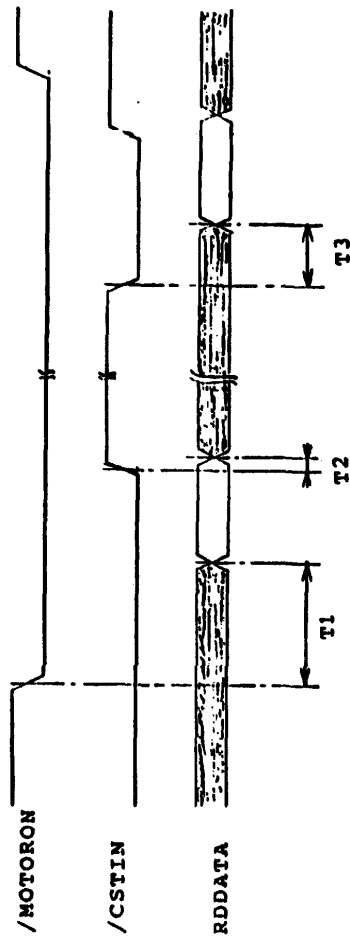
| | | |
|-----------|------------------------------|----------------|
| SIZE A | DRAWING NUMBER 699-0285-A | SHEET 26 OF 39 |
| SCALE: | | |

3.4.6 RDDATA VALID TIMING - CONDITION 1



- T1 : 100 ns Max
- T2 : 100 ns Max
- T3 : 12 ms STEP + 30 ns HEAD SETTLING
- T4 : 400 ns Min 800 ns Max
- T5 : 2 us, 4 us, or 6 us
- T6 : 10 us (data error may occur when ERASE goes off)

3.4.7 RDDATA VALID TIMING - CONDITION 2



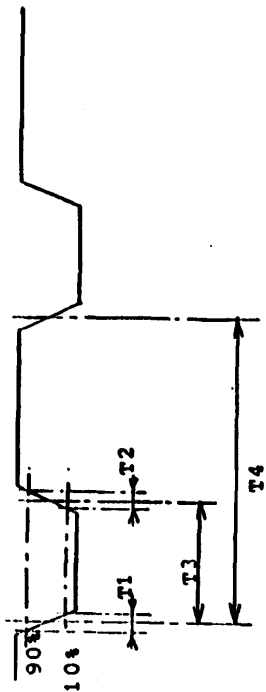
- T1 : 400 ns Max
- T2 : No Requirement
- T3 : 1 second Max



SIZE A
DRAWING NUMBER 699-0285-A

SCALE:
SHEET 27 OF 39

3.4.8 /PWM WAVEFORM



- T1 : 50 ns
- T2 : 50 ns
- T3 : 10% to 90% of T4
- T4 : 25 us to 50 us

3.5 Power On and Power Off Requirements

3.5.1 Data Protection

There shall be no damage to recorded data on the disk during either a power on or power off operation as long as the disk is not in the middle of a write when power is turned off.

3.5.2 Power Supply Sequencing

No special power supply sequencing shall be required by the disk as long as both the +5 volt and +12 volt power supplies have a monotonic rise time of less than 100 milliseconds. That is there shall be no ringing on the supplies during turn on or turn off which causes them to rise above and then fall below their specified voltage. Some ringing is tolerable as long as it doesn't cause the voltage to exceed or fall below the specified limits (+/-5%).

At turn off, both supplies must fall monotonically to zero volts, however, there are no sequencing or timing requirements.



| | |
|--------|----------------|
| SIZE | DRAWING NUMBER |
| A | 699-0285-A |
| SCALE: | SHEET 28 OF 39 |

3.5.3 Head Position Initialization

At power on, the head shall be automatically accessed to track 0.

3.6 Interface Connector and Pin Assignment

The interface connector shall be a 20 pin connector, 3M J3428-5202 or equivalent. The pinouts are as follows:

| <u>Pin number</u> | <u>Signal Name</u> | <u>Pin Number</u> | <u>Signal Name</u> |
|-------------------|--------------------|-------------------|--------------------|
| 1 | GND | 2 | CA0 |
| 3 | GND | 4 | CA1 |
| 5 | GND | 6 | CA2 |
| 7 | GND | 8 | LSTRB |
| 9 | N/C | 10 | /WRTGATE |
| 11 | +5V | 12 | SEL |
| 13 | +12V | 14 | /ENBL |
| 15 | +12V | 16 | RD |
| 17 | +12V | 18 | WRTDATA |
| 19 | +12V | 20 | /PMM |

4.0 Labelling

The drive shall have two labels attached when it is shipped to Apple.

4.1 Label Position

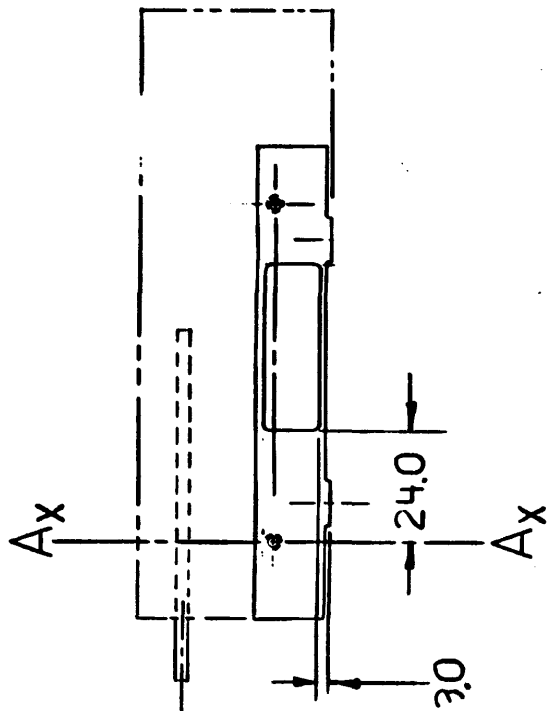
The serial number label shall be attached to the right side, and the date label to the left side of the chassis as shown in Figure 4.1.

4.2 Label Contents

The shape and contents of the serial number label shall be as shown in Figure 4.2. The date label shape and size may be picked by the drive manufacturer, but must include the month and year of manufacture and be clearly legible.




| | |
|--------|----------------|
| SIZE | DRAWING NUMBER |
| .A | 699-0285-A |
| SCALE: | SHEET 29 OF 39 |



SCALE : NONE
TOL. : XX.X ±0.4

Figure 4.1 Label Position

| | |
|---|------------------------------|
|  apple computers inc. | |
| SIZE .A | DRAWING NUMBER 699-0285-A |
| SCALE: | SHEET 30 OF 39 |

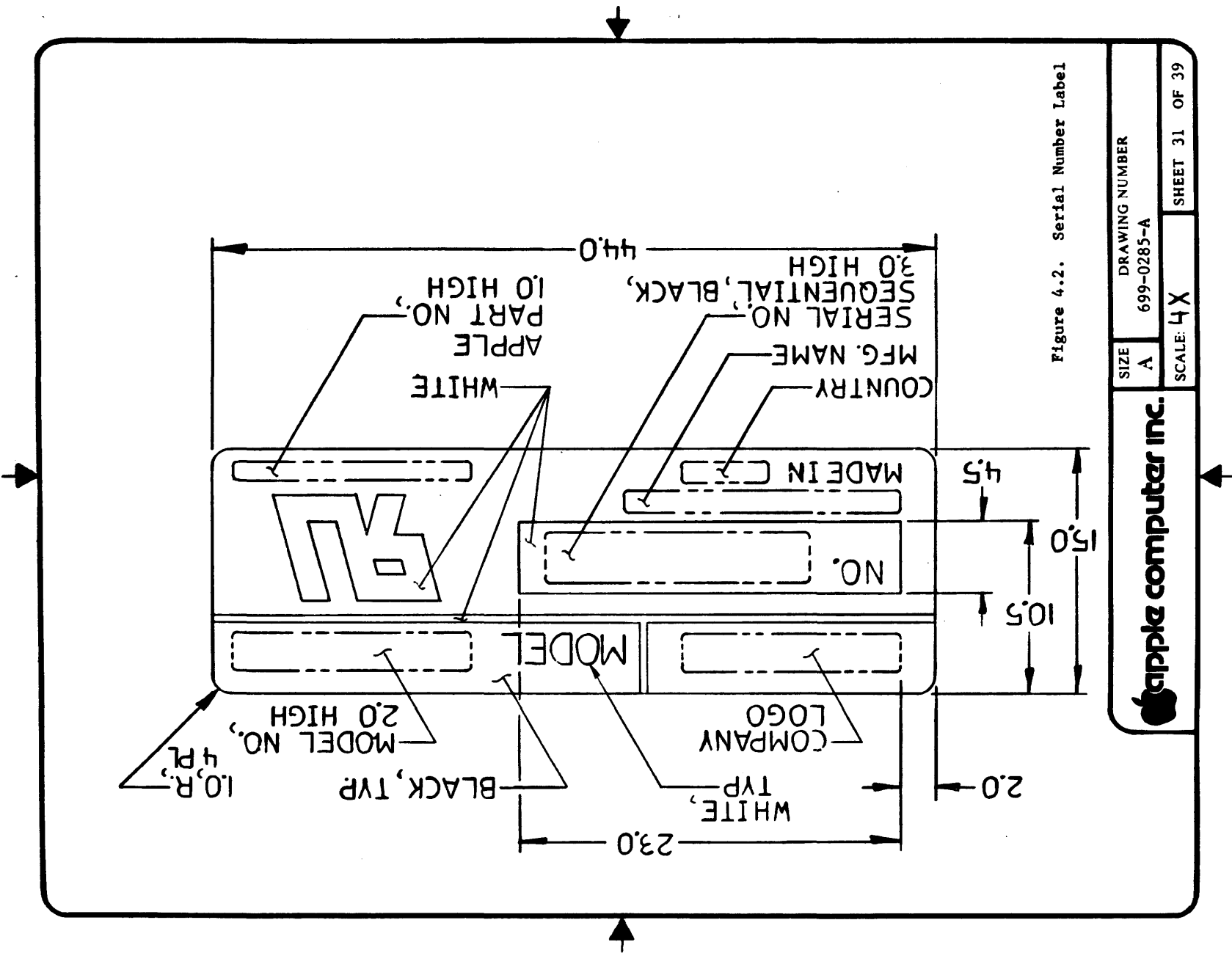


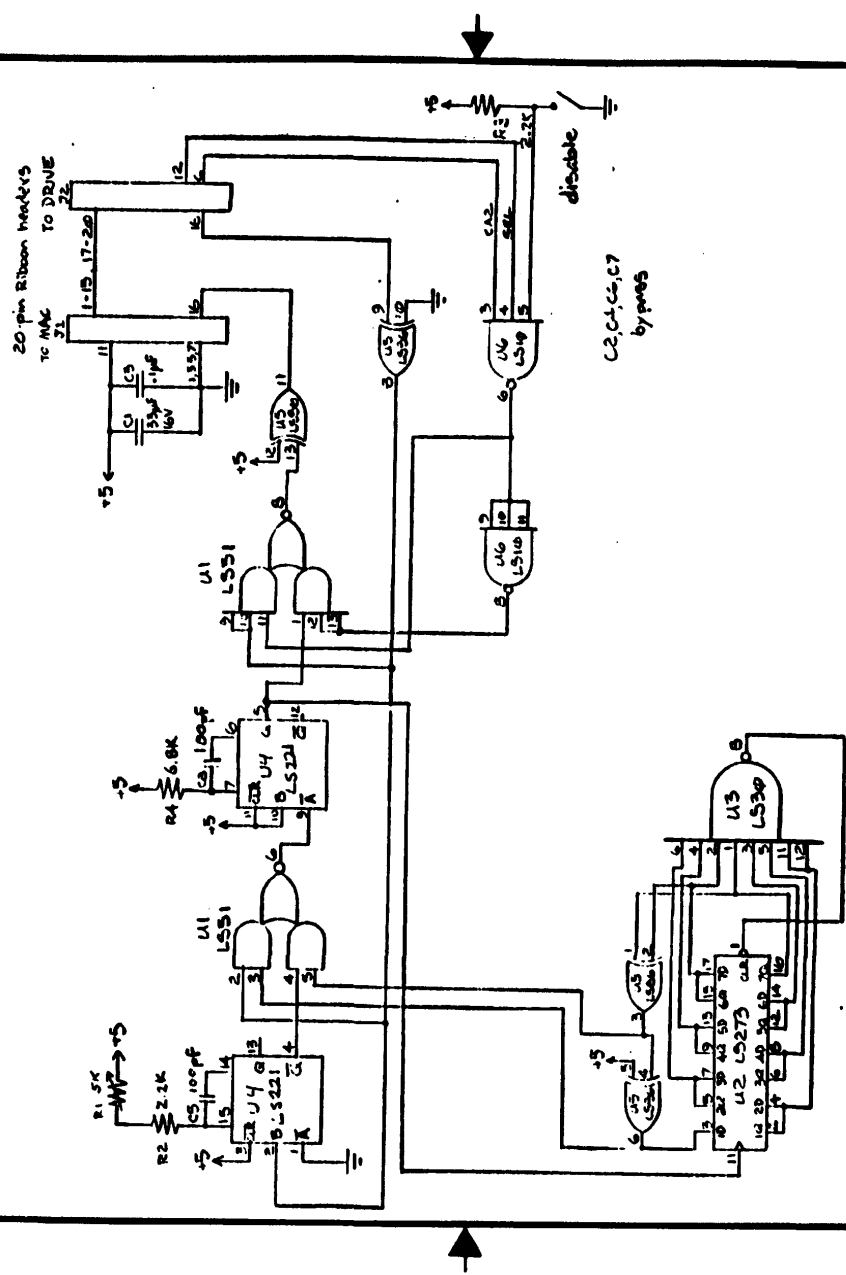
Figure 4.2. Serial Number Label

apple computer inc.

| | |
|----------------|----------------|
| SIZE | DRAWING NUMBER |
| A | 699-0285-A |
| SCALE: 4X | |
| SHEET 31 OF 39 | |

"APPLE_699-0285-A-31of39.PICT" 183 KB 2002-03-12 dpi: 200h x 200v pix: 3275h x 2486v

Appendix A. Jitter Generator Schematic



| | | | |
|--------|---|----------------|------------|
| SIZE | A | DRAWING NUMBER | 699-0285-A |
| SCALE: | | SHEET 32 | OF 39 |

Appendix B. Sector Format

This document describes the sector format used for single-sided 3-1/2 inch diskettes; provision is made for eventual expansion to double-sided diskettes.

The current drive has a single read/write head located on the bottom of the drive at the back (the diagram below shows a side-view of a drive, the dotted line representing a diskette):

```

front of (side 1)                back of
drive -> -----                <- drive
               ^                |
               ^                |
track 0      ^ track 79         read/write
block 0      ^ block 799        head
    
```

There are 80 tracks on the drive, numbered from track 0 (the outermost track) through track 79 (the innermost track). The single side is side 0: the top side, side 1, will be used on future double-sided disk drives.

The number of sectors per track varies from 12 on the outside tracks to 8 on the inside tracks as shown in the following table. Speed 1 represents a data transfer rate of 489.6 K bits/sec. Speed 2 is for 500 K bits/sec. The different speeds record the data at a fixed density and allow the diskettes to be interchanged.

| Track | Speed Group | Sectors/Track | Speed 1 | Speed 2 |
|---------|-------------|---------------|---------|---------|
| 0 - 15. | 1 | 12 | 394 | 402 |
| 16 - 31 | 2 | 11 | 429 | 438 |
| 32 - 47 | 3 | 10 | 472 | 482 |
| 48 - 63 | 4 | 9 | 525 | 536 |
| 64 - 79 | 5 | 8 | 590 | 603 |

This format is derived by limiting the sectors per track for the single-sided drive according to the smaller radius of the opposite-side track of the future double-sided drive. This format yields a total of 800 sectors or blocks. Block numbering goes from 0 to 799: block 0 is sector 0 on track 0 and block 799 is sector 7 on track 79 (sectors are numbered from 0). Future double-sided disks will have an additional 800 blocks on side 1; these blocks will be interleaved with side 0 blocks in a cylinder fashion (blocks 0-11 will be on side 0, track 0, blocks 12-23 will be on side 1, track 0, etc.).

Sectors are typically interleaved 2:1 because of the write recovery time. As an example, the sector sequencing for 2:1 interleave is:

- speed group 1: 0-6-1-7-2-8-3-9-4-10-5-11
- speed group 2: 0-6-1-7-2-8-3-9-4-10-5
- speed group 3: 0-5-1-6-2-7-3-8-4-9
- speed group 4: 0-5-1-6-2-7-3-8-4
- speed group 5: 0-4-1-5-2-6-3-7



SIZE A
DRAWING NUMBER 699-0285-A

SCALE:
SHEET 33 OF 39

Sector Format

A sector can be divided into four major sections. These are the header sync field, the header field, the data sync field, and the data field. These fields combined add up to 733.5 code bytes minimum.

Header Sync Field (6.25 bytes + sync overhead)

 5 bit slip FFs minimum (FF,3F,CF,F3,FC,FF)

The header sync field contains a pattern of ones and zeroes that synchronizes the hardware state machine with the data on the disk. The header sync and header fields are written only when the diskette is formatted. The formatter should make this field as large as possible since this field buffers expansion of the previous sector's data field due to speed variation of the drive.

Header Field (11 bytes)

 D5 AA 96 Trk Sect Side Fmt ChkSum DE AA off

The header field identifies the sector. The sub-fields are:

D5 AA 96 address marks: this identifies the field as a header field.
 Track encoded low 6 bits of track number
 Sector encoded sector number
 Side encoded high 2 bits of track number and side bit:
 decoded bit 5 = 0 for side 0, 1 for side 1
 decoded bit 0 is the high-order bit of the track number
 decoded bits 1-4 are reserved and should be 0

Format encoded format specification:
 decoded bit 5 = 0 for single-sided formats
 decoded bits 0-4 define the format interleave:
 standard 2:1 interleave formats have a 2 in this field
 checksum formed by exclusive 'or'ing the track, sector, side,
 and format fields

DE AA bit slip marks: this identifies the end of the field
 off pad byte where the write electronics were turned off

Data Sync Field (6.25 bytes)

 5 bit slip FFs (FF,3F,CF,F3,FC,FF)

The data sync field contains a pattern of ones and zeroes that synchronizes the state machine with the data on the disk. This field is written whenever the data field is written.



| | |
|--------|----------------|
| SIZE | DRAWING NUMBER |
| A | 699-0285-A |
| SCALE: | SHEET 34 OF 39 |

Data Field (710 bytes)

D5 AA AD Sect <encoded data> ChkSum DE AA off

The data field contains the actual data in the sector. The sub-fields are:

D5 AA AD data marks: this identifies the field as a data field.
 Sector encoded sector number
 encoded data 524 data bytes encoded into 699 code bytes; the first 12 data bytes are typically used as a sector tag by the operating system, and the remaining 512 bytes for actual data
 Checksum a 24-bit checksum encoded into 4 code bytes (see below)
 DE AA bit slip marks: this identifies the end of the field
 off pad byte where the write electronics were turned off

Data Encoding Format

A sector is composed of 524 user data bytes and a 3 byte checksum. These are translated into 6 bit nibbles that are used to look up GCR codewords to be written to the disk. The data is encoded as follows. CSUMA, CSUMB, CSUMC are registers used for accumulating the checksum. BYTEA, BYTEB, BYTEC contain three bytes from the data buffer. GCR is the table of GCR codewords.

1. Rotate CSUMC left
 CSUMC[76543210] ← CSUMC[65432107]
 Carry ← CSUMC[7]
2. CSUMA ← CSUMA + BYTEA + carry from step 1
3. BYTEA ← BYTEA xor CSUMC
4. CSUMB ← CSUMB + BYTEB + carry from step 2
5. BYTEB ← BYTEB xor CSUMA
6. CSUMC ← CSUMC + BYTEC + carry from step 4
7. BYTEC ← BYTEC xor CSUMB
8. Convert BYTEA, BYTEB and BYTEC to 6 bit nibbles
 NIBL1 ← A7 A6 B7 B6 C7 C6 High bits of the bytes
 NIBL2 ← A5 A4 A3 A2 A1 A0 Low bits of BYTEA
 NIBL3 ← B5 B4 B3 B2 B1 B0 Low bits of BYTEB
 NIBL4 ← C5 C4 C3 C2 C1 C0 Low bits of BYTEC
9. Write GCR(NIBL1), GCR(NIBL2), GCR(NIBL3) and GCR(NIBL4)

+-----+-----+
 | | | Note carry out of CSUMC
 +CSUMC ← CSUMB ← CSUMA ←---+ is from rotate.

Figure showing carry propagation



| | |
|--------|----------------|
| SIZE | DRAWING NUMBER |
| A | 699-0285-A |
| SCALE: | SHEET 35 OF 39 |

CCR Codeword Table (used to convert nibbles to GCR codewords)

0: 96,97,9A,9B,9D,9E,9F,A6
 8: A7,AB,AC,AD,AE,AF,B2,B3
 10: B4,B5,B6,B7,B9,BA,BB,BC
 18: BD,BE,BF,CB,CD,CE,CF,D3
 20: D6,D7,D9,DA,DB,DC,DD,DE
 28: DF,E5,E6,E7,E9,EA,EB,EC
 30: ED,EE,EF,F2,F3,F4,F5,F6
 38: F7,F9,FA,FB,FC,FD,FE,FF

Speed Control

Disk speed is controlled via a PWM signal from the host computer. The duty cycle of this signal is set by software in the host computer; the appropriate value is determined by measuring the length of pulses on the tach sense line from the disk drive. The disk speed should be checked when a diskette is first inserted and periodically thereafter to allow adjustment for thermal drifting of disk speed. The speed should also be checked at the position on the diskette which corresponds to the actual speed group to compensate for torque loading of the motor.

Disk Storage Calculations

The next page shows how the track classes and speeds were determined. The following formulas were used:

track density: 135.4666 tracks/inch
 track 0 radius: 0.1875 mm track to track
 max data density: 39.5 mm
 sync overhead: 8750 fci = 344.4882 fcm
 bytes/block 733.5
 data speed: 500 kbits/sec
 bytes: (733.5 * blocks) * 1.06
 rpm: 60 sec/min * 500kbits/sec / (bytes*8bits/byte)
 fci: bytes*8bits/byte / (2*pi*Radius in inches)

The actual RPM values for Macintosh are adjusted for a bit rate of 489.6 kbits/sec and are slightly lower (e.g., 394 rpm instead of 402 rpm on the outside tracks).



| | |
|--------|----------------|
| SIZE | DRAWING NUMBER |
| A | 699-0285-A |
| SCALE: | SHEET 36 OF 39 |

| TRACK | RADIUS (side0) | RADIUS (sidel) | BLOCKS | BYTES | RPM | FCI (side0) | FCI (sidel) |
|-------|----------------|----------------|--------|---------|----------|-------------|-------------|
| 0 | 39.5 | 38 | 12 | 9330.12 | 401.9241 | 7638.955 | 7940.493 |
| 1 | 39.3125 | 37.8125 | 12 | 9330.12 | 401.9241 | 7675.389 | 7979.867 |
| 2 | 39.125 | 37.625 | 12 | 9330.12 | 401.9241 | 7712.172 | 8019.634 |
| 3 | 38.9375 | 37.4375 | 12 | 9330.12 | 401.9241 | 7749.309 | 8059.799 |
| 4 | 38.75 | 37.25 | 12 | 9330.12 | 401.9241 | 7786.806 | 8100.369 |
| 5 | 38.5625 | 37.0625 | 12 | 9330.12 | 401.9241 | 7824.667 | 8141.349 |
| 6 | 38.375 | 36.875 | 12 | 9330.12 | 401.9241 | 7862.899 | 8182.745 |
| 7 | 38.1875 | 36.6875 | 12 | 9330.12 | 401.9241 | 7901.505 | 8224.565 |
| 8 | 38 | 36.5 | 12 | 9330.12 | 401.9241 | 7940.493 | 8266.815 |
| 9 | 37.8125 | 36.3125 | 12 | 9330.12 | 401.9241 | 7979.867 | 8309.500 |
| 10 | 37.625 | 36.125 | 12 | 9330.12 | 401.9241 | 8019.634 | 8352.629 |
| 11 | 37.4375 | 35.9375 | 12 | 9330.12 | 401.9241 | 8059.799 | 8396.208 |
| 12 | 37.25 | 35.75 | 12 | 9330.12 | 401.9241 | 8100.369 | 8440.244 |
| 13 | 37.0625 | 35.5625 | 12 | 9330.12 | 401.9241 | 8141.349 | 8484.745 |
| 14 | 36.875 | 35.375 | 12 | 9330.12 | 401.9241 | 8182.745 | 8529.717 |
| 15 | 36.6875 | 35.1875 | 12 | 9330.12 | 401.9241 | 8224.565 | 8575.168 |
| 16 | 36.5 | 35 | 11 | 8552.61 | 438.4626 | 7577.913 | 7902.681 |
| 17 | 36.3125 | 34.8125 | 11 | 8552.61 | 438.4626 | 7617.042 | 7945.245 |
| 18 | 36.125 | 34.625 | 11 | 8552.61 | 438.4626 | 7656.577 | 7988.270 |
| 19 | 35.9375 | 34.4375 | 11 | 8552.61 | 438.4626 | 7696.524 | 8031.763 |
| 20 | 35.75 | 34.25 | 11 | 8552.61 | 438.4626 | 7736.891 | 8075.733 |
| 21 | 35.5625 | 34.0625 | 11 | 8552.61 | 438.4626 | 7776.683 | 8120.186 |
| 22 | 35.375 | 33.875 | 11 | 8552.61 | 438.4626 | 7818.907 | 8165.132 |
| 23 | 35.1875 | 33.6875 | 11 | 8552.61 | 438.4626 | 7860.571 | 8210.578 |
| 24 | 35 | 33.5 | 11 | 8552.61 | 438.4626 | 7902.681 | 8256.533 |
| 25 | 34.8125 | 33.3125 | 11 | 8552.61 | 438.4626 | 7945.245 | 8303.005 |
| 26 | 34.625 | 33.125 | 11 | 8552.61 | 438.4626 | 7988.270 | 8350.003 |
| 27 | 34.4375 | 32.9375 | 11 | 8552.61 | 438.4626 | 8031.763 | 8397.536 |
| 28 | 34.25 | 32.75 | 11 | 8552.61 | 438.4626 | 8075.733 | 8445.613 |
| 29 | 34.0625 | 32.5625 | 11 | 8552.61 | 438.4626 | 8120.186 | 8494.245 |
| 30 | 33.875 | 32.375 | 11 | 8552.61 | 438.4626 | 8165.132 | 8543.439 |
| 31 | 33.6875 | 32.1875 | 11 | 8552.61 | 438.4626 | 8210.578 | 8593.207 |
| 32 | 33.5 | 32 | 10 | 7775.1 | 482.3089 | 7505.939 | 7857.780 |
| 33 | 33.3125 | 31.8125 | 10 | 7775.1 | 482.3089 | 7548.186 | 7904.093 |
| 34 | 33.125 | 31.625 | 10 | 7775.1 | 482.3089 | 7590.912 | 7950.955 |
| 35 | 32.9375 | 31.4375 | 10 | 7775.1 | 482.3089 | 7634.124 | 7998.376 |
| 36 | 32.75 | 31.25 | 10 | 7775.1 | 482.3089 | 7677.830 | 8046.366 |
| 37 | 32.5625 | 31.0625 | 10 | 7775.1 | 482.3089 | 7722.041 | 8094.936 |
| 38 | 32.375 | 30.875 | 10 | 7775.1 | 482.3089 | 7766.763 | 8144.095 |
| 39 | 32.1875 | 30.6875 | 10 | 7775.1 | 482.3089 | 7812.006 | 8193.856 |
| 40 | 32 | 30.5 | 10 | 7775.1 | 482.3089 | 7857.780 | 8244.228 |
| 41 | 31.8125 | 30.3125 | 10 | 7775.1 | 482.3089 | 7904.093 | 8295.223 |
| 42 | 31.625 | 30.125 | 10 | 7775.1 | 482.3089 | 7950.955 | 8346.853 |
| 43 | 31.4375 | 29.9375 | 10 | 7775.1 | 482.3089 | 7998.376 | 8399.130 |
| 44 | 31.25 | 29.75 | 10 | 7775.1 | 482.3089 | 8046.366 | 8452.065 |
| 45 | 31.0625 | 29.5625 | 10 | 7775.1 | 482.3089 | 8094.936 | 8505.673 |
| 46 | 30.875 | 29.375 | 10 | 7775.1 | 482.3089 | 8144.095 | 8559.964 |
| 47 | 30.6875 | 29.1875 | 10 | 7775.1 | 482.3089 | 8193.856 | 8614.953 |



SIZE: A
 DRAWING NUMBER: 699-0285-A
 SCALE:
 SHEET 37 OF 39

| TRACK | RADIUS (side0) | RADIUS (side1) | BLOCKS | BYTES | RPM | FCI (side0) | FCI (side1) |
|---------------|----------------|----------------|--------|---------|----------|----------------|-------------|
| 48 | 30.5 | 29 | 9 | 6997.59 | 535.8988 | 7419.805 | 7803.588 |
| 49 | 30.3125 | 28.8125 | 9 | 6997.59 | 535.8988 | 7465.701 | 7854.371 |
| 50 | 30.125 | 28.625 | 9 | 6997.59 | 535.8988 | 7512.168 | 7905.818 |
| 51 | 29.9375 | 28.4375 | 9 | 6997.59 | 535.8988 | 7559.217 | 7957.945 |
| 52 | 29.75 | 28.25 | 9 | 6997.59 | 535.8988 | 7606.859 | 8010.763 |
| 53 | 29.5625 | 28.0625 | 9 | 6997.59 | 535.8988 | 7655.105 | 8064.287 |
| 54 | 29.375 | 27.875 | 9 | 6997.59 | 535.8988 | 7703.968 | 8118.531 |
| 55 | 29.1875 | 27.6875 | 9 | 6997.59 | 535.8988 | 7753.458 | 8173.510 |
| 56 | 29 | 27.5 | 9 | 6997.59 | 535.8988 | 7803.588 | 8229.238 |
| 57 | 28.8125 | 27.3125 | 9 | 6997.59 | 535.8988 | 7854.371 | 8285.732 |
| 58 | 28.625 | 27.125 | 9 | 6997.59 | 535.8988 | 7905.818 | 8343.006 |
| 59 | 28.4375 | 26.9375 | 9 | 6997.59 | 535.8988 | 7957.945 | 8401.078 |
| 60 | 28.25 | 26.75 | 9 | 6997.59 | 535.8988 | 8010.763 | 8459.965 |
| 61 | 28.0625 | 26.5625 | 9 | 6997.59 | 535.8988 | 8064.287 | 8519.682 |
| 62 | 27.875 | 26.375 | 9 | 6997.59 | 535.8988 | 8118.531 | 8580.248 |
| 63 | 27.6875 | 26.1875 | 9 | 6997.59 | 535.8988 | 8173.510 | 8641.682 |
| 64 | 27.5 | 26 | 8 | 6220.08 | 602.8861 | 7314.878 | 7736.891 |
| 65 | 27.3125 | 25.8125 | 8 | 6220.08 | 602.8861 | 7365.095 | 7793.091 |
| 66 | 27.125 | 25.625 | 8 | 6220.08 | 602.8861 | 7416.006 | 7850.113 |
| 67 | 26.9375 | 25.4375 | 8 | 6220.08 | 602.8861 | 7467.625 | 7907.977 |
| 68 | 26.75 | 25.25 | 8 | 6220.08 | 602.8861 | 7519.968 | 7966.699 |
| 69 | 26.5625 | 25.0625 | 8 | 6220.08 | 602.8861 | 7573.051 | 8026.301 |
| 70 | 26.375 | 24.875 | 8 | 6220.08 | 602.8861 | 7626.887 | 8086.800 |
| 71 | 26.1875 | 24.6875 | 8 | 6220.08 | 602.8861 | 7681.495 | 8148.219 |
| 72 | 26 | 24.5 | 8 | 6220.08 | 602.8861 | 7736.891 | 8210.578 |
| 73 | 25.8125 | 24.3125 | 8 | 6220.08 | 602.8861 | 7793.091 | 8273.898 |
| 74 | 25.625 | 24.125 | 8 | 6220.08 | 602.8861 | 7850.113 | 8338.203 |
| 75 | 25.4375 | 23.9375 | 8 | 6220.08 | 602.8861 | 7907.977 | 8403.516 |
| 76 | 25.25 | 23.75 | 8 | 6220.08 | 602.8861 | 7966.699 | 8469.859 |
| 77 | 25.0625 | 23.5625 | 8 | 6220.08 | 602.8861 | 8026.301 | 8537.259 |
| 78 | 24.875 | 23.375 | 8 | 6220.08 | 602.8861 | 8086.800 | 8605.739 |
| 79 | 24.6875 | 23.1875 | 8 | 6220.08 | 602.8861 | 8148.219 | 8675.328 |
| side 0 blocks | | | 800 | | | max fci side 0 | 8224.565 |
| side 1 blocks | | | 800 | | | max fci side 1 | 8675.328 |
| total blocks | | | 1600 | | | min fci side 0 | 7314.878 |
| total bytes | | | 819200 | | | min fci side 1 | 7736.891 |



| | |
|----------------|------------|
| SIZE | A |
| DRAWING NUMBER | 699-0285-A |
| SCALE: | |
| SHEET | 38 OF 39 |

NOTE: UNLESS OTHERWISE SPECIFIED

▷ MATL: LEAD BASE DIE CASTING ALLOY NO.7.
17% ANTIMONY, 83% LEAD.

▷ DRILL HOLE TO INDICATED SIZE. INSTALL PEM
SELF-CLINCHING FLUSH STANDOFF NO. S05-440-4
(4-40 THD). ORIENTATE AS SHOWN.

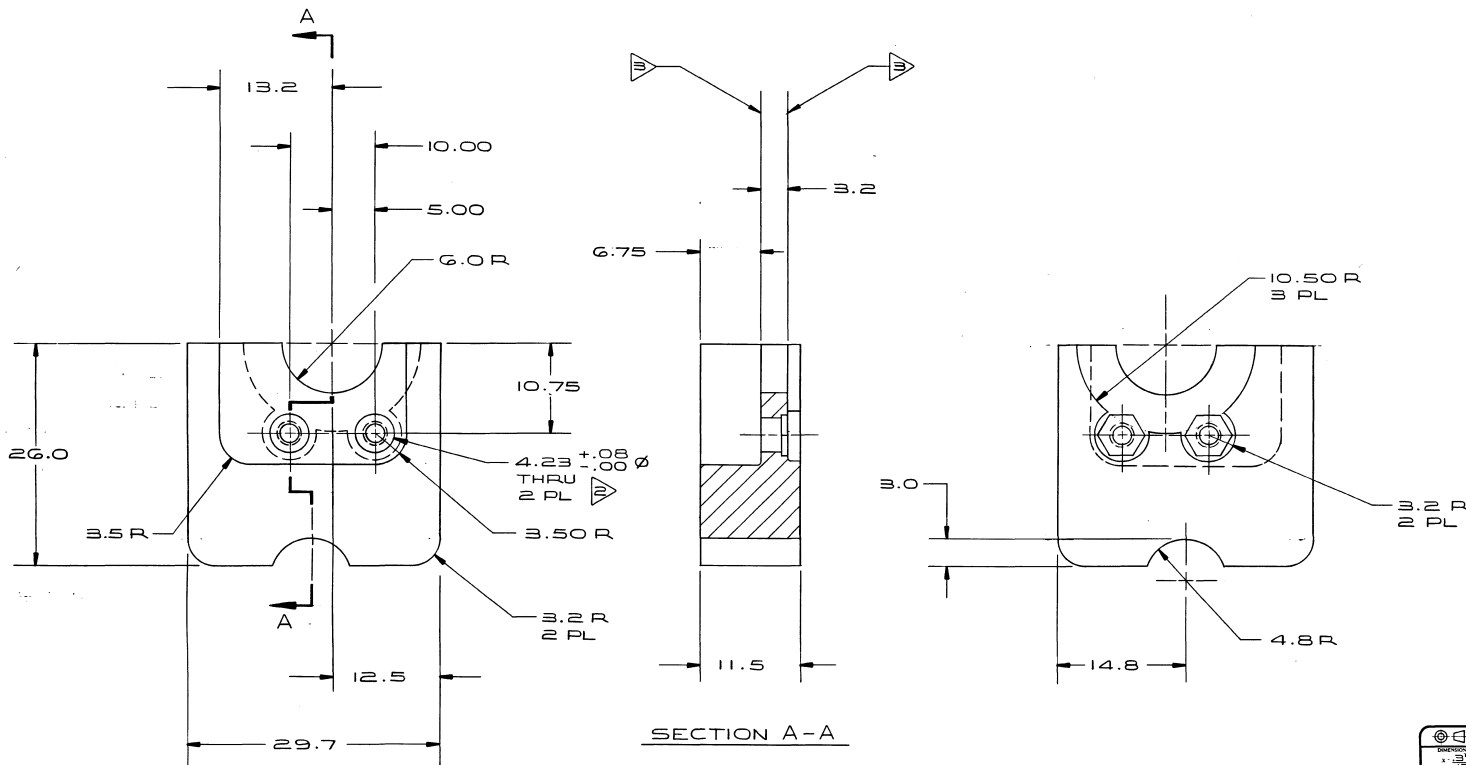
▷ PEM FASTENERS ARE NOT TO PROTRUDE
BEYOND INDICATED SURFACES.

4. UNSPECIFIED RADII TO BE .20R MAX.

5. COUNTER-WEIGHTS TO BE FREE OF BURRS AND
LOOSE OR FOREIGN PARTICLES AND PACKAGED
TO PREVENT CONTAMINATION.

▷ FINISH: ZINC PLATE PER QQ-Z-325, TYPE 2,
CLASS 2.

| REV | ZONE | ECO # | REVISION | APPD |
|-----|------|-------|---------------------------------|------|
| A | | PG19 | INITIAL RELEASE (SK-W095-08) | XU |



| METRIC | | NOTICE OF PROPRIETARY PROPERTY | |
|----------------------------|-------------------------------|---|--|
| UNLESS OTHERWISE SPECIFIED | ALL DIMENSIONS IN MILLIMETERS | THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE RECIPIENT AGREES TO THE FOLLOWING: | |
| MATERIAL | DATE | 1. TO MAINTAIN THIS DOCUMENT IN CONFIDENCE | |
| DESIGN | DATE | 2. NOT TO REPRODUCE OR COPY IT | |
| ANDERSON | DATE | 3. NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART | |
| FOR ORIGIN | DATE | TITLE | |
| DATE | DATE | COUNTERWEIGHT, ARM, WIDGET | |
| DESIGN | DATE | SCALE | |
| ANDERSON | DATE | 4X | |
| REVISION | DATE | SIZE | |
| | | D | |
| | | PART NUMBER | |
| | | 815-5032-A | |
| | | SHEET 1 / 1 | |

