

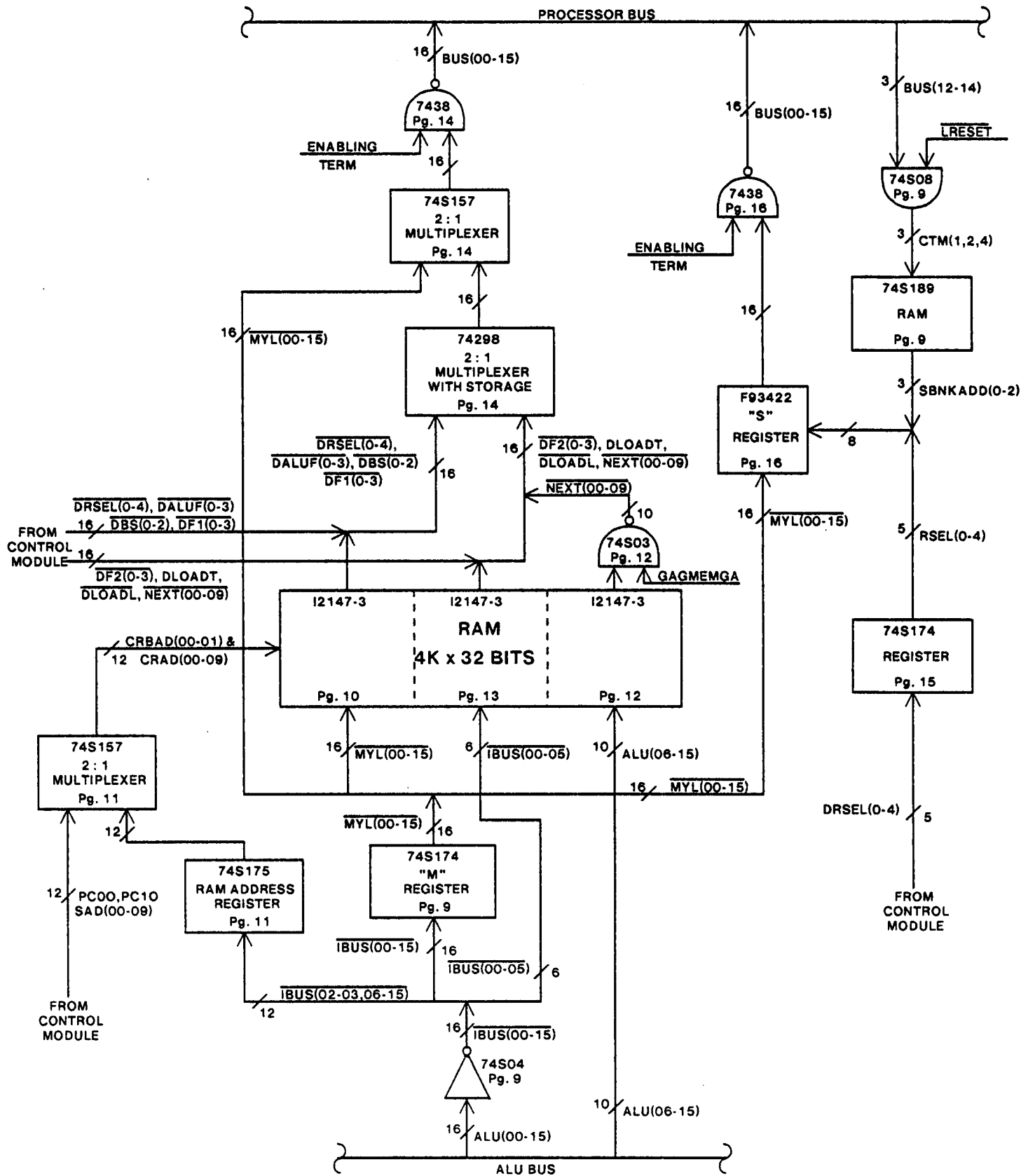
3K CONTROL RAM

The 3K Control Ram is a standard logic card containing a fast (90 nsec.) 3072-word by 32-bit read/write microinstruction memory, 8 banks of even faster (40 nsec.) 32-word by 16-bit read/write memory (S registers), and logic to interface those memories to the Alto's microinstruction bus, processor bus, and ALU output. Unlike other microinstruction memories in the Alto, the larger memory of the 3K Control Ram can hold microinstructions and/or data.

RAM-RELATED TASKS

The 3K Control Ram performs data manipulation (as distinct from microcode fetching) functions in response to the microinstruction. Not all tasks are likely to be interested in these functions. Moreover, not all tasks will have the appropriate values for the microinstruction uncommitted. A Ram-related task is defined as one during whose execution the 3K Control Ram card will respond to microinstructions. The standard Alto is wired so that the CPU emulator task is the only Ram-related task.

EXTENDED MEMORY 3K CONTROL RAM MODULE (3KCRAM)(XM)



NOTE: UNLESS OTHERWISE SPECIFIED.

1. ASSEMBLE PER ALTO II MODULE ASSY. SPEC. DWG NO. 216207
 PROGRAMMING THE PROMS:

2

- A. PROGRAM THE PROMS BEFORE IT IS INSERTED INTO THE MODULE.
- B. LABEL EACH PROM AS DEFINED AS SHOWN BELOW USING AVERY SELF-ADHESIVE (1/16X1/2) LABEL. STICK THE LABEL ON THE TOP OF THE PROM(IC).
- C. PROGRAM THE FOLLOWING PROMS:

PROM LABEL	LOCATION	FILE NAME	FILE LOCATION
R21B	A37	R21B.MB	[ISIS]<SPGDOCS>PROMS>3KCRAM.DM

- D. ADDITIONAL PROGRAM REQUIREMENT:
 - a. PNEW.RUN.....[ISIS]<SPGDOCS>PROLOG.PRESS.
- E. HARDWARE REQUIREMENTS:
 - a. PROLOG PROGRAMMER.....[ISIS]<SPGDOCS>PROLOG.PRESS
 - b. 82S126 PROLOG PERSONALITY CARD.

3. THE FOLLOWING MODIFICATION ARE REQUIRED USING "B" REV PW BOARD ONLY.
 CUT ETCH PER INSTRUCTION:

- A. CUT ALL ETCH LEADING TO

A52-11	ONE CUT	(ETCH SIDE)
A49-11	TWO CUTS	(ETCH SIDE)
A50-11	TWO CUTS	(ETCH SIDE)
A62-11	TWO CUTS	(COMP & ETCH)
A63-11	TWO CUTS	(COMP & ETCH)
A65-11	TWO CUTS	(COMP & ETCH)
A75-11	TWO CUTS	(COMP & ETCH)
A78-11	TWO CUTS	(ETCH SIDE)
A88-11	TWO CUTS	(COMP. SIDE)
A91-11	TWO CUTS	(ETCH SIDE)
A61-15	ONE CUTS	(COMP. SIDE)
- CUT ALL ETCH LEADING TO A25-1 ONE CUT (ETCH SIDE)
- B. CUT BOTH ETCH TO FEEDTHROW BETWEEN A68-18 AND A69-1 (ETCH,COMP)
- C. CUT ETCH TO FEED THROUGH BETWEEN A52-10 AND A53-9 (COMP SIDE)
- D. CUT ETCH TO EDGE CONNECTOR FINGER J2-13 (ETCH SIDE)
- E. CUT ETCH TO EDGE CONNECTOR FINGER J2-15 (ETCH SIDE)
- F. CUT ETCH TO EDGE CONNECTOR FINGER J2-29 (ETCH SIDE)
- G. CUT ETCH TO EDGE CONNECTOR FINGER J2-30 (ETCH SIDE)
- H. CUT ETCH TO A84-1 (COMP SIDE)

4. THE FOLLOWING MODIFICATION ARE REQUIRED USING "B" REV PW BOARD ONLY.
 ADD JUMPER PER INSTRUCTION

- ~~A. ADD JUMPER FROM P2-12 TO A70-9 (ETCH SIDE)~~
- B. ADD JUMPER FROM P2-13 TO A90-9 (ETCH SIDE) GND
- C. ADD JUMPER FROM P2-15 TO A91-9 (ETCH SIDE) GND
- D. ADD JUMPER FROM P2-29 TO A92-9 (ETCH SIDE) GND
- E. ADD JUMPER FROM P2-30 TO A93-9 (ETCH SIDE) GND

PROPRIETARY NOTE ON SHEET 1 APPLIES TO ALL SHEETS

FILE: 3KCRAM02.SIL

TITLE
 ASSEMBLY, P.W.
 3K CRAM MODULE

DWG. SIZE
 A4

DWG. NO. 217812
 SHEET OF 2 17

SHEET REV.
 E

4. THE FOLLOWING MODIFICATIONS ARE REQUIRED USING "B" REV PW BOARD ONLY.
ADD JUMPER PER INSTRUCTION:

- a. A49-11 TO A23-5
- A62-11 TO A23-3
- A75-11 TO A23-1
- A88-11 TO A12-1
- A50-11 TO A12-3
- A52-11 TO A23-9
- A63-11 TO A12-5
- A65-11 TO A23-11
- A78-11 TO A23-13
- A91-11 TO A12-13
- A21-15 TO A21-8
- A24-13 TO A25-1
- A87-15 TO A87-8
- A66-11 TO A35-7
- A57-1 TO P1-69
- A57-2 TO A39-1
- A57-3 TO A61-15
- A45-4 TO A12-9
- A12-8 TO FEED THROUGH BETWEEN A52-10 AND A53-9

PROPRIETARY NOTE ON SHEET 1 APPLIES TO ALL SHEETS

FILE: 3KCRAM03.SIL

TITLE	ASSEMBLY, P.W. 3K CRAM MODULE	DWG. SIZE	DWG. NO. 218812	SHEET REV. E
		A4	SHEET 3 OF 18	

NOTE: THE FOLLOWING MODIFICATION INSTRUCTION(5,6,&7) SHOULD BE DONE ON
"B" REV PWB ONLY.

5.0 DRILL HOLE: a. DRILL HOLE PER FIGURE3.

6.0 MOUNT CABLE ASSEMBLY (2533)AND PLATE ASSEMBLY (218054-001) PER
 FIG. 1 AND FIG.2.

7.0 ADD WIRE (OBSERVE FIGURE 4)

CONDUCTOR 1 TO A83-07	GND	CIRCUIT SIDE
CONDUCTOR 2 TO A84-08	GND	CIRCUIT SIDE
CONDUCTOR 7 TO A84-13	CT8	CIRCUIT SIDE
CONDUCTOR 8 TO A84-14	CT4	CIRCUIT SIDE
CONDUCTOR 9 TO A84-15	CT3	CIRCUIT SIDE
CONDUCTOR 10 TO A84-01	CT1	CIRCUIT SIDE

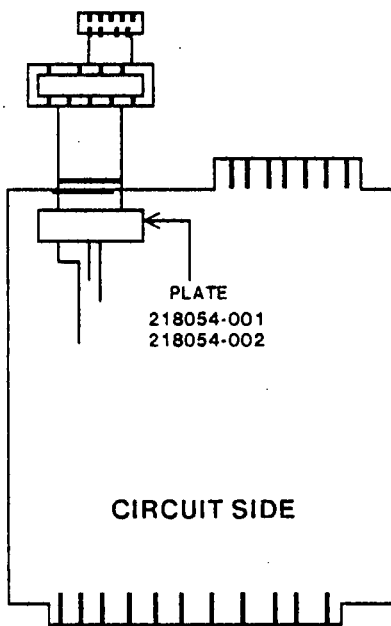


FIG. 1

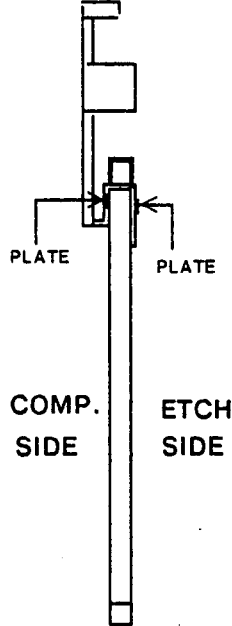


FIG. 2

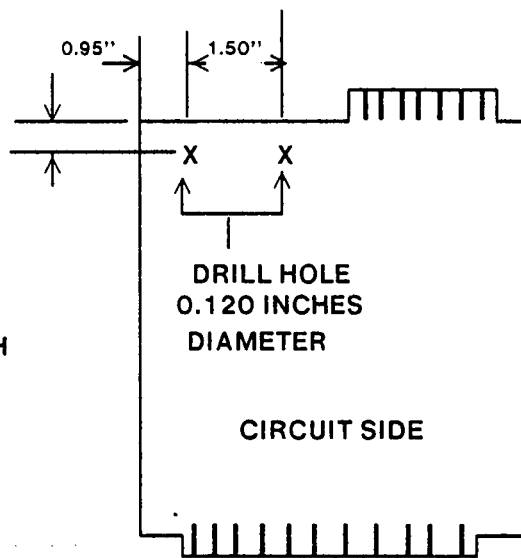


FIG. 3

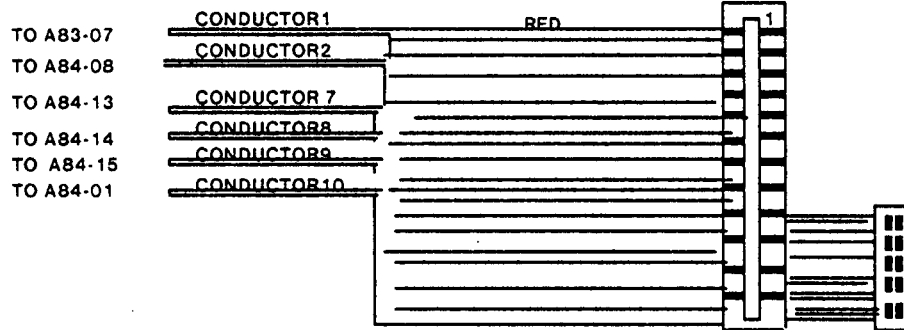


FIG. 4

8.0 THE FOLLOWING MODIFICATION INSTRUCTIONS SHOULD BE DONE ON
"C" REV PWB ONLY

* CUT ETCH LEADING TO A25-1

2 CUTS ON COMPONENT SIDE

* ADD WIRE: A25-1 TO A24-13
 A38-1 TO A1-09

PROPRIETARY NOTE ON SHEET 1 APPLIES TO ALL SHEETS

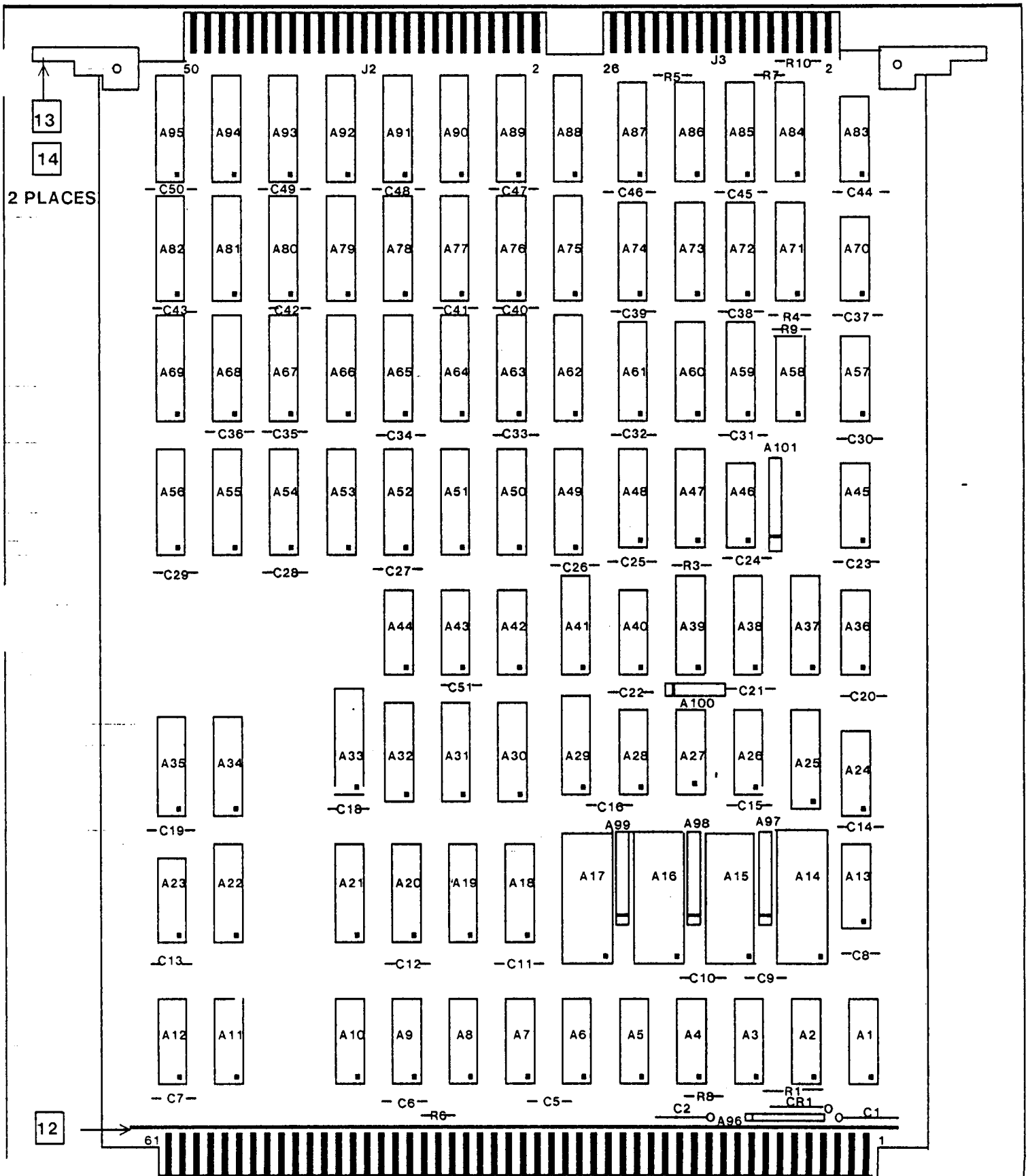
FILE: 3KCRAM04.SIL

TITLE
 ASSEMBLY, P.W.
 3K CRAM MODULE

DWG. SIZE
 A4

DWG. NO. 217812
 SHEET 4 OF 17

SHEET REV.
 E



PROPRIETARY NOTE ON SHEET 1 APPLIES TO ALL SHEETS

FILE: 3KCRAM07.SIL

TITLE

ASSEMBLY, P.W.
3K CRAM MODULE

DWG.
SIZE
A4

DWG. NO. 217812
SHEET 7 OF 17

SHEET REV.
E

