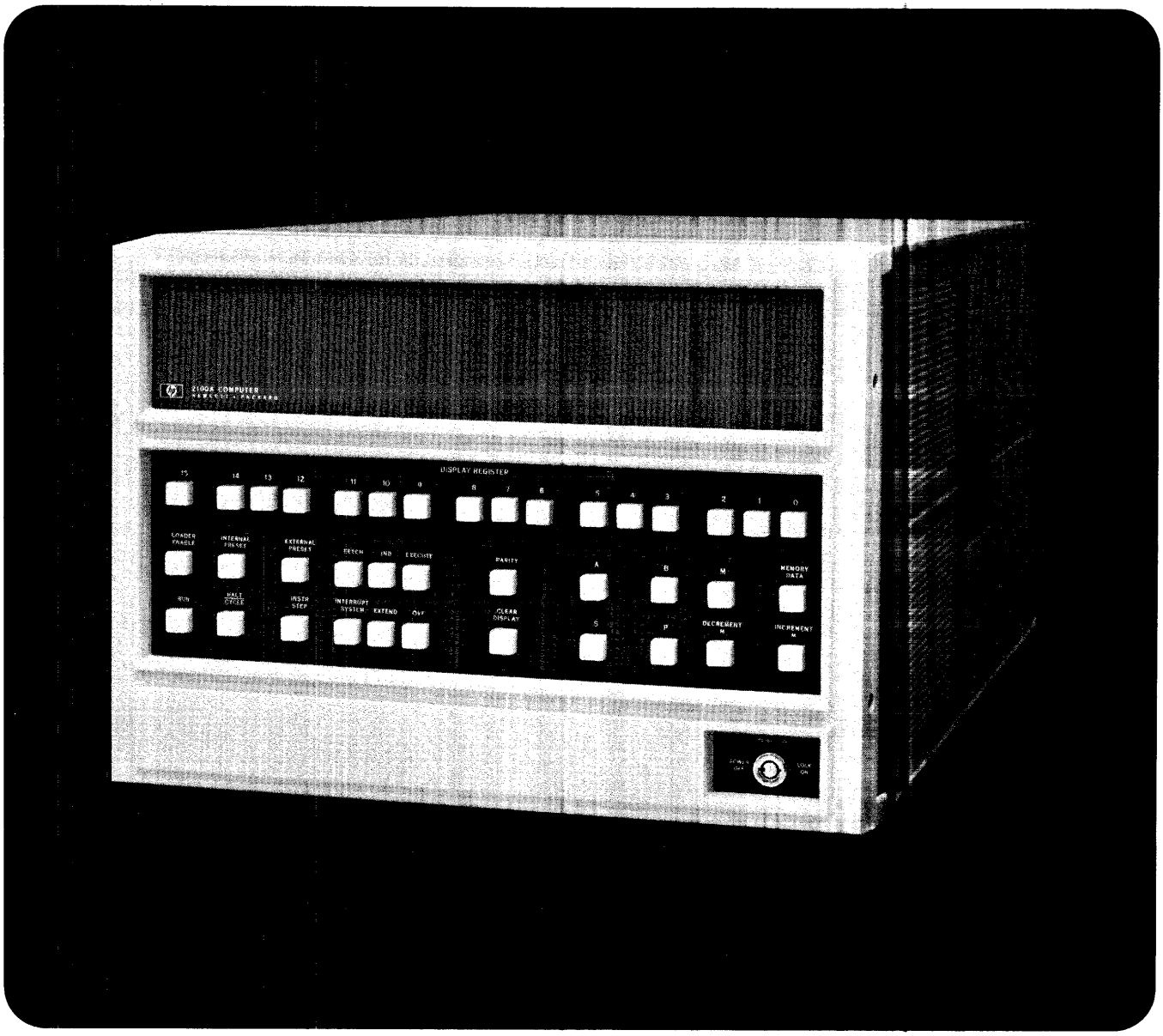
HEWLETT hp PACKARD

2100A computer



diagrams manual

HEWLETT hp PACKARD

CERTIFICATION

The Hewlett-Packard Company certifies that this instrument was thoroughly tested and inspected and found to meet its published specifications when it was shipped from the factory. The Hewlett-Packard Company further certifies that its calibration measurements are traceable to the U.S. National Bureau of Standards to the extent allowed by the Bureau's calibration facility.

HEWLETT hp PACKARD

DIAGRAMS MANUAL

MODEL 2100A COMPUTER

SERIAL NUMBERS COVERED

This manual applies directly to Model 2100A Computers having serial numbers prefixed 1136, 1140, 1145, 1146, 1147, 1148, 1150, 1202, 1203, 1215, 1224, 1230, 1238, 1243, 1244, 1249, 1250, 1304, 1306, 1312, 1314, 1320, 1322, 1330, 1333, 1345, 1402, 1410, 1420, 1435, and 1449. Computers with higher prefix numbers will be covered in manual updating supplements.

OPTIONS COVERED

This manual covers options 001, 004, 008, 012, 015, 016, 024, and 032 as well as the basic computer.

ACCESSORIES COVERED

This manual covers the following accessory kits:

12884A, 12884A-001 and 12884A-002 Memory (4K Increments) Accessory Kits

12885A, 12885A-001, 12885A-002, 12885A-003, and 12885A-004 Memory (8K Increments) Accessory Kits

12895A Direct Memory Access Accessory Kit

12899A Operator Panel Accessory Kit

12901A Floating-Point Hardware Accessory Kit

02100-90003

PRINTED: JAN 1975

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SECTION I
GENERAL INFORMATION

1-1. INTRODUCTION.

1-2. This Diagrams Manual, part no. 02100-90003, is one in a set of five manuals that document the Hewlett-Packard 2100A Computer (figure 1-1). The other manuals in the series are: the Power Supply Operating and Service Manual, part no. 5951-3038, the Reference Manual, part no. 02100-90001, the Installation and Maintenance Manual, part no. 02100-90002, and the Illustrated Parts Breakdown (IPB), part no. 02100-90004. The computer is documented in the five manuals as follows:

a. This Diagrams Manual provides interconnecting information and schematic diagrams for all assemblies of the computer except the power supply.

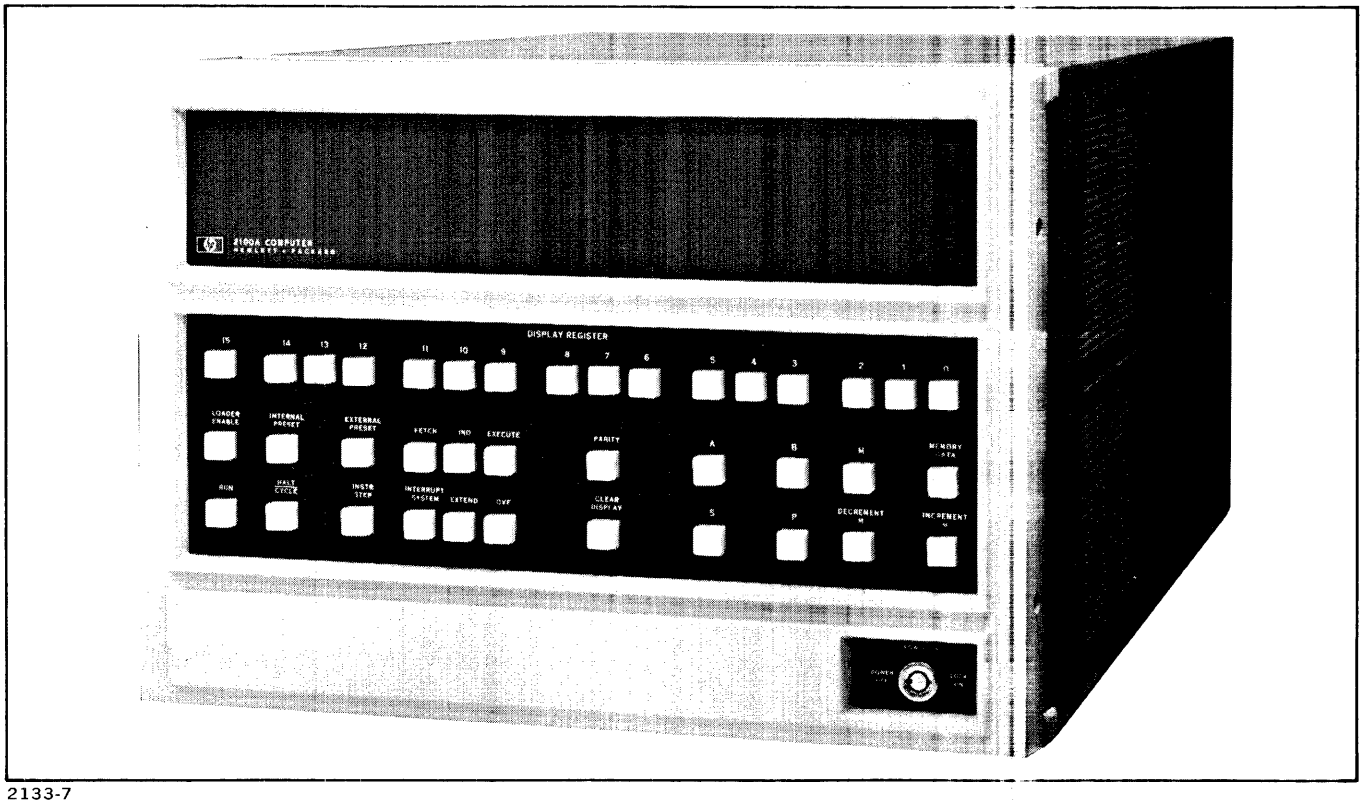
b. The Power Supply Manual contains all the information necessary to troubleshoot and repair the power supply. This includes installation instructions, schematic diagrams, and replaceable parts information.

c. The Reference Manual contains specifications, operating instructions, and programming information for the computer.

d. The Installation and Maintenance Manual contains instructions for installation, maintenance, troubleshooting, and repair of the computer, except as covered in the Power Supply Manual.

e. The IPB Manual contains replaceable parts ordering information, replaceable parts lists, exploded views, part location diagrams, and numerical lists of parts for all assemblies of the computer except the power supply.

1-3. Unless otherwise stated in future updating supplements, information contained in this manual is applicable to 2100A Computers having serial numbers with the prefixes listed on the title page of this manual.



2133-7

Figure 1-1. Hewlett-Packard 2100A Computer

1-4. SCOPE.

1-5. This manual is intended for use by maintenance personnel who are familiar with the circuit theory and maintenance procedures of the 2100A. A thorough understanding of the information presented in the Reference Manual and the Installation and Maintenance Manual for the computer is essential to using the material presented in this manual.

1-6. Sections II, III, and IV of this manual contain the following information:

a. Section II, Logic Symbology. Section II describes and defines the logic symbology used in this manual. It also includes integrated circuit diagrams and characteristics and descriptions of nonstandard integrated circuits.

b. Section III, Wiring Information. Section III contains cable wiring information, wiring lists, and wiring diagrams.

c. Section IV, Diagrams. Section IV contains parts location diagrams, replaceable parts lists, and schematic diagrams for each printed circuit card used in the computer, including the optional memory and control cards. Lists of signal interconnections are included to enable quick signal tracing between cards. Use of these lists is described in Section IV. The section also includes an alphabetical list of the signal mnemonics used on the schematic diagrams and in the backplane wiring list.

d. Updating Supplements. If required, updating supplements are included with this manual. These supplements make the manual applicable to computers with serial numbers prefixed higher than the prefixes given on the title page of this manual.

1-7. MAJOR ASSEMBLY CONFIGURATIONS.

1-8. Table 1-1 lists the serial number prefixes of the computers covered by this manual and the date codes of the circuit card and power supply assemblies originally installed in these computers at the factory. (The Identification paragraphs in the computer Installation and Maintenance Manual describe serial number prefixes and circuit-card date codes.)

1-9. The assembly configurations may vary from those shown in table 1-1 because of field modifications, repairs, or other reasons requiring assembly exchanges.

Table 1-1. Major Assembly Configurations

COMPUTER SERIAL NUMBER PREFIX	A1 02100-60014	A2 02100-60002	A3 02100-60004	A4 02100-60022	A4 02100-60112	A5 02100-60001	A6 02100-60003	A7 02100-60024	A8 02100-60007	A9 12895-60001	A16 02100-60060	A24 02100-60015	A24 02100-60017	A101 A104 A109 A112 02100-60012	A102 A103 4K CARD 02100-60040	A102 A103 A110 A111 8K CARD 5060-8324	A102 A103 A110 A111 8K CARD 5060-8331	A105 4K,8K MEMORY 02100-60008	A105 A108 02100-60009	A106 02100-60010	A107 02100-60011	A25 POWER SUPPLY 02100-60053
1136	1116	1106 or 1132	1124	1110	–	1051	1109	1116	1051	1116	1131	1123	1128	1121	1139	1126	–	1049	1049	1046	1132	1126 or 1140
1140	1116	1132	1124	1110	–	1051	1109	1116	1051	1116	1131	1123	1128	1121 or 1132	1139	1126 or 1136	–	1049	1049	1046	1132	1141
1145	1116	1132	1124	1110	–	1051	1109	1116	1051	1116	1131	1123	1128	1121 or 1132	1139	1126 or 1136	–	1049	1049	1046	1132	1141
1146	1116	1132 or 1144	1124	1110	–	1051	1109	1116	1051	1116	1131	1123	1128	1121 or 1132	1139	1126 or 1136	–	1049	1049	1046	1132	1146
1147	1116	1132 or 1144	1124	1110	–	1051	1109	1116	1051	1116	1131	1123	1128	1132	1139	1136	–	1049	1049	1046	1132	1146
1148	1116	1144	1124	1140	–	1051	1140	1144	1051	1116	1131	1123	1128	1132	1139	1136	–	1049	1049	1046	1132	1148 or 1149
1150	1116	1144	1124	1140	–	1051	1140	1144	1051	1116 or 1144	1131	1123	1128 or 1201	1132	1139	1136	–	1049	1049	1046	1132	1150
1202	1116	1144	1124	1140	–	1051	1202	1144	1051	1144	1131	1123	1201	1132 or 1152	1139	1136	–	1049	1049	1046	1132	1150
1203	1116	1144	1124 or 1144	1140	–	1051	1202	1144	1051	1144	1131	1123	1201	1152	1139	1136	1208	1049	1049	1046	1132	1150
1215	1116	1144	1144	1140	–	1051	1202	1215	1051	1144	1131	1123	1201	1152	1139	1136	1208	1049	1049	1046	1132	1215
1224	1116 or 1144	1144	1144	1140	–	1051	1202	1215	1051 or 1216	1144	1131	1123	1201	1152	1139 or 1148	–	1208	1049	1049	1046	1132	1220
1230	1144	1144	1144	1140	–	1051	1238	1215	1216	1144	1131	1123	1201	1152	1148	–	1208	1049	1049	1046	1132	1220
1238	1144	1144	1144	1140	–	1051	1238	1215	1216	1144	1131	1123	1201	1152	1148	–	1208	1049	1049	1046	1132	1229
1243	1144	1144	1144	1140	–	1051	1238	1215	1216	1144	1131	1123	1201	1152	1148	–	1208	1049	1049	1046	1132	1243
1244	1144	1144	1144	1140	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1208	1049	1049	1046	1132	1243
1249	1144	1144	1144	1140	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1208	1049	1049	1046	1132	1249
1250	1144	1144	1144	1140	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1208	1049	1049	1046	1132	1250
1304	1144	1144	1144	1144	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1208	1049	1049	1046	1132	1250
1306	1144	1144	1144	1144	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1132	1250
1312	1144	1144	1144	1144	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1312	1250
1314	1144	1144	1144	1144	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1312	1314
1320	1144	1144	1144	1144	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1312	1320
1322	1144	1144	1144	1144	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1312	1322
1330	1144	1144	1144	1144	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1312	1330
1333	1144	1144	1144	1144	–	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1312	1333
1345	1144	1144	1144	–	1333	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1312	1345
1402	1144	1144	1144	–	1402	1051	1238	1215	1216	1144	1131	1244	1201	1152	1148	–	1301	1049	1049	1046	1312	1345

NOTE: A separate Operating and Service Manual, part number 5951-3038, is supplied for the A25 Power Supply Assembly.

2191-1D (Sheet 1 of 2)

Table 1-1. Major Assembly Configurations (Continued)

COMPUTER SERIAL NUMBER PREFIX	A1 02100-60014	A2 02100-60002	A3 02100-60004	A4 02100-60022	A4 02100-60112	A5 02100-60001	A6 02100-60003	A7 02100-60024	A8 02100-60007	A9 12895-60001	A16 02100-60060	A24 02100-60015	A24 02100-60017	A101 A104 A109 A112 02100-60012	A102 A103 4K CARD 02100-60040	A102 A103 A110 A111 8K CARD 5060-8324	A102 A103 A110 A111 8K CARD 5060-8331	A105 4K,8K MEMORY 02100-60008	A105 A108 02100-60009	A106 02100-60010	A107 02100-60011	A25 POWER SUPPLY 02100-60053
1410	1144	1144	1144	–	1402	1051	1238	1215	1216	1144	1131	1244	1201	1410	1148	–	1301	1049	1049	1046	1312	1410
1420	1144	1144	1144	–	1402	1051	1238	1215	1216	1144	1131	1244	1201	1410	1148	–	1301	1049	1049	1046	1312	1420
1435	1144	1144	1144	–	1402	1051	1238	1215	1216	1144	1131	1244	1201	1410	1148	–	1301	1049	1049	1046	1312	1435
1449 (NOTE 2)	1144	1144	1144		1402	1051	1238	1215	1216	1144	1131	1244	1201	1410	1148		1301	1049	1049	1046	1312	1435

NOTES: 1 A seperate Operating and Service Manual, part number 5951-3038, is supplied for the A25 Power Supply Assembly.

2 Wire type of backplane wiring changed to reduce noise levels. No other assemblies were changed.

2191-1E (Sheet 2 of 2)

SECTION II LOGIC SYMBOLOGY

2-1. INTRODUCTION.

2-2. Three basic symbol shapes distinguish the major classes of logic circuits depicted in this manual. These classes are gates, regenerative switching elements, and amplifiers. Each symbol, and a brief explanation of its operation, is given below. Additional markings on the basic symbols aid in determining actual circuit operation.

2-3. In addition to the basic symbols, a general multi-purpose symbol is used wherever a standardized logic symbol does not exist. A brief explanation of this multi-purpose symbol is included below. Following the logic descriptions are a table of integrated circuit characteristics and a set of integrated circuit diagrams.

2-4. INVERSION.

2-5. Logic inversion is indicated by an inversion dot at the input or output of a logic symbol. When this dot appears at the input of a logic symbol, the input will be effective when the input signal is of the opposite polarity to that normally required. When the dot appears at the output of a logic symbol, the output will be of the opposite polarity to that normally delivered.

2-6. GATES.

2-7. A gate is a circuit which produces a binary output when certain input conditions are met. The gate symbol has input lines connecting to the flat side of the symbol, and output lines connecting to the curved side (see figure 2-1). Since the inputs and outputs are easily identifiable, the symbol may be shown left-facing, right-facing, or facing up or down.

2-8. There are four basic types of gates, "and," "or," "nand," and "nor," each named for the logic function that it performs. Each of these gates is described below. In addition, a brief explanation of an "expander" gate is given following the descriptions of the basic logic gates.

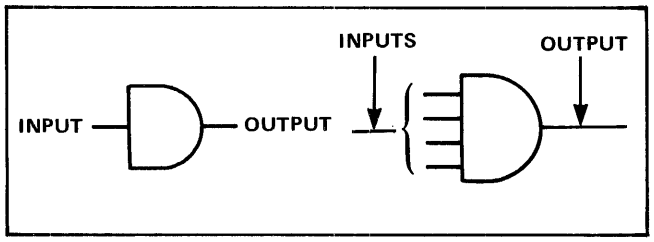
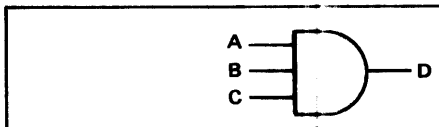


Figure 2-1. Gate Symbols

2-9. "AND" GATE.

2-10. The "and" gate (see figure 2-2) performs a logical "and" function. It will produce a logical-true output only when all of its input lines are true. Input A and input B and input C must be true for a true output to be generated.

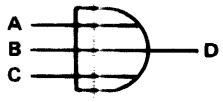


A	B	C	D
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

Figure 2-2. Three-Input "And" Gate, Logic Symbol and Truth Table

2-11. "OR" GATE.

2-12. The "or" gate (figure 2-3) performs a logical "or" function. It produces a true output when one or more inputs are true. The truth table in figure 2-3 shows the various states of a three-input "or" gate.

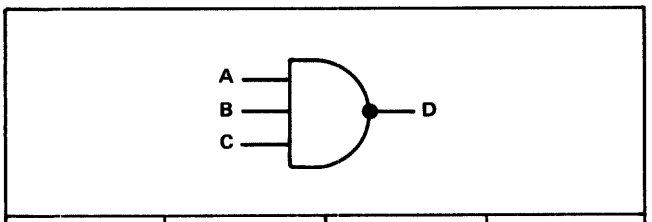


A	B	C	D
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

Figure 2-3. Three-Input "Or" Gate, Logic Symbol and Truth Table

2-13. "NAND" GATE.

2-14. The "nand" gate (figure 2-4) is similar to the "and" gate described previously, except that its output is inverted. The gate generates a false output when all inputs are true. The various states of a three-input "nand" gate are shown in the truth table in figure 2-4.

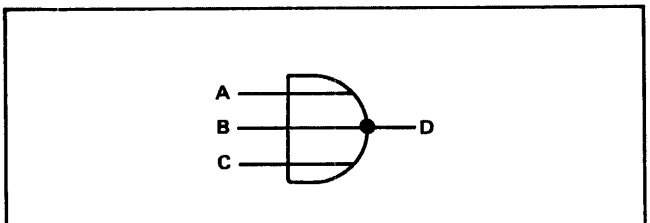


A	B	C	D
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

Figure 2-4. Three-Input "Nand" Gate, Logic Symbol and Truth Table

2-15. "NOR" GATE.

2-16. The "nor" gate (figure 2-5) is identical with the "or" gate described previously, except that its output is inverted. The gate generates a false output when one or more inputs are true. The various states of a three-input "nor" gate are shown in the truth table in figure 2-5.



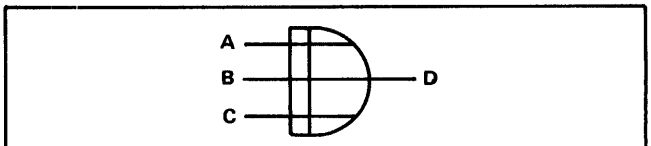
A	B	C	D
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

Figure 2-5. Three-Input "Nor" Gate, Logic Symbol and Truth Table

2-17. EXCLUSIVE "OR" GATE.

2-18. The exclusive "or" gate (figure 2-6) is a variation of the basic "or" gate. It has two or more input signals. The output is true when an odd number of inputs are true.

2-19. The truth table in figure 2-6 shows the functioning of a three-input exclusive "or" gate.



A	B	C	D
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

Figure 2-6. Three-Input Exclusive "Or" Gate, Logic Symbol and Truth Table

2-20. It will be noted that operation of the exclusive "or" gate is independent of the electrical polarity of the true and false conditions. The device therefore cannot be described as either positive-true or negative-true.

2-21. EXCLUSIVE "NOR" GATE.

2-22. The exclusive "nor" gate (figure 2-7) is similar to the exclusive "or" gate, except that its output is inverted. The output is therefore true when an even number of inputs are true.

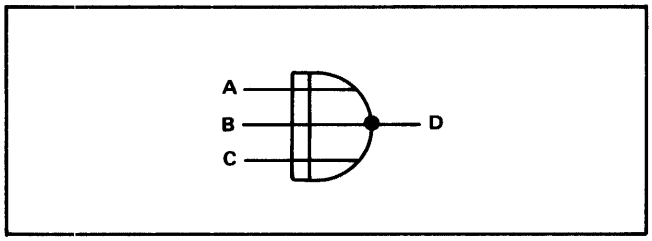


Figure 2-7. Three-Input Exclusive "Nor" Gate, Logic Symbol

2-23. EXPANDER GATE.

2-24. The expander gate provides a means for increasing the number of inputs to a gate. Figure 2-8 shows a simplified method of illustrating this type of gate, and figure 2-9 shows the actual connections between the gates involved.

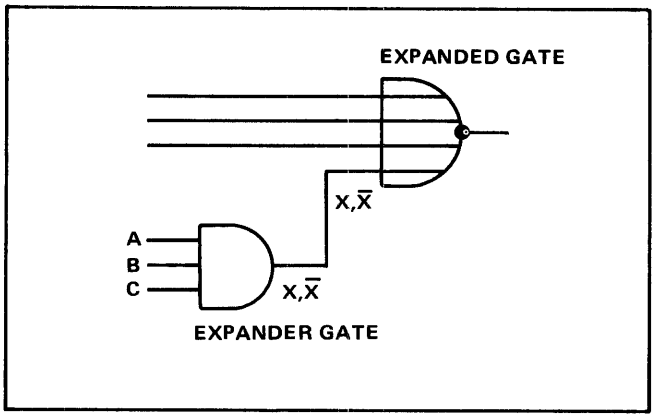


Figure 2-8. Simplified Expander Gate, Logic Symbol

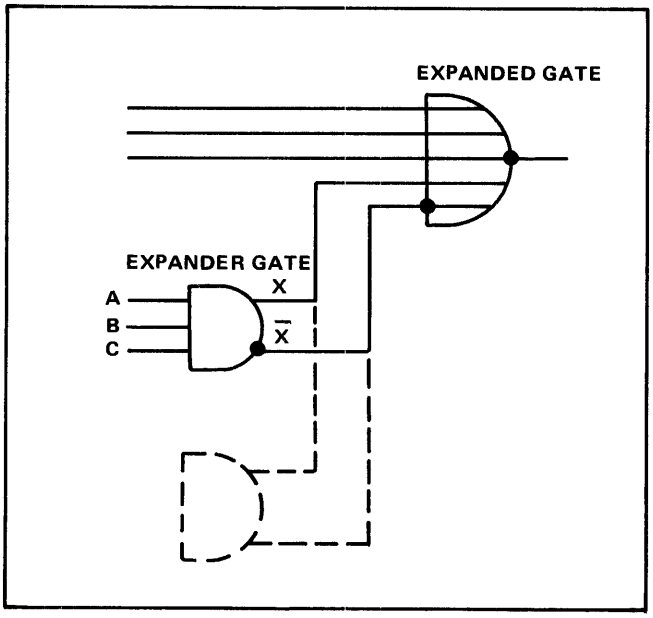


Figure 2-9. Actual Expander Gate, Logic Symbol

The X and $\overline{X}$ outputs of the expander gate are not logical opposites, but they do carry a voltage differential with respect to each other. When one or more inputs to the expander gate are false, there is a voltage difference of a few volts between X and X. When all inputs to the expander gate are true, the voltage difference decreases; the two outputs of the expander then act as a true input to the expanded gate. The actual output-voltage differential of the expander gate depends on the type used.

2-25. When more than one expander gate is used, the gate outputs are connected as in parallel, as shown by the dashed lines in figure 2-9.

2-26. ENCODING GATE.

2-27. The encoding gate (figure 2-10) has one input and multiple outputs. Assuming no inverting dot at input A to the symbol, when the input is true all outputs (B, C, and D) are true. When the input is false, the outputs are either true or false, in accordance with the state of the logic element to which each is connected.

2-28. A typical circuit for an encoding gate is shown in figure 2-11. With A positive, all diodes conduct and all outputs are clamped positive. With A negative, each diode is practically an open circuit, and points B, C, and D assume the voltage level of the circuit to which each is connected.

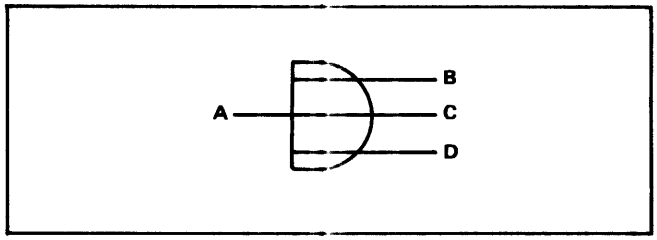


Figure 2-10. Three-Input Encoding Gate, Logic Symbol

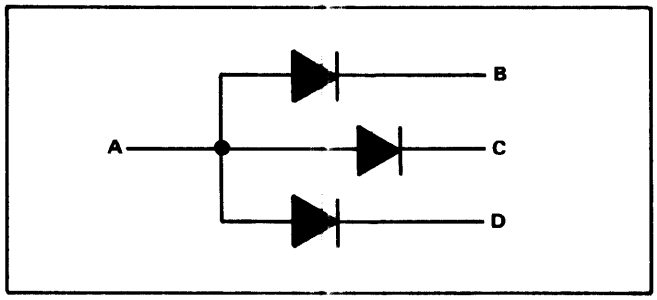


Figure 2-11. Circuit of Typical Encoding Gate

2-29. MULTIVIBRATORS.

2-30. The multivibrators described here are of four main types: flip-flops, Schmitt trigger circuits, one-shot multivibrators, and free-running multivibrators. All furnish a binary output. However, unlike gate circuits, the duration of a multivibrator output signal is not dependent on the duration of an input signal.

2-31. The basic logic symbol for a multivibrator is a retangle (figure 2-12). Letters in the symbol indicate the type of multivibrator. The rectangle is divided horizontally, with the upper portion representing the "set side" of the unit, and the lower portion representing the "clear side". The multivibrator is "set" when the output from the set side is true. It is "clear" or "reset" when the output from the clear side is true. To avoid confusion, the symbol is always oriented as shown in figure 2-12. Inputs are on the left, outputs on the right.

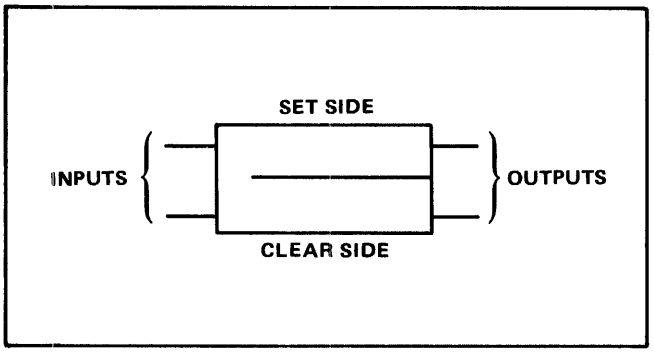


Figure 2-12. Basic Logic Symbol for Multivibrator

2-32. FLIP-FLOP.

2-33. The symbol for a flip-flop is shown in figure 2-13. The letters "FF", preceded by the name of the flip-flop, distinguish this symbol from other types of multivibrators. Additional identification, described later, identifies the particular type of flip-flop.

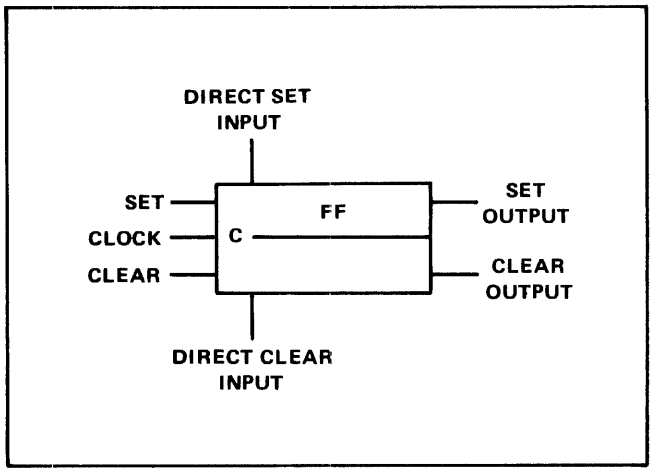
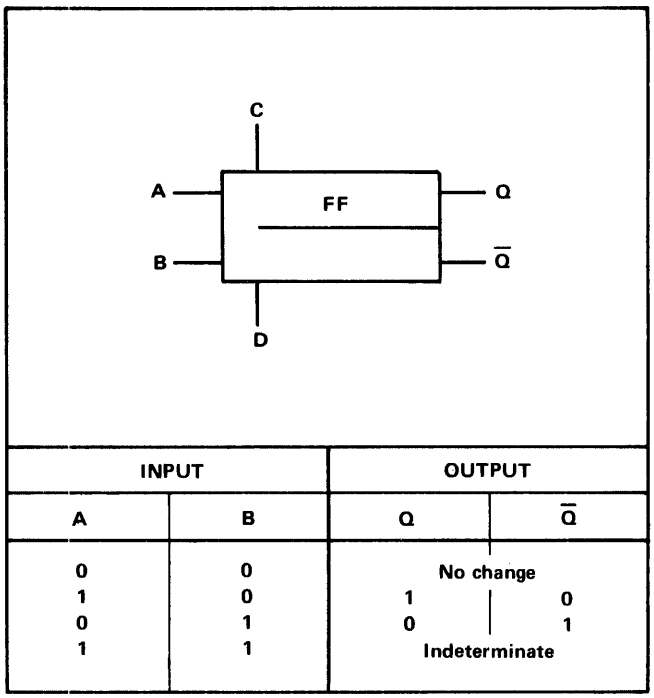


Figure 2-13. Flip-Flop Logic Symbol (General)

2-34. A flip-flop is a bistable switching device; an external signal is required to set the flip-flop, and another to clear it. The flip-flop remains in its current state until switched to the opposite state by the appropriate external signal. Various forms of flip-flop exist, of which seven are described here: the R-S (reset-set), clocked R-S, J-K, clocked J-K, toggle, latch, and delay flip-flops.

2-35. R-S FLIP-FLOP. The symbol for the R-S flip-flop (figure 2-14) can be recognized by the fact that there is no information in the symbol identifying it as one of the other six types. The R-S flip-flop has a minimum of two input terminals (A and B in figure 2-14) and one or two output terminals Q and $\overline{Q}$. One or two additional input terminals, C and D, may be used.



INPUT		OUTPUT	
A	B	Q	$\overline{Q}$
0	0	No change	
1	0	1	0
0	1	0	1
1	1	Indeterminate	

Figure 2-14. R-S Flip-Flop, Logic Symbol and State Table

2-36. The R-S flip-flop is set by a true input at A (assuming no inverting dot at this point). It can also be set by a true input at C, if this input terminal is present. The flip-flop is cleared by a true input at B or D. Figure 2-14 includes a state table, showing the flip-flop outputs resulting from various input conditions.

2-37. After being set or cleared, the R-S flip-flop remains in that condition after termination of the set or clear pulse. If the flip-flop is either set or clear and it receives an input to place it in the existing state, no change takes place in the flip-flop output signals.

2-38. Simultaneous set and clear input signals normally are not permitted, and circuit design usually prevents occurrence of this condition at a time when the flip-flop outputs are used. If simultaneous set and clear inputs are received, both outputs of the flip-flop are true for the duration of the simultaneous inputs. The eventual state of the flip-flop is determined by the input that remains longest in the activating condition.

2-39. CLOCKED R-S FLIP-FLOP. This flip-flop is similar to the R-S flip-flop, but it has a clock pulse input (figure 2-15). The logic symbol can be recognized by the letter "C" at this input terminal. At the true-going transition of the clock pulse, the flip-flop becomes set if input A is true, or it becomes clear if input B is true (assuming no inverting dot at the clock pulse input terminal). If inputs A and B are both false during the clock pulse, the flip-flop does not change state. It is not permissible that A and B both be true when true-going clock pulse transition takes place.

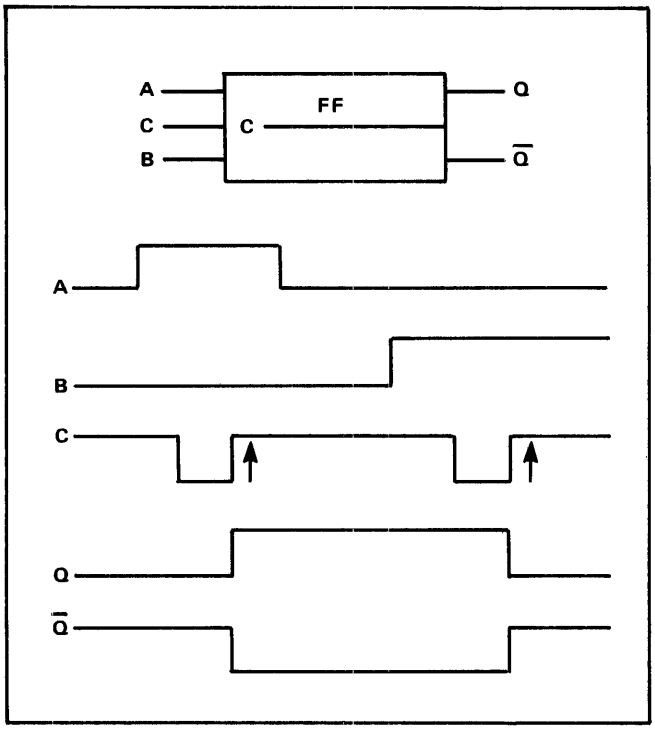


Figure 2-15. Clocked R-S Flip-Flop, Logic Symbol and Switching Waveforms

2-40. When the clocked R-S flip-flop has an inverting dot at the clock pulse input (figure 2-16), the false-going transition of the clock pulse is the transition that is effective in setting or clearing the flip-flop.

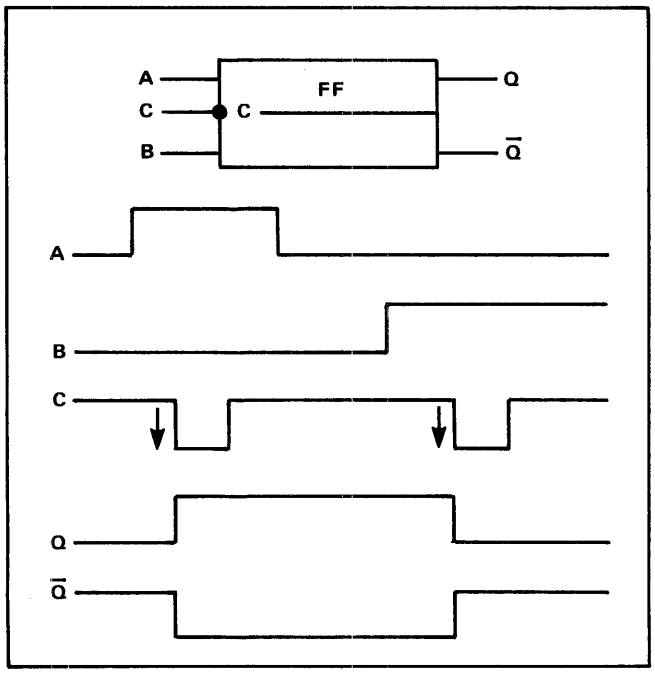


Figure 2-16. R-S Flip-Flop with Inverted Clock Input, Logic Symbol and Switching Waveforms

2-41. In some cases the clocked R-S flip-flop has a set and clear input at the top and bottom of the logic symbol (inputs D and E, figure 2-17). These inputs are independent of the clock pulse, and are referred to as the direct set and direct clear inputs. They function as a result of a true or false level, rather than a true- or false-going transition. An inverting dot at the direct set or clear input indicates that a false level is required to set or clear the flip-flop. No dot indicates that a true level is required. The direct set and clear input is also used on other types of flip-flops.

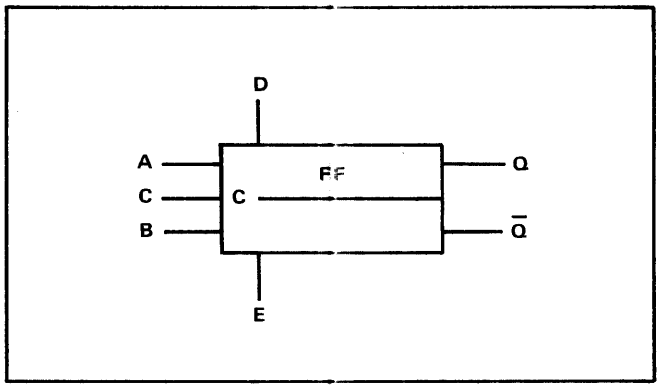


Figure 2-17. Logic Symbol for Clocked R-S Flip-Flop with Direct Set and Direct Clear Inputs

2-42. TOGGLE FLIP-FLOP. The symbol for the toggle flip-flop (figure 2-18) can be recognized by the letter "T" in the symbol. This flip-flop has a single input. If there is no inverting dot at this input, each time the input signal becomes true, outputs Q and $\overline{Q}$ change state. Since two input pulses are required to produce one complete cycle of the output, the toggle flip-flop functions as a divide-by-two element, and is commonly used in groups in counting circuits, with the output of one flip-flop driving the next. Figure 2-18 shows the switching waveforms for one flip-flop.

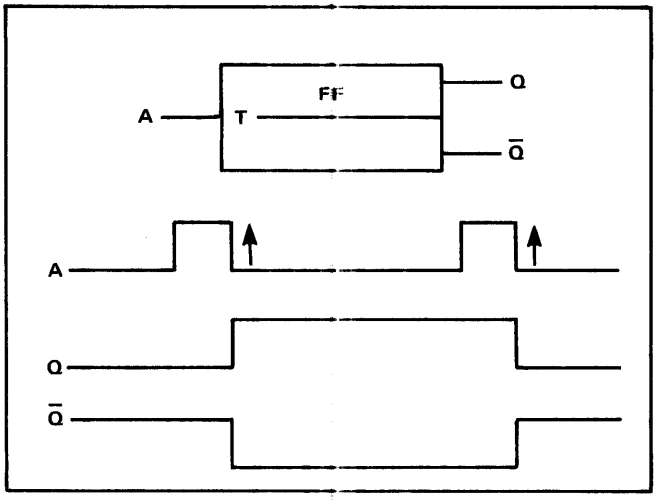


Figure 2-18. Toggle Flip-Flop, Logic Symbol and Switching Waveforms

2-43. If a toggle flip-flop symbol has an inverting dot at the input connection, the flip-flop changes state at the false-going transition of the input. The symbol and waveforms for this type of flip-flop are shown in figure 2-19.

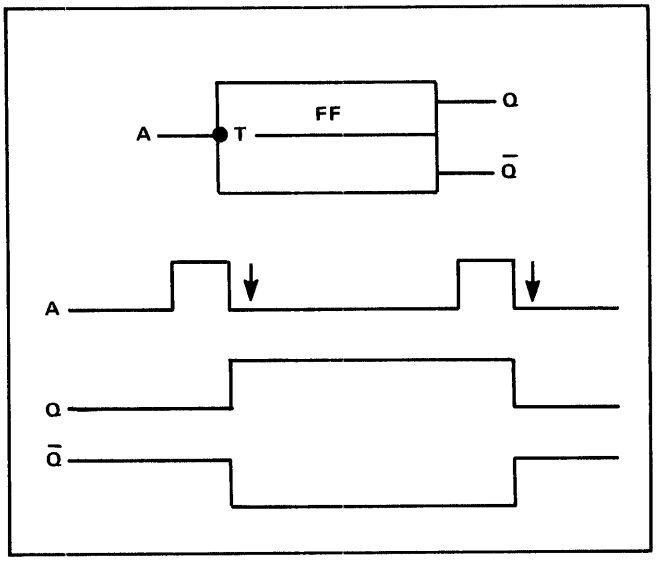


Figure 2-19. Toggle Flip-Flop with Inverted Input, Logic Symbol and Switching Waveforms

2-44. J-K FLIP-FLOP. In the J-K flip-flop, simultaneous true inputs for both set and clear will reverse the existing state of the flip-flop. This requires some method of storing two conditions, the previous output state and the new output state, until the clock pulse time. The set and clear inputs are labeled J and K respectively. In order to provide the necessary output storage the flip-flops are combined in a dual-rank configuration, together with the necessary gates to form a single logic element. For simplicity the internal dual-rank arrangement of the flip-flop is not usually shown (see figure 2-20).

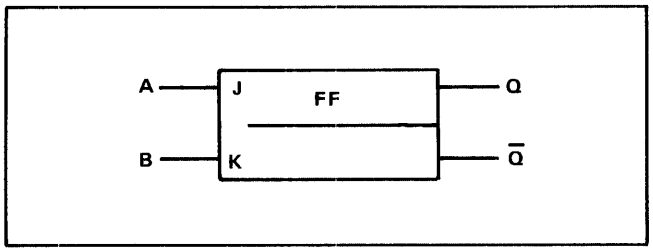


Figure 2-20. J-K Flip-Flop, Logic Symbol

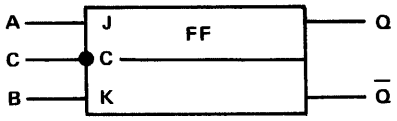
2-45. CLOCKED J-K FLIP-FLOP. The clocked J-K flip-flop (figure 2-21) is similar to the clocked R-S flip-flop. However, simultaneous set and clear inputs to the J-K flip-flop are permissible. Under these conditions, the J-K flip-flop changes its state at the occurrence of each true-going clock pulse transition. With an inverting dot at the clock pulse input, the flip-flop changes state at the false-going clock pulse transition. If both J and K inputs are true when the clock pulse occurs, the flip-flop will toggle.

2-46. The J-K flip-flop can also be operated with one true input and one false input. It then functions in the same manner as the clocked R-S flip-flop.

2-47. Figure 2-21 includes a state table showing operation of the J-K flip-flop. Note that with both inputs true at the time of clock pulse transition, the final state of the flip-flop (after clock pulse transition) depends on the state before the transition. With only one input true, the initial state of the flip-flop is immaterial.

2-48. In some cases the J-K flip-flop consists of two separate flip-flops, with the output of one applied to the input of the other. Usually, a single flip-flop logic symbol is used to illustrate this circuit. The clock pulse inverting dot, or the lack of it, indicates the clock pulse transition that affects the output flip-flop of the pair.

2-49. LATCHING FLIP-FLOP. The latching flip-flop (figure 2-22) can be recognized by the letter "L" in the symbol. The flip-flop has a clock input and a data input. Although the logic symbol shows two input-signal connections to the flip-flop, these separate inside the integrated circuit container from a single input to the unit. After separation, one input is inverted (indicated by the inverting dot) before application to the flip-flop proper.



INPUT		INITIAL OUTPUT*		FINAL OUTPUT**	
A	B	Q	$\overline{Q}$	Q	$\overline{Q}$
1	1	0	1	1	0
1	1	1	0	0	1
0	0	Either		No change	
1	0	Either		1	0
0	1	Either		0	1

*Before clock pulse transition
**After clock pulse transition

Figure 2-21. Clocked J-K Flip-Flop, Logic Symbol and State Table

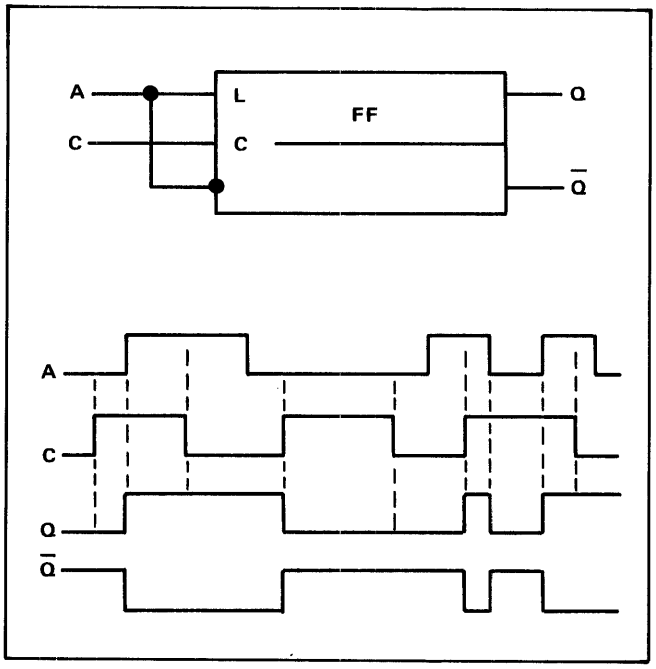


Figure 2-22. Latching Flip-Flop, Logic Symbol and Switching Waveforms

2-50. The set input is responsive to true signal levels at A (figure 2-22), and the clear input is responsive to false signal levels at A. If there is no inverting dot at the clock input, this response takes place when the clock pulse is true. While the clock pulse remains true, the outputs follow any changes in the logic level at A as these changes take place. When the clock pulse becomes false, the flip-flop retains its current state, and no longer responds to changes in the input signal.

2-51. If the clock input connection of a latching flip-flop has an inverting dot, the flip-flop responds to the input signal while the clock pulse is false.

2-52. DELAY FLIP-FLOP. The delay flip-flop (figure 2-23) is identified by a letter "D" inside the flip-flop symbol. This type of flip-flop is similar to the latching flip-flop, except that it responds to the input signal only at the transition of the clock pulse. The delay flip-flop thus does not follow changes in the input signal as these changes take place.

2-53. GATE FLIP-FLOP. The gate flip-flop is made up of two logic gates, connected as shown in figure 2-24. The number of inputs to each gate can vary from that shown. The flip-flop can also be made up of two "nor" gates. The circuit may have a set output, a clear output, or both.

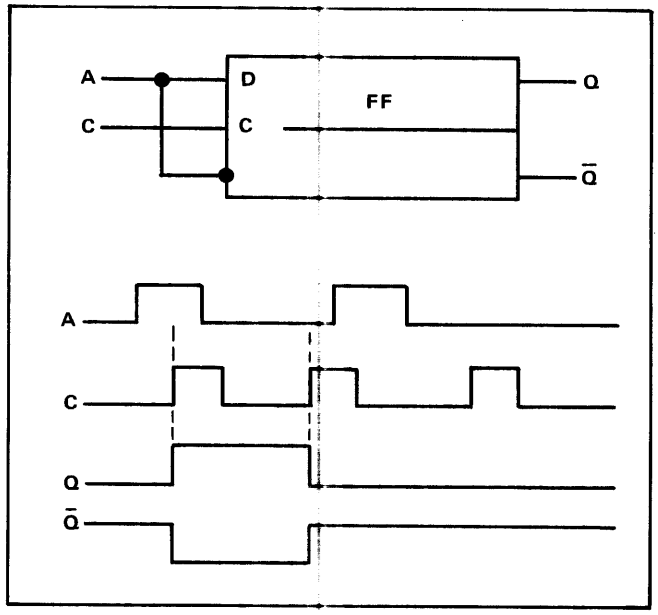


Figure 2-23. Delay Flip-Flop, Logic Symbol and Switching Waveforms

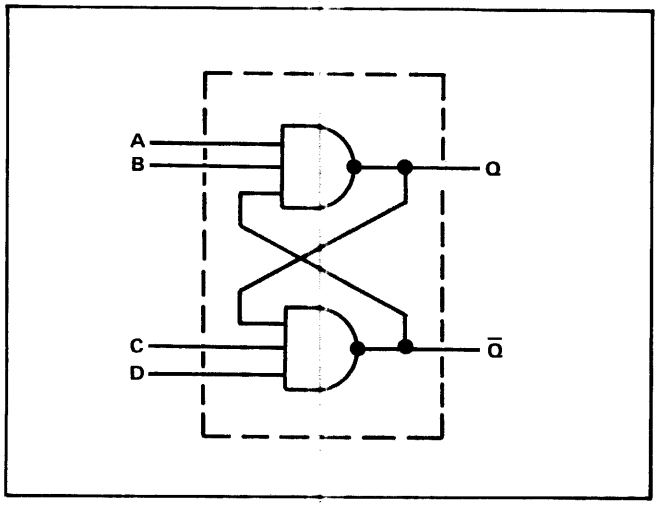


Figure 2-24. "Nand" Gate Flip-Flop, Logic Symbol

2-54. The gate flip-flop functions like an R-S flip-flop, but it has the advantage that it can "or" inputs without the addition of a separate "or" gate. Another reason for use of the gate flip-flop is that if two spare gates are available in integrated circuits on a circuit card, they can be employed as an R-S flip-flop without the need to add another integrated circuit to the card.

2-55. If the flip-flop is made up of two "nand" gates, as in figure 2-24, it is set by a false input at either A or B. Similarly, it is cleared by a false input at C or D. When the flip-flop is in the quiescent state (not undergoing transition), the inputs at A, B, C, and D are all true.

2-56. A "nor" gate flip-flop is illustrated in figure 2-25. In this type of flip-flop all inputs are false when the device is in the quiescent state. A true input at A sets the flip-flop, and a true input at B clears it. The outputs cross in the illustration in order to align the set and clear inputs with the set and clear outputs, respectively.

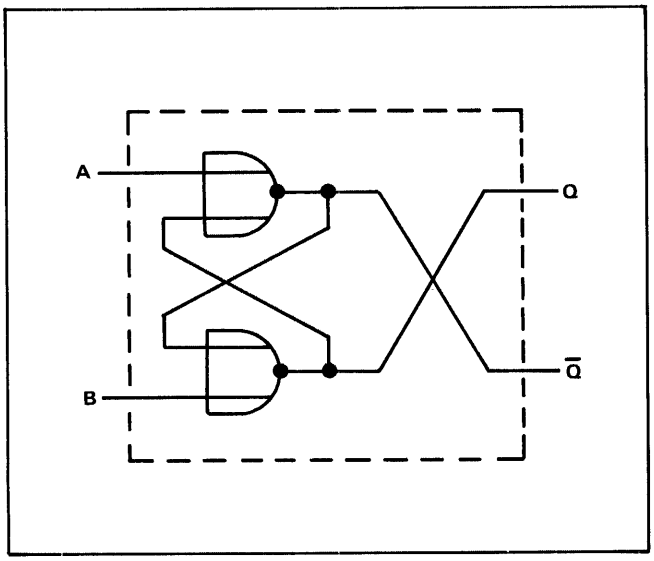


Figure 2-25. "Nor" Gate Flip-Flop, Logic Symbol

2-57. In most circuits using the "nand" or "nor" gate flip-flop, input signals are such that the flip-flop does not receive a set and clear input signal simultaneously. If circuit design does permit this to occur, both the set and the clear output are true for the duration of the condition. The eventual state of the flip-flop is determined by the input that remains longest in the activating condition.

2-58. SCHMITT TRIGGER CIRCUIT.

2-59. The Schmitt trigger circuit (figure 2-26) can be identified by the letters "ST" appearing in the logic-diagram symbol. Like the various types of flip-flop, this circuit is a two-state device which does not perform a Boolean function. It serves for level sensing or signal squaring. It may have a set output, a clear output, or both.

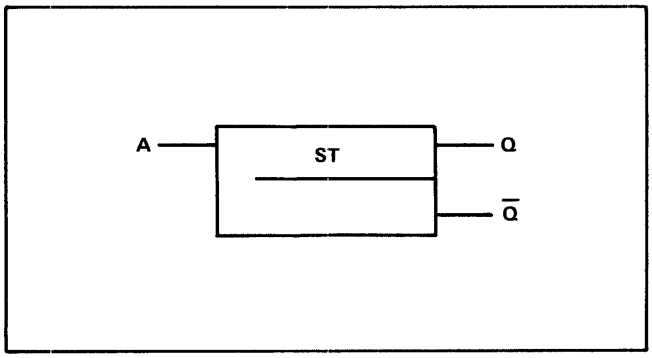


Figure 2-26. Schmitt Trigger Circuit, Logic Symbol

2-60. When the input voltage at A is below a certain level, the Schmitt trigger is in the clear state. When the input voltage rises above the reference level, the trigger assumes the set state. Circuit constants establish the reference level.

2-61. Switching between states takes place rapidly, and the Schmitt trigger is therefore useful for squaring signals that have poor rise and fall times. It can produce a square wave from a sine wave. Other uses of the Schmitt trigger are voltage level restoration, and detection of the rise of the input signal above a given level.

2-62. ONE-SHOT MULTIVIBRATOR.

2-63. The one-shot multivibrator (figure 2-27) is a monostable switching element, used to produce a pulse of predetermined duration. The device is triggered into its unstable state by an external signal. It returns to the stable state after a time interval determined by circuit constants.

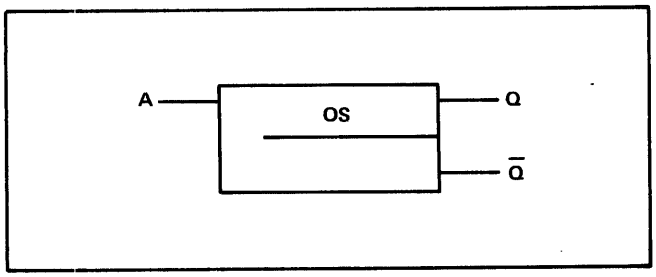


Figure 2-27. One-Shot Multivibrator, Logic Symbol

2-64. If there is no inverting dot at the input, triggering is accomplished when input A undergoes a true-going transition. If there is an inverting dot, a false-going transition is required.

2-65. The one-shot multivibrator may have a set output, a clear output, or both.

2-66. The symbol for the one-shot multivibrator is always drawn with the orientation shown in figure 2-27, with the input at the left and the output or outputs at the right.

2-67. FREE-RUNNING MULTIVIBRATOR.

2-68. The free-running multivibrator (figure 2-28) can be distinguished by the letters "MV" appearing in the symbol. This device produces trains of complementary pulses at Q and $\overline{Q}$. Pulse width is determined by circuit constants.

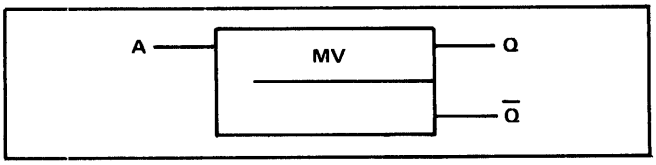


Figure 2-28. Free-Running Multivibrator, Logic Symbol

2-69. In some instances a control signal is applied to the free-running multivibrator. If there is no inverting dot at the signal input to the symbol, the multivibrator runs when the control signal is true, and stops when the signal is false. When it is stopped, the multivibrator is in the clear condition. If there is an inverting dot at the control signal input, a false input is required to bring the multivibrator into operation. This type of multivibrator is in the set condition when it is not running.

2-70. Figure 2-29 shows typical waveforms for a controlled free-running multivibrator that runs when the control signal is true. The true and false portions of the output waveforms need not be of equal duration.

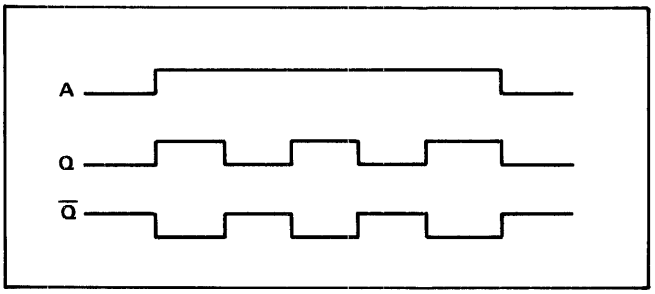


Figure 2-29. Input and Output Waveforms of Controlled Free-Running Multivibrator

2-71. The symbol for the free-running multivibrator is always drawn with the orientation shown in figure 2-28, with the input (if any) at the left, and the output or outputs at the right.

2-72. AMPLIFIER.

2-73. The symbol for an amplifier is shown in figure 2-30. A differential amplifier is illustrated in figure 2-31. Like gates, these symbols may be shown in any of four positions.

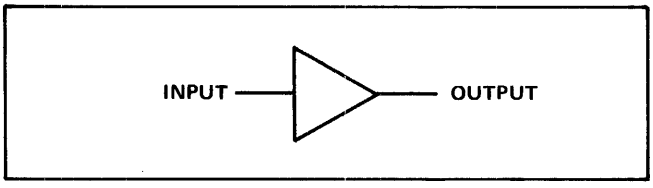


Figure 2-30. Amplifier, Logic Symbol

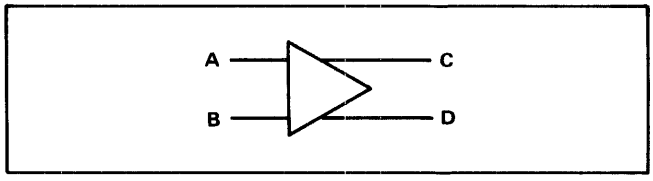


Figure 2-31. Differential Amplifier, Logic Symbol

2-74. In most instances, the amplifier symbol has a non-binary input. A circuit which restores the voltage level of a binary input, or which furnishes a low-impedance output from a binary input, is indicated by a one-input gate symbol.

2-75. An inverting dot at the output of an amplifier symbol indicates that the amplifier inverts the input signal.

2-76. Figure 2-32 is the symbol for a phase splitter.

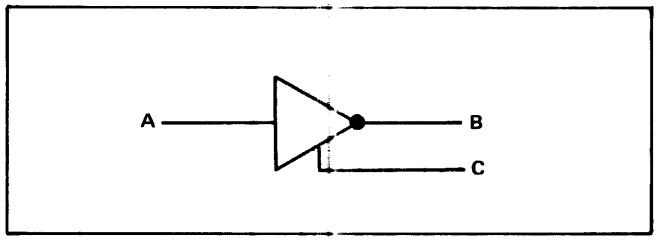


Figure 2-32. Phase Splitter, Logic Symbol

2-77. CAPACITIVE COUPLING.

2-78. Capacitive coupling to a logic element is indicated by an arrow, as shown in figure 2-33. When used with a gate or multivibrator, this type of coupling results in response only to a change in the logic level. Since the clock pulse input to multivibrators always uses capacitive coupling, the arrow is omitted from this type of input.

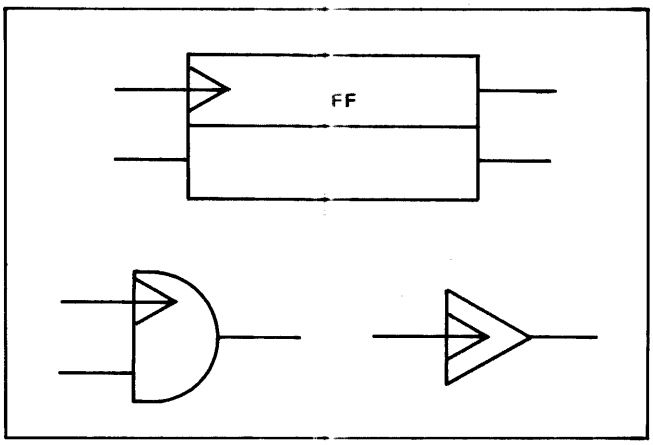


Figure 2-33. Capacitive Coupling

2-79. MULTIPURPOSE LOGIC SYMBOL.

2-80. The "multipurpose" logic symbol is used to indicate a logic function that has not received a standardized logic symbol. The multipurpose symbol is also used to depict multiple logic elements that act together to perform a single/overall logic function such as decoding, data storage, or counting. The symbol shown in figure 2-34 may be of varying proportions (most commonly 2:1 or 1:2), but

retangular in shape. The symbol should include a descriptive name indicating the overall logic function performed. All active inputs should be labeled to indicate the effect on the overall function. Other descriptive information may be included as needed.

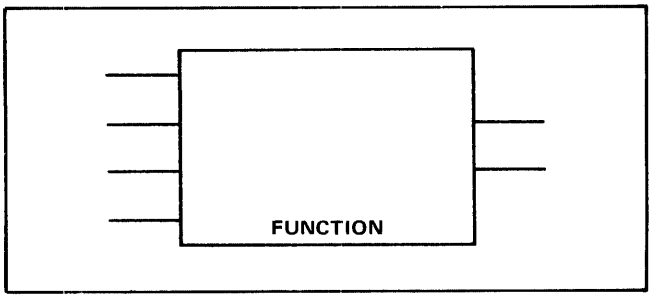


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Figure 2-34. Multipurpose Logic Symbol

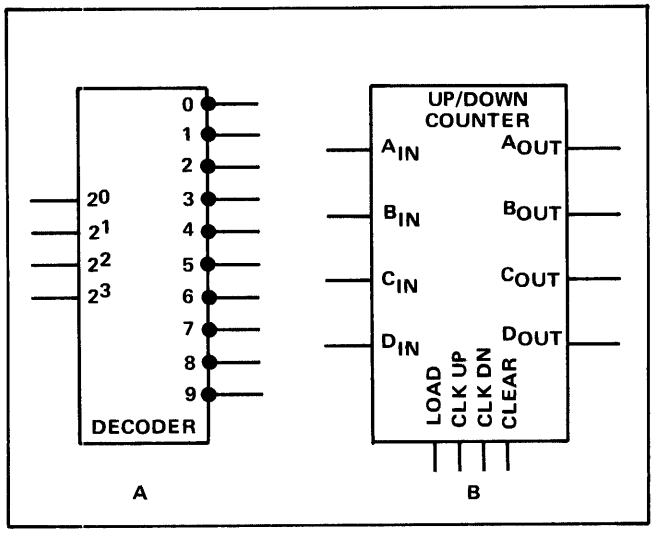
2-81. Examples of nonstandard symbols are given in figure 2-35. Figure 2-35a shows a binary to octal decoder. Figure 2-35b shows a 4-bit up/down counter.

2-82. INTEGRATED CIRCUIT CHARACTERISTICS AND DIAGRAMS.

2-83. Contained in table 2-1 is a list of integrated circuit operating characteristics. This list of characteristics is keyed to the integrated circuit diagrams illustrated in figure 2-36. The circuit diagrams are shown in numerical order by Hewlett-Packard part number. Each circuit diagram has a characteristic number which identifies a particular operating characteristic in table 2-1.

2-84. Refer to any accompanying text, notes, or characteristic information concerning the operation of nonstandard logic elements.

2-85. For additional information on the operation of selected nonstandard integrated circuits refer to figure 2-37. The integrated circuits are in numerical order by Hewlett-Packard part number. The typical schematic representation of each circuit is followed by a brief description of circuit operation.



2039-53

Figure 2-35. Nonstandard Logic Symbols

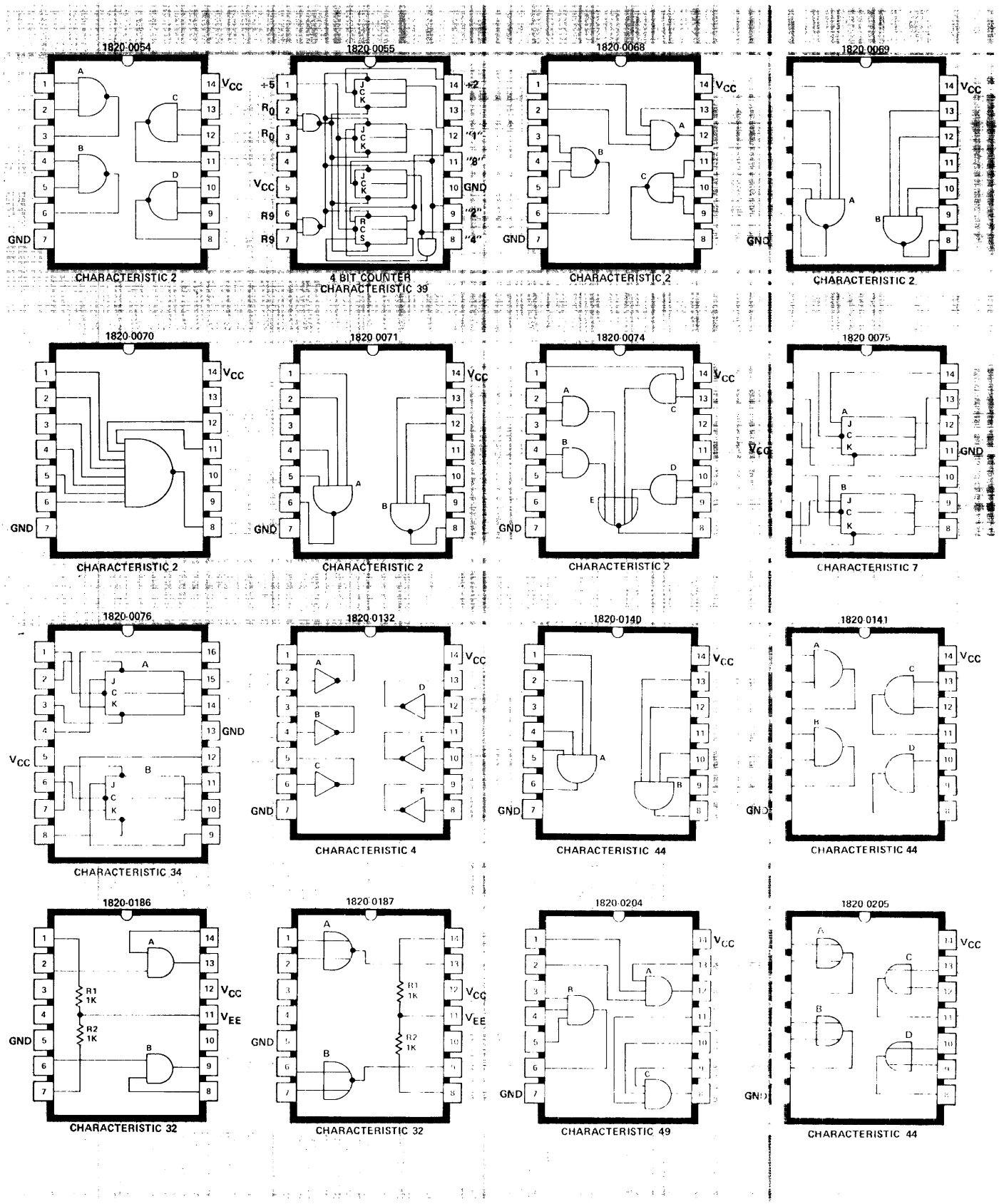


Figure 2-36. Integrated Circuit Diagrams (Sheet 1 of 7)

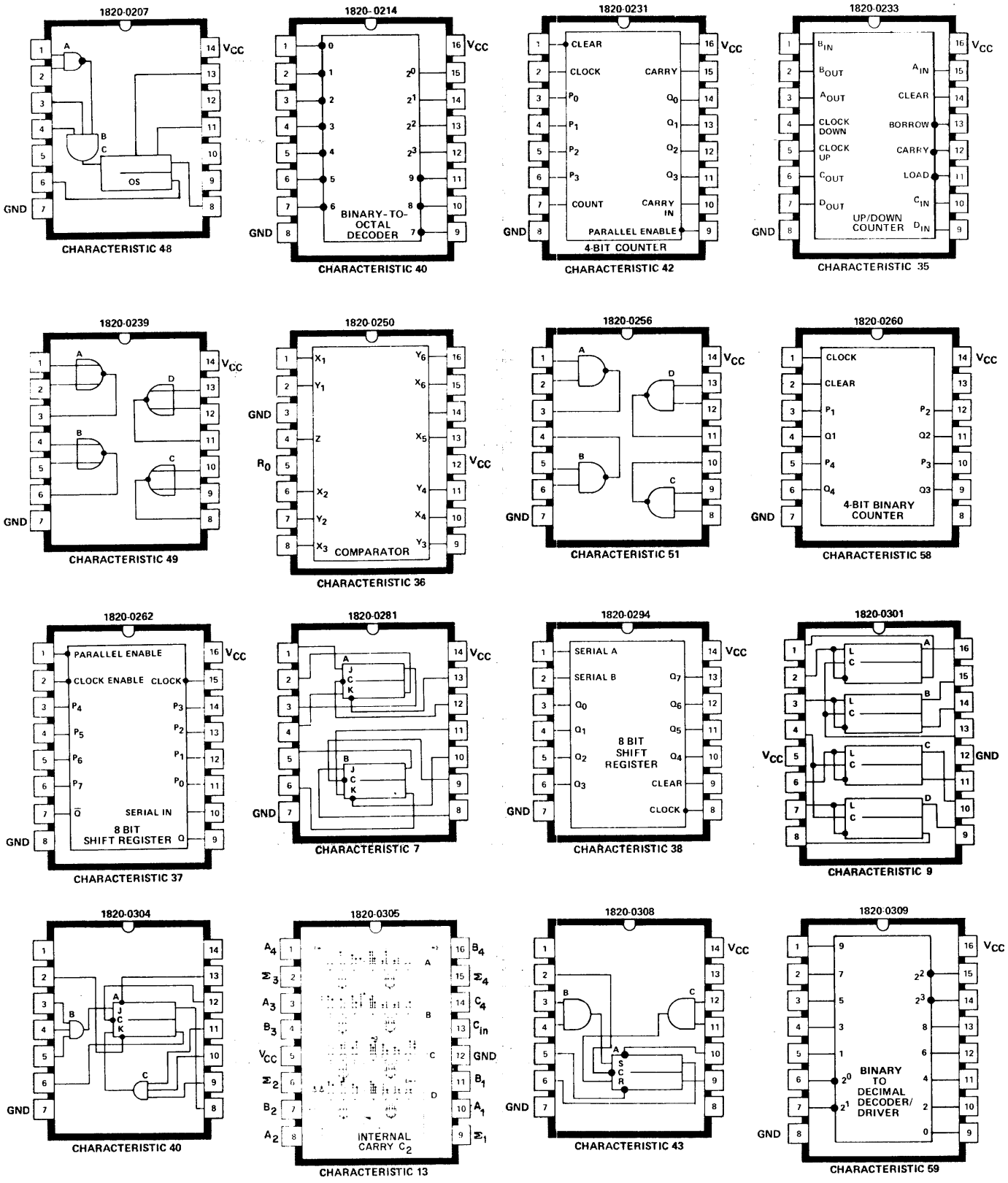


Figure 2-36. Integrated Circuit Diagrams (Sheet 2 of 7)

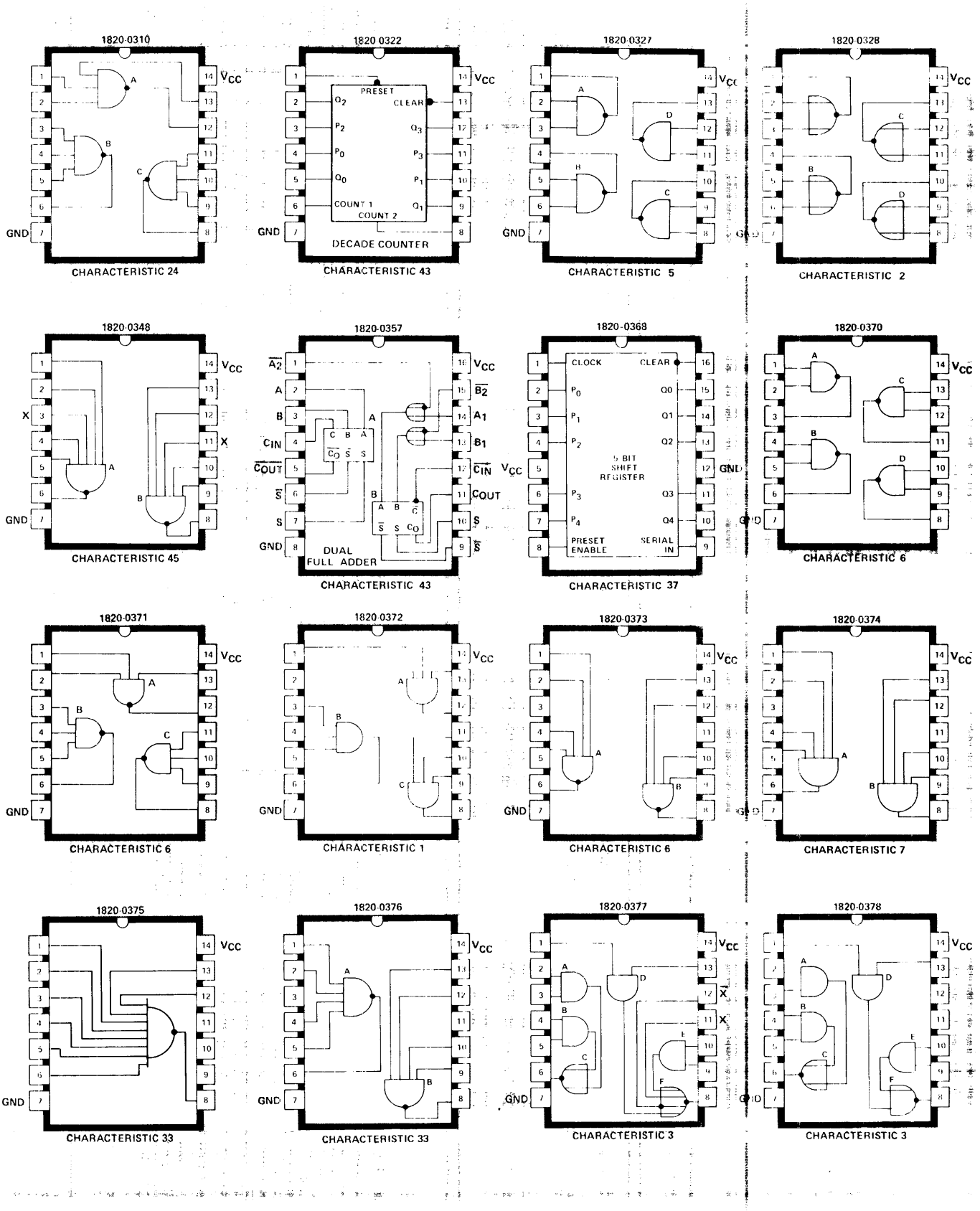


Figure 2-36. Integrated Circuit Diagrams (Sheet 3 of 7)

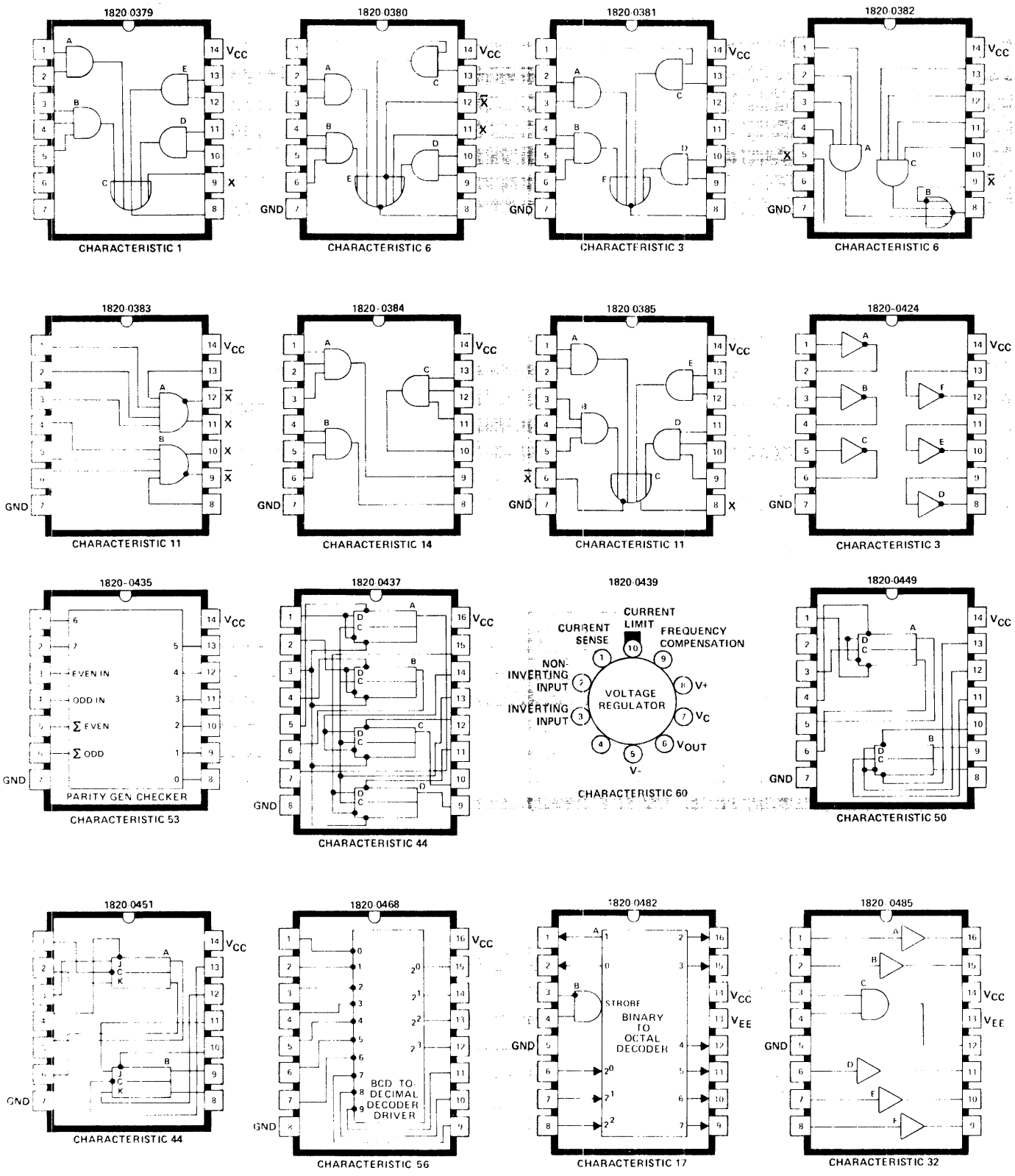


Figure 2-36. Integrated Circuit Diagrams (Sheet 4 of 7)

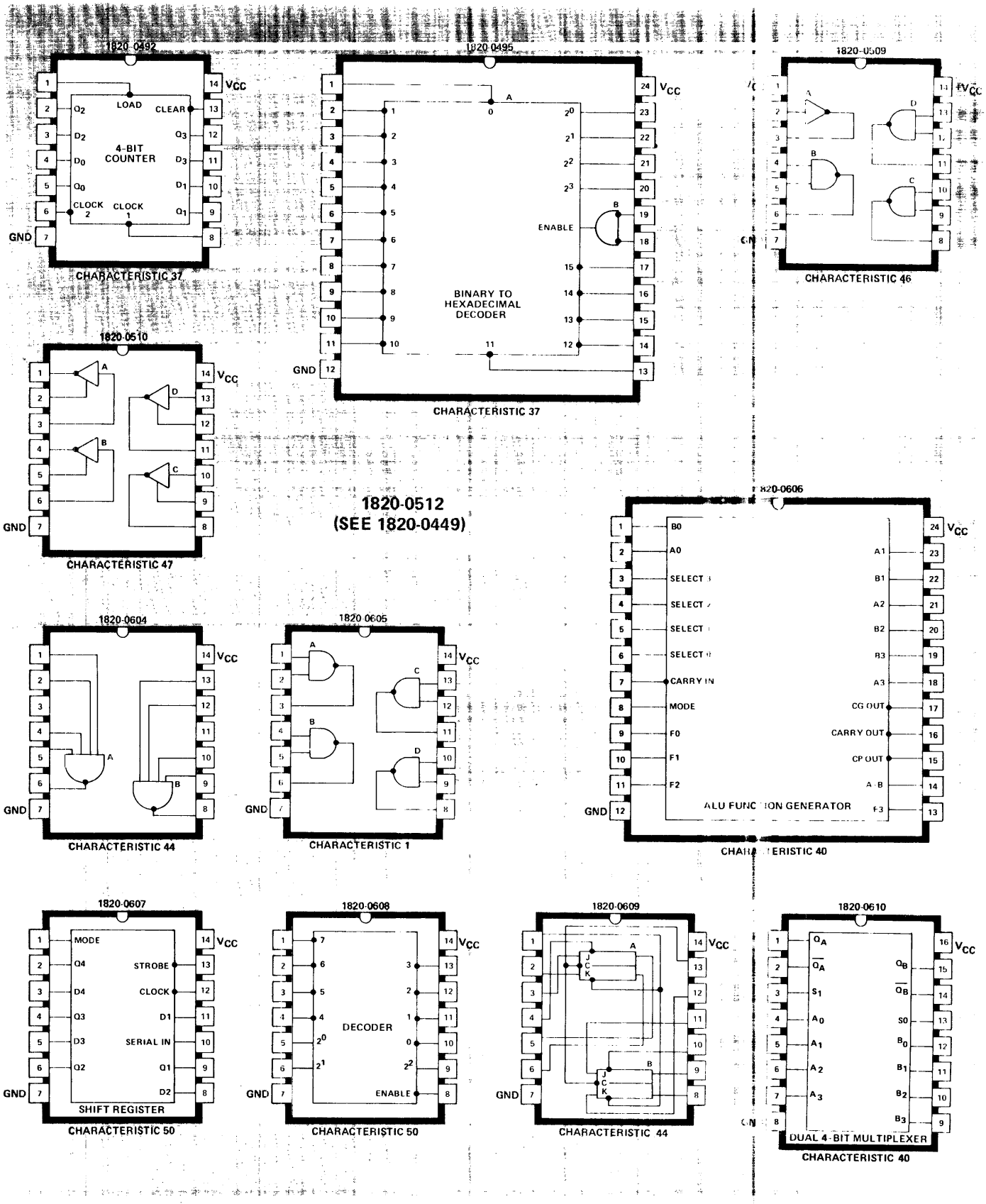


Figure 2-36. Integrated Circuit Diagrams (Sheet 5 of 7)

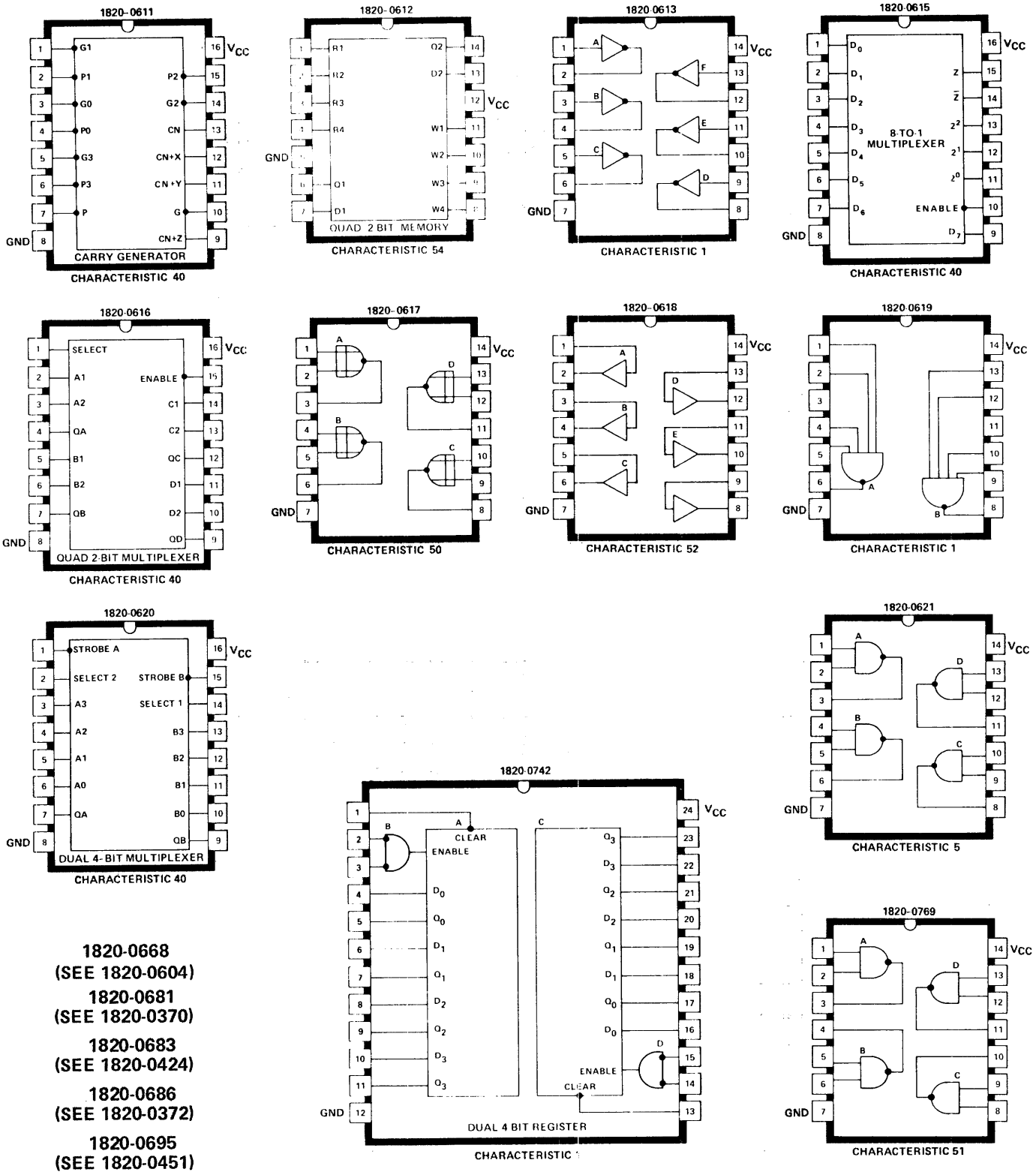


Figure 2-36. Integrated Circuit Diagrams (Sheet 6 of 7)

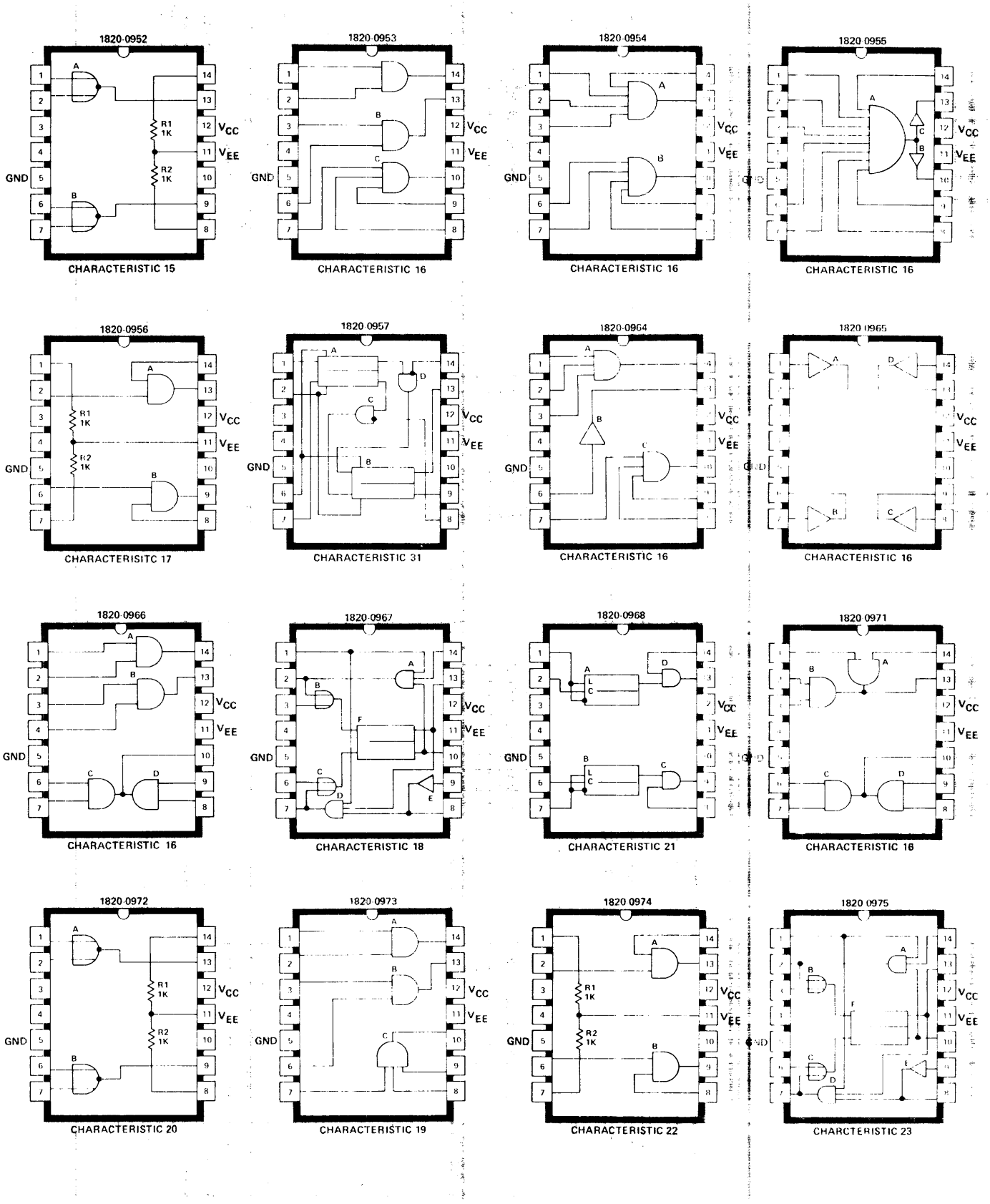


Figure 2-36. Integrated Circuit Diagrams (Sheet 7 of 7)

Table 2-1. Integrated Circuit Characteristics

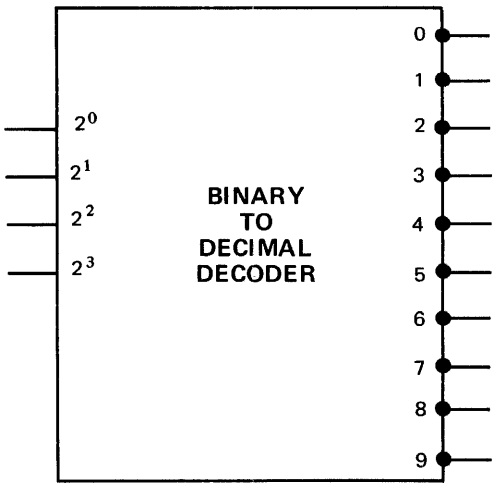
CHARACTERISTIC	INPUT LEVEL		OUTPUT LEVEL		OPEN INPUT ACTS AS:	MAXIMUM PROPAGATION DELAY	
	LOGIC 1 (VOLTS, MIN)	LOGIC 0 (VOLTS, MAX)	LOGIC 1 (VOLTS, MIN)	LOGIC 0 (VOLTS, MAX)		TO LOGIC 1 (NANOSECONDS)	TO LOGIC 0 (NANOSECONDS)
1	2.0	0.8	2.4	0.4	Logic 1	15	15
2	2.0	0.8	2.4	0.4	Logic 1	29	15
3	2.0	0.8	2.4	0.4	Logic 1	12	10
4	1.9	0.8	2.4	0.45	Logic 1	15	13
5	2.0	0.8	(12)	0.4	Logic 1	45	15
6	2.0	0.8	2.4	0.4	Logic 1	10	10
7	2.0	0.8	2.4	0.4	Logic 1	50(2)	50
8	2.0(3)	0.8	2.4	0.4	Logic 1	35	50
9	2.0(4)	0.8	2.4	0.4	Logic 1	40	25
10	2.0	0.8	Output ON results in a max 0.4		Logic 1	34(1)	20(1)
11	2.0	0.8	across X & $\overline{X}$		Logic 1	17(1)	13(1)
12	2.0	0.8	2.4(5)	0.4	Logic 1	35	30
13	2.0(6)	0.8	2.4	0.4	Logic 1	55	60
14	2.0	0.8	1.0	0.0	Logic 1	19(1)	19(1)
15	1.25	0.5	2.35	-0.36	Logic 0	14	12
16	1.8	0.0	1.5	0.22	Logic 0	4.5	4
17	1.25	0.5	2.25	-0.36	Logic 0	18	18
18	1.35(6)	0.5	2.35	-0.36	Logic 0	15 J&K only	25 J&K only
19	1.8	0.0	1.5	0.22	Logic 0	5.5	6
20	1.5	0.4	2.25	-0.3	Logic 0	24	12
21	1.8	0.0	2	-0.16	Logic 0	25	4
22	1.5	0.4	2.2	-0.3	Logic 0	24	24
23	1.5(3)	0.4	2.2	-0.3	Logic 0	30	25
24	2.0	0.9	2.6	0.5	Logic 1	80	30
25	Input voltage = +35.0 max		Output voltage - +25.0 max		Output current - 20.0 ma max, 30 ma min		
26	Voltage gain: 32 db typical						
27	Voltage gain: 40 db typical						
28	2.0	0.9	2.6	0.5	Logic 1	80	40
29	2.0(13)	0.8(14)	2.4	0.4	Logic 1	135	135
30	2.0	0.8	2.4	0.4	Logic 1	10	10
31	1.25	0.5	2.5	2.2	Logic 0	15	30
32	1.25	0.5	2.35	-0.36	Logic 0	8	8
33	2.0	0.8	2.4	0.4	Logic 1	11	11
34	2.0(7)	0.8	2.4	0.4	Logic 1	30	45
35	2.0	0.8	2.4	0.4	Logic 1	(8)	(9)
36	2.0	0.8	4.7	0.5	Logic 1	—	—
37	2.0	0.8	2.4	0.4	Logic 1	30	35

Table 2-1. Integrated Circuit Characteristics (Continued)

CHARACTERISTIC	INPUT LEVEL		OUTPUT LEVEL		OPEN INPUT ACTS AS:	MAXIMUM PROPAGATION DELAY	
	LOGIC 1 (VOLTS, MIN)	LOGIC 0 (VOLTS, MAX)	LOGIC 1 (VOLTS, MIN)	LOGIC 0 (VOLTS, MAX)		TO LOGIC 1 (NANOSECONDS)	TO LOGIC 0 (NANOSECONDS)
38	2.0(11)	0.8	2.4	0.4	Logic 1	40	(10)
39	2.0(15)	0.8	2.4	0.4	–	100	100
40	2.0	0.8	2.4	0.4	–	21	27
41	1.7	0.9	2.4	0.4	–	–	–
42	1.4	0.8	2.4	0.4	–	14	14
43	1.8	0.8	2.4	0.4	Logic 1	45	40
44	1.8	1.1	2.5	0.4	Logic 1	15	15
45	2.0	1.1	(12)	0.5	Logic 1	50	35
46	1.9	0.8	6.0	-6.0	1	50	25
47	3.0	-3.0	2.6	0.45	–	90	80
48	1.9	0.85	2.4	0.45	1	40	–
49	1.8	1.1	2.5	0.4	1	10	10
50	1.8	1.1	2.5	0.4	1	25	25
51	1.8	1.1	(12)	0.45	1	50	35
52	2.0	0.8	(12)	0.7	–	25	15
53	2.0	0.8	2.5	0.4	1	60	68
54	1.25	0.8	2.35	-0.36	–	45 WRITE	25 READ
55	2.0	0.8	Capable of sinking cathode current to 5ma at up to 60 volts.				
56			Not used at this time.				
57	2.0	0.8	2.6	0.5	–	35	45
58	1.8	0.5	2.5	0.5	–	5	5
59	1.0	0.4	Capable of sinking cathode current to 10ma at up to 50 volts.				
60	Input voltage = ±40 max.		Output voltage = 37 volts max.			Output current = 150ma max.	

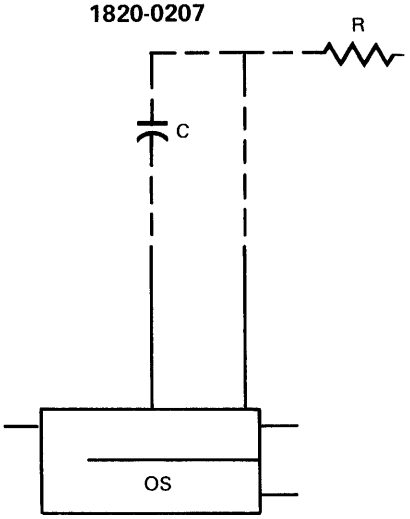
Notes:
(1) Through expanded gate.
(2) Required clock pulse width 20 ns min.; set-clear 25 ns min.
(3) Required pulse widths 30 ns min.
(4) Required pulse widths; clock 30 ns min., data 75 ns min.
(5) BCS0-BCS9 only one output = 0. BCD 9 all outputs = 1.
(6) Required pulse widths 16 ns min.
(7) Required clock pulse widths 20 ns min.
(8) Delay is 27 ns at output and 22 ns at carry/borrow.
(9) Delay is 37 ns at output and 18 ns at carry/borrow.
(10) Delay is 40 ns clock to output and 50 ns clear to output.
(11) Required clock and clear pulse width is typically 25 ns and 30 ns, respectively (45 ns max.). Time serial A and B data must be set up prior to clock pulse, typically 15 ns (30 ns max.).
(12) Level depends on load.
(13) +2.2V for pin 1.
(14) +0.6V for pin 1.
(15) Required input pulse width 50 ns min.

1820-0111



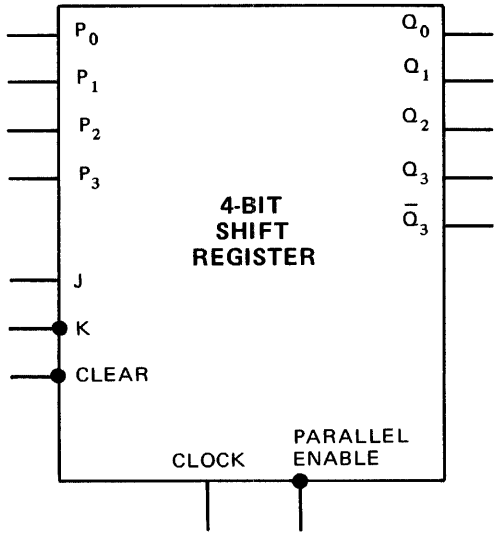
Data on the input lines is interpreted as a binary number. The output line representing the decimal equivalent of the binary input will go low and remain low until the input data is changed. Input data for decimal numbers greater than 9 result in all outputs being high.

1820-0207



The one-shot is triggered by the input signal. This produces a pulse with duration determined by the external RC elements.

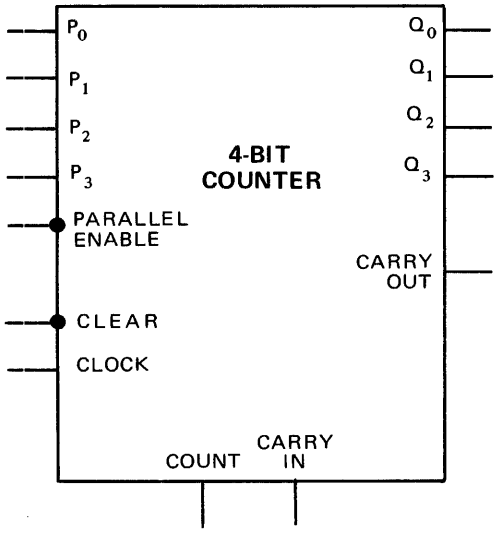
1820-0134



Serial data is entered on the J and K lines. One bit is entered for each clock pulse, most significant bit first. After the clock pulse the data bit will appear at the Q_0 output.

Parallel data is entered by placing the data on the P_0 -- P_3 input lines and applying a negative PARALLEL ENABLE pulse. A negative CLEAR pulse will clear the register.

1820-0231

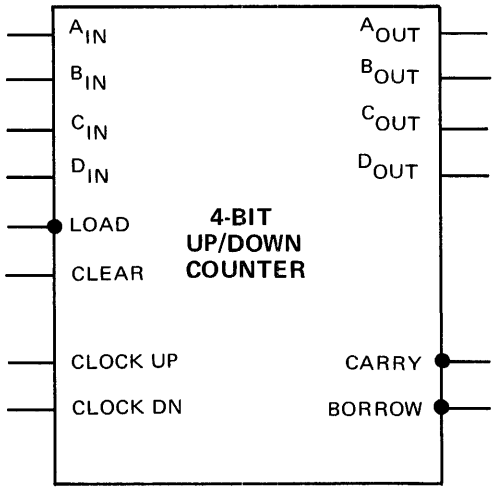


The counter is set from the parallel input lines. When the clock input line goes high and a negative input is applied to the PARALLEL ENABLE line, the counter is loaded. When the clock goes high and both the COUNT and CARRY IN lines go high, the counter will be incremented. The new count will be present on the output lines following the high-to-low transition of the clock.

The CARRY OUT line will be high if the CARRY IN line is high and the counter lines are all high.

Figure 2-37. Nonstandard Integrated Circuit Descriptions (Sheet 1 of 7)

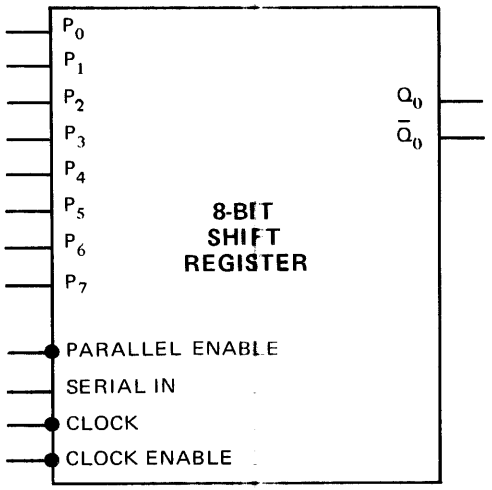
1820-0233



A negative pulse at the LOAD input will set the counter with the data on the input lines. A positive pulse on the CLEAR line will clear the counter. The counter is decremented for each positive-going pulse on the CLOCK DOWN line and incremented for each positive-going pulse on the CLOCK UP line.

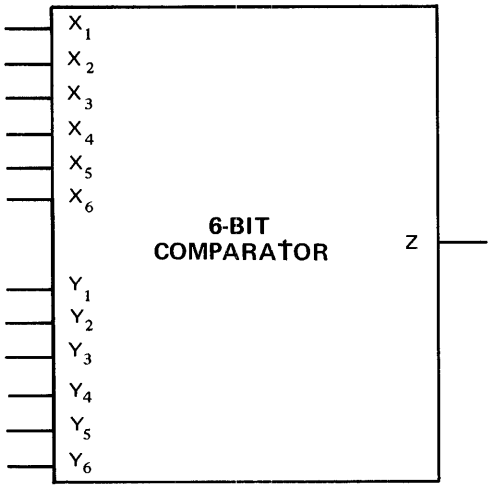
A negative pulse occurs on the CARRY line when the outputs of the counter are all high and a negative pulse on the CLOCK UP line occurs. A negative pulse on the BORROW line occurs when the counter outputs are all low and a negative pulse on the CLOCK DOWN line occurs. When a BORROW pulse is generated the counter is set to all "ones".

1820-0262



A negative pulse on the PARALLEL ENABLE line will load the register with the data on the parallel input lines. A low CLOCK ENABLE line allows negative clock pulses to store serial data, one bit at a time. Each time a clock pulse occurs the data in the register is shifted one bit position.

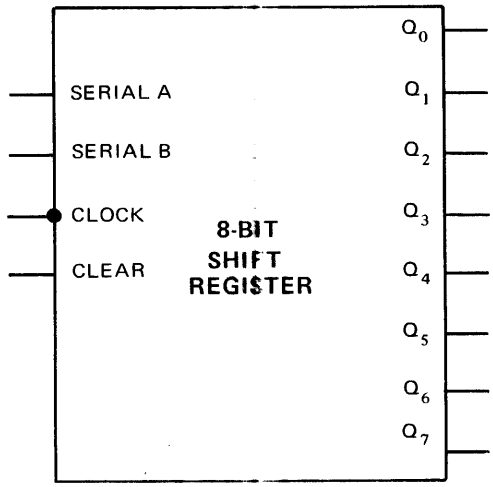
1820-0250



A Z output is generated when each X input is equal to the respective Y input.

$$Z = (\overline{X_1 \oplus Y_1}) \cdot (\overline{X_2 \oplus Y_2}) \cdot (\overline{X_3 \oplus Y_3}) \cdot (\overline{X_4 \oplus Y_4}) \cdot (\overline{X_5 \oplus Y_5}) \cdot (\overline{X_6 \oplus Y_6})$$

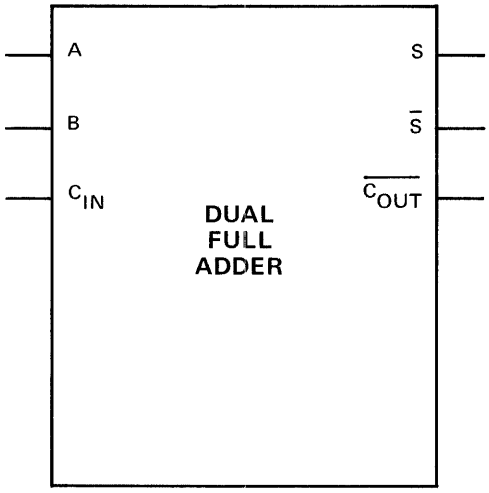
1820-0294



A negative clock pulse loads data at the A or B input lines, most significant bit first. The CLEAR line clears the register.

Figure 2-37. Nonstandard Integrated Circuit Descriptions (Sheet 2 of 7)

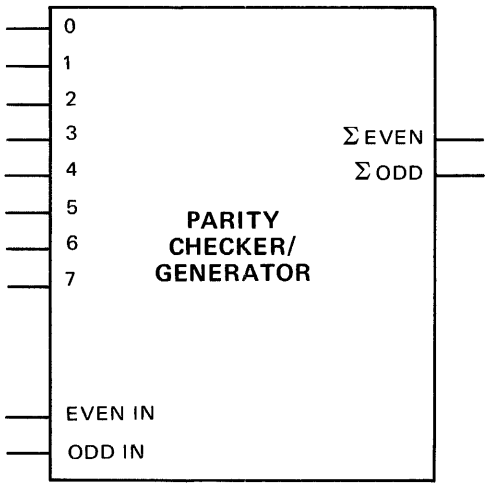
1820-0357



$$C_{out} = \overline{(C_{in} \cdot A) + (C_{in} \cdot B) + (A \cdot B)}$$

$$S = \overline{A} \cdot \overline{B} \cdot \overline{C_{in}} + \overline{A} \cdot B \cdot \overline{C_{in}} + \overline{A} \cdot \overline{B} \cdot C_{in} + A \cdot B \cdot C_{in}$$

1820-0435



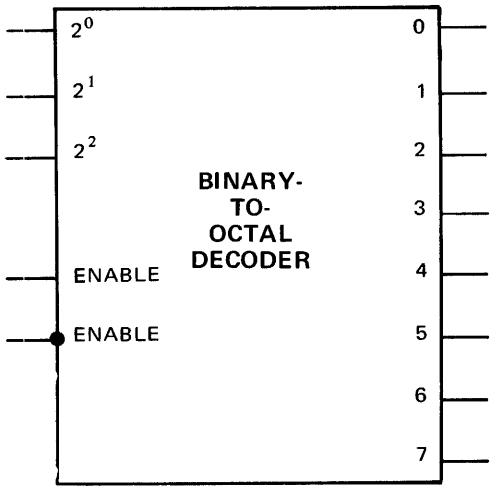
0 THRU 7	EVEN IN	ODD IN	ΣEVEN	ΣODD
EVEN	1	0	1	0
ODD	1	0	0	1
EVEN	0	1	0	1
ODD	0	1	1	0
–	1	1	0	0
–	0	0	1	1

The eight data lines are tested to determine whether the true bits are even or odd. The EVEN and ODD inputs are interpreted as parity from another parity checker. (Note: the EVEN and ODD lines may also be interpreted as the expected parity.) The SUM

1820-0435
PARITY CHECKER/GENERATOR
(Continued)

EVEN and SUM ODD outputs are the combined parity of the two sets of data, refer to the table above. If the parity check mode is used the output of the SUM ODD line will indicate a parity error.

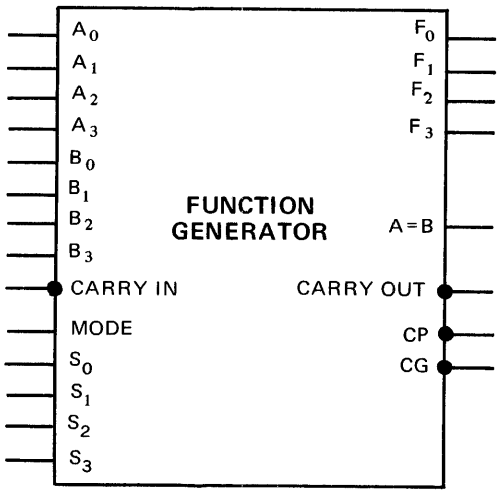
1820-0482



Binary input data is decoded to octal when both ENABLE conditions are met. For a given input only one output line will be high.

Figure 2-37. Nonstandard Integrated Circuit Descriptions (Sheet 3 of 7)

1820-0606



FUNCTION SELECT				OUTPUT FUNCTION	
S3	S2	S1	S0	LOGIC FUNCTIONS	ARITHMETIC OPERATIONS
L	L	L	L	$F = \overline{A}$	F = A
L	L	L	H	$F = \overline{A+B}$	F = A+B
L	L	H	L	$F = \overline{A}B$	$F = A+\overline{B}$
L	L	H	H	F = Logical 0	F = minus 1 (2's complement)
L	H	L	L	$F = \overline{AB}$	$F = A$ plus $A\overline{B}$
L	H	L	H	$F = \overline{B}$	$F = [A+B]$ plus $A\overline{B}$
L	H	H	L	$F = A \oplus B$	F = A minus B minus 1
L	H	H	H	$F = A\overline{B}$	$F = A\overline{B}$ minus 1
H	L	L	L	$F = \overline{A}+B$	F = A plus AB
H	L	L	H	$F = A \oplus B$	F = A plus B
H	L	H	L	F = B	$F = [A+\overline{B}]$ plus AB
H	L	H	H	F = AB	F = AB minus 1
H	H	L	L	F = Logical 1	F = A plus A 1
H	H	L	H	$F = A+\overline{B}$	$F = [A+B]$ plus A
H	H	H	L	F = A+B	$F = [A+\overline{B}]$ plus A
H	H	H	H	F = A	F = A minus 1

The MODE line determines whether an arithmetic or logic operation will be performed (A "1" for logic function and a "0" for arithmetic function). The S lines select the function to be performed according to the table given above. If the function code LHHL is used and the A inputs are the same as the B inputs the A=B output line will be true.

The CP (Carry Propagate) and CG (Carry Generate) lines are used for fast addition operations using a "look ahead" carry function. The CP line will go false when the following conditions are met:

$$CP = F_0 \cdot F_1 \cdot F_2 \cdot F_3$$

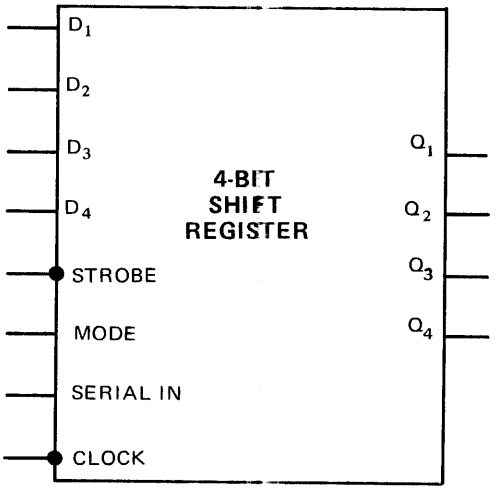
If the CARRY IN line is false and the CP condition is met, then the CARRY OUT line will also go false.

1820-0606
FUNCTION GENERATOR
(Continued)

The CG line will go false if the pack addition results in a true CARRY OUT independant of the CARRY IN. The CT signal is defined as follows:

$$CG = A_3 \cdot B_3 + (A_2 \cdot B_2)(A_3+B_3) + (A_1 \cdot B_1)(A_2+B_2)(A_3+B_3) + (A_0 \cdot B_0)(A_1+B_1)(A_2+B_2)(A_3+B_3)$$

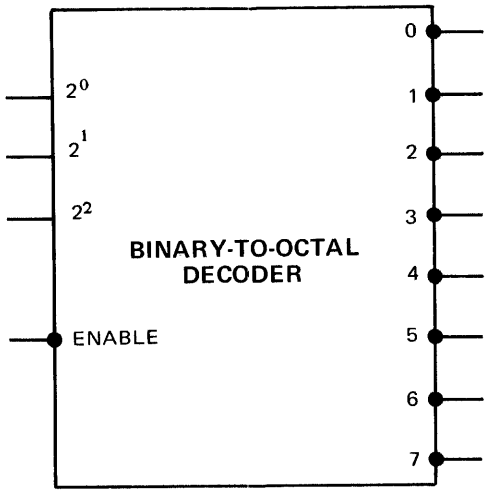
1820-0607



Data may be entered in serial or parallel. To enter serial data the MODE line must be low. Data is placed on the SERIAL Input line and a clock pulse is then used to enter the data. Parallel data entry is accomplished with the MODE line high and the data on the D input lines. The data is then entered by a STROBE pulse. Serial right shifting is accomplished by lowering the MODE line and pulsing the CLOCK line.

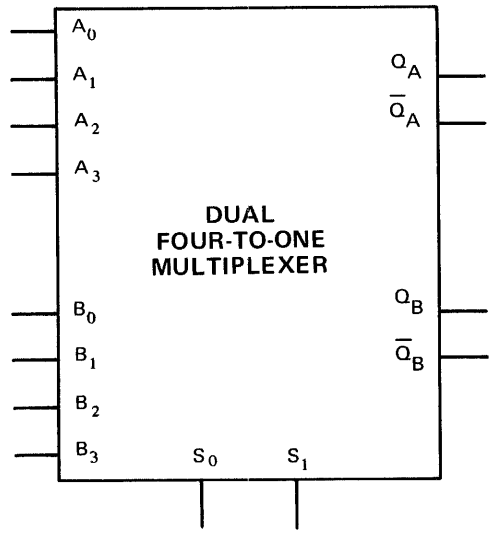
Figure 2-37. Nonstandard Integrated Circuit Descriptions (Sheet 4 of 7)

1820-0608



Binary data is decoded to octal when the ENABLE input is low. For a given input only one output line will be low.

1820-0610



TRUTH TABLE

SELECT LINES		INPUTS				OUTPUTS	
S_0	S_1	A_0	A_1	A_2	A_3	Q_A	$\overline{Q}_A$
0	0	0	X	X	X	0	1
0	0	1	X	X	X	1	0
1	0	X	0	X	X	0	1
1	0	X	1	X	X	1	0
0	1	X	X	0	X	0	1
0	1	X	X	1	X	1	0
1	1	X	X	X	0	0	1
1	1	X	X	X	1	1	0

X = irrelevant

1820-0610
DUAL FOUR-TO-ONE MULTIPLEXER
(Continued)

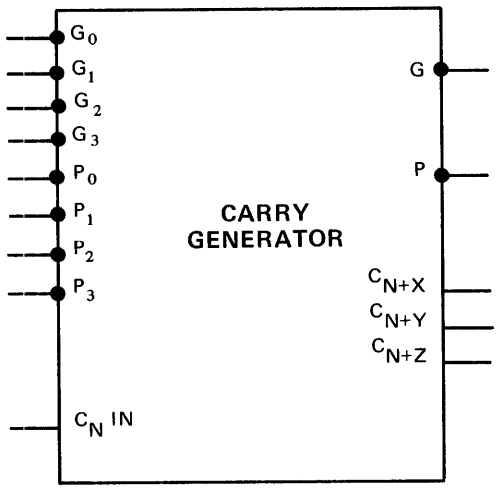
LOGIC EQUATIONS

$$Q_A = A_0 \cdot \bar{S}_0 \cdot \bar{S}_1 + A_1 \cdot S_0 \cdot \bar{S}_1 + A_2 \cdot \bar{S}_0 \cdot S_1 + A_3 \cdot S_0 \cdot S_1$$

$$Q_B = B_0 \cdot \bar{S}_0 \cdot \bar{S}_1 + B_1 \cdot S_0 \cdot \bar{S}_1 + B_2 \cdot \bar{S}_0 \cdot S_1 + B_3 \cdot S_0 \cdot S_1$$

A two bit code selects one out of four bits to be propagated through the multiplexer. The dual output allows both states of the output bit to be used. A truth table of input codes and the resulting bit transfer is given above.

1820-0611



This circuit is used together with 1820-0606 to provide fast addition. The Carry Generator uses CP (Carry Propagate) and CG (Carry Generate) signals from the adder circuits (P_0-P_3 and G_0-G_3) as well as the Carry In signal to the first adder circuit to provide carry in signals to succeeding adder circuits. (C_{N+X}, C_{N+Y}, and C_{N+Z}). This is done without waiting for the "ripple carry" to propagate from adder to adder.

The G and P signals provide inputs to additional look ahead circuits if they are used. The output signals are defined as follows:

$$C_{N+X} = G_0 + P_0 C_N$$

$$C_{N+Y} = G_1 + P_1 G_0 + P_1 P_0 C_N$$

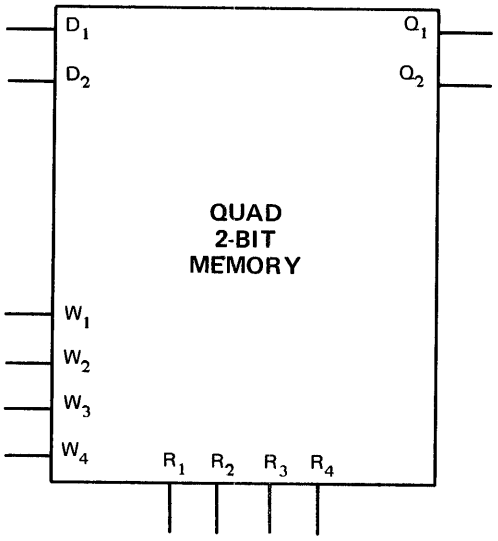
$$C_{N+Z} = G_2 + P_2 G_1 + P_2 P_1 G_0 + P_2 P_1 P_0 C_N$$

$$\bar{G} = \overline{G_3 + P_3 G_2 + P_3 P_2 G_1 + P_3 P_2 P_1 G_0}$$

$$P = \overline{P_3 P_2 P_1 P_0}$$

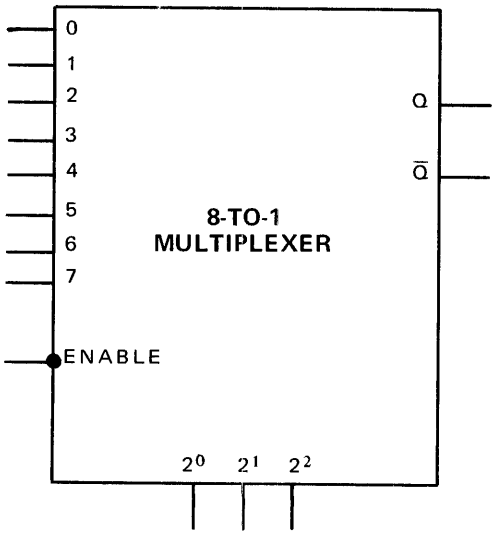
Figure 2-37. Nonstandard Integrated Circuit Descriptions (Sheet 5 of 7)

1820-0612



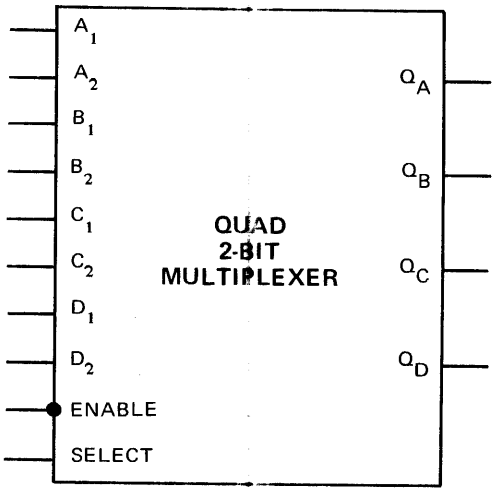
Data is written into the memory by placing the data on the D inputs and pulsing the appropriate W (Write) line. Data is read from the memory by pulsing the desired R (Read) line. The data will then be placed on the Q output lines for the duration of the read signal.

1820-0615



Data on one of the 8 input lines is transferred to the output line when the ENABLE line goes false. The specific input line to be transferred is determined by the three select lines.

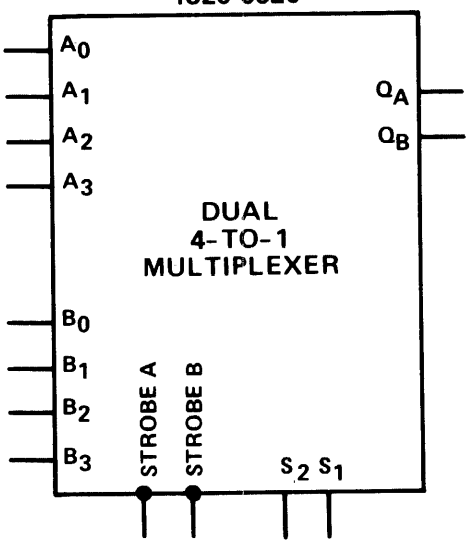
1820-0616



The circuit is used to select one of two four bit data words. The ENABLE must be low to allow the selection. The SELECT line is used to determine which data word will be transmitted. A "0" on the select line will transmit data word 1. A "1" on the select line will transmit data word 2.

Figure 2-37. Nonstandard Integrated Circuit Descriptions (Sheet 6 of 7)

1820-0620



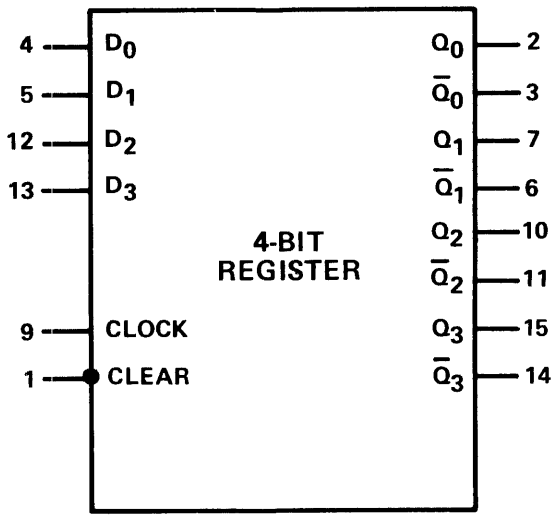
TRUTH TABLE

SELECT INPUTS		DATA INPUTS				STROBE	OUTPUT
S_2	S_1	A0	A1	A2	A3	A	QA
X	X	X	X	X	X	1	0
0	0	0	X	X	X	0	0
0	0	1	X	X	X	0	1
0	1	X	0	X	X	0	0
0	1	X	1	X	X	0	1
1	0	X	X	0	X	0	0
1	0	X	X	1	X	0	1
1	1	X	X	X	0	0	0
1	1	X	X	X	1	0	1

Select inputs S_1 and S_2 are common to both sections.
X = irrelevant

Each part of the multiplexer allows one of four bits to be placed at the output terminal. The data bits are placed on the input lines prior to the multiplexing operation. The code for the desired bit is then placed on the select lines (refer to the table above). The strobe line is used to gate the data bit onto the appropriate output line (A inputs to the Q_A terminal etc.).

1820-0839



Data on the input lines (D_0-D_3) is stored at the low-to-high transition of CLOCK line. A low signal on the CLEAR line will clear the register.

Figure 2-37. Nonstandard Integrated Circuit Descriptions (Sheet 7 of 7)

WIRING INFORMATION

SECTION III

3-1. INTRODUCTION.

3-2. This section contains interconnecting wiring information for the computer. Replace wiring as described in the Installation and Maintenance Manual. Replace leadwires with the same color and size as on the original installation.

3-3. BACKPLANE WIRING.

3-4. Table 3-1 is a functional wiring list for the backplane and includes all connections between the backplane connectors, the front panel (A24), and the power supply (A25). The table is in numerical order of reference numbers which are assigned to the signal mnemonics. The reference numbers and signal mnemonics also appear in the signal index (table 4-1) and on the schematic diagrams in section IV. Refer to paragraph 4-21 for an explanation of how to use these reference numbers.

3-5. Table 3-2 lists the point-to-point wiring between the backplane connectors and front panel connector XA24. The list is in numerical order of connector XA24 pin numbers.

3-6. Table 3-3 lists the point-to-point wiring between the backplane connectors and the power supply and plenum chamber. The list is in alphanumeric order of reference designations. Each connection is listed twice to enable determining leadwire terminations from either end of the leadwire. For example, the wht-blk-red leadwire from A25TB1-1 to XA101-9,10 is also listed as from XA101-9,10 to A25TB1-1.

3-7. Figure 3-1 depicts the wiring between the backplane, the front panel (A24), the power supply (A25), the plenum chamber (A26), and other components. The diagram is not complete in itself but must be used with tables 3-1, 3-2, and 3-3 to determine the point-to-point wiring between the components illustrated.

3-8. POWER SUPPLY WIRING.

3-9. This section contains information about the wiring that interconnects the computer and the power supply. For information concerning wiring that is internal to the power supply, refer to the separate power supply manual.

3-10. PLENUM CHAMBER WIRING.

3-11. Table 3-4 lists the point-to-point wiring between the assemblies and components in the plenum chamber. The table also includes the wiring between the plenum chamber and the backplane, power switch, and power supply. The list is in alphanumeric order of reference designations. Each connection, except to the backplane, power switch, and power supply, is listed twice to enable determining leadwire terminations from either end of the leadwire. For example, the blk leadwire from B1-J1 to TB2-1 is also listed as from TB2-1 to B1-J1.

3-12. The wiring diagram, figure 3-2, supports table 3-4 by identifying the plenum chamber assemblies and components and their connecting points.

3-13. CABLE ASSEMBLY WIRING.

3-14. The cable assemblies used to interconnect the 50-pin connector edges of the cards in the memory section (see figure 4-2) are wired pin-to-pin by 50-wire flat cables. The connector assemblies used to interconnect the 48-pin connector edges of the cards in the memory section are also wired pin-to-pin.

Table 3-1. Backplane, Functional Wiring List

REF NO.	SIGNAL	CPU									INPUT/OUTPUT													MEMORY												FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
1	AAB					26	78																															1
2	$\overline{\text{AAFF}}$			52			5																															2
3	$\overline{\text{ABF}}$			66	21																																	3
4	ADR		68	16																																		4
5	ALU0				13	58	79																															5
6	ALU14				38	22																																6
7	ALU15				35	21	77																															7
8	ALX14				41	7	3																															8
9	ALX16				9	23	17																															9
10	AR0				36	45																																10
11	$\overline{\text{ARS}}$				84		18																															11
12	$\overline{\text{ARSS}}$				33		75																															12
13	BAFF			43	32		74																															13
14	$\overline{\text{CIN}}$				14	41	81																															14
15	$\overline{\text{CJMP}}$	60			62																																	15
16	CL		51	13																																		16
17	CLC							10	66	44	21	21	21	21	21	21	21	21	21	21	21	21	21	21														17
18	CLF				76			5	51	24	7	7	7	7	7	7	7	7	7	7	7	7	7	7														18
19	CLK	51				61																																19
20	$\overline{\text{CLK1}}$	72		79																																		20
21	$\overline{\text{CLK2}}$	84			69		31		70																													21
22	$\overline{\text{CLK3}}$ Note 3	(78)		81				(56)	42	76																					(69)						(64)		22
23	CMEFF	70					55																																23
24	CMF0	77						25																															24
25	CMOV	76			61																																	25
26	COND			20	11																																	26
27	$\overline{\text{COUT}}$			50	56	10	11																															27
28	CPEN	52			19																															43		28
29	CR		38	15																																		29
30	CRS							19		82	13	13	13	13	13	13	13	13	13	13	13	13	13	13														30
31	CT3	10							64																													31
32	CW Note 4						(73)			(36)																					(76)						(55)		32
33	$\overline{\text{DECM}}$ Note 5	(42)																													(6)						(60)		33
34	$\overline{\text{DIV}}$			83	58																																	34
35	DTRY			(25)																											(81)						76		35
36	EDT									15	62	62	62	62	62	62	62	62	62	62	62	62	62	62														36
37	EEOP		64	68																																		37
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. ○ Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire. 3. Leadwires are from A1-78 to A24-64 and A7-56 to A107-69.
4. Leadwires are from A6-73 to A107-76 and A9-36 to A24-55. 5. Leadwires are from A1-42 to A107-6 and A1-42 to A24-60.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY												FRONT PANEL	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL •	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
38	ENF	50						4	57	29	46	46	46	46	46	46	46	46	46	46	46	46	46	46															38
39	ENOV				51		83																																39
40	ENRM	58	63																																				40
41	ENSS			61			15																																41
42	EOP	46	65		55																																		42
43	EPRSI							42																													12		43
44	EXTEND				10		82																													22		44
45	FBFF6							31		28																													45
46	FBFF7							28		30																													46
47	FETCH	67			64																																21		47
48	FLAG				23		80																																48
49	FLG1							71									4	4/49	4/49	4/49	4/49	4/49	4/49	4/49															49
50	FLG2							34			4/49	4/49	4/49	4/49	4/49	4/49	49																						50
51	FN0				66	50																																	51
52	FN1				3	46																																	52
53	FN2				4	56																																	53
54	FN3				5	55																																	54
55	$\overline{\text{FRZ}}$	80		35			43																																55
56	HIN (NOTE 3)	65						65	50																												74		56
57	HT6			75				9																															57
58	IAK							14	84		10	10	10	10	10	10	10	10	10	10	10	10	10	10															58
59	IDEM0-3																												5/6										59
60	IDEM4-7																															4/5							60
61	ID0M0 *																										25		10										61
62	ID1M0 *																										27		7										62
63	ID2M0 *																										29		8										63
64	ID3M0 *																										31		9										64
65	ID4M0 *																										33		37										65
66	ID5M0 *																										35		32										66
67	ID6M0 *																										37		33										67
68	ID7M0 *																										41		34										68
69	ID8M0 *																										43		31										69
70	ID9M0 *																										45		46										70
71	ID10M0 *																										49		49										71
72	ID11M0 *																										51		50										72
73	ID12M0 *																										53		61										73
74	ID13M0 *																										55		69										74
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. * Indicates two leadwires per connection. 3. A24-74 pin may also be a source.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY												FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
75	ID14M0 *																										57		70										75
76	ID15M0 *																										59		71										76
77	ID16M0 *																										61		15										77
78	ID0M1 *																										26		14										78
79	ID1M1 *																										28		11										79
80	ID2M1 *																										30		12										80
81	ID3M1 *																										32		13										81
82	ID4M1 *																										34		38										82
83	ID5M1 *																										36		43										83
84	ID6M1 *																										38		41										84
85	ID7M1 *																										42		42										85
86	ID8M1 *																										44		72										86
87	ID9M1 *																										46		68										87
88	ID10M1 *																										50		66										88
89	ID11M1 *																										52		67										89
90	ID12M1 *																										54		65										90
91	ID13M1 *																										56		62										91
92	ID14M1 *																										58		63										92
93	ID15M1 *																										60		64										93
94	ID16M1 *																										62		16										94
95	ID0M2 *																									25			26										95
96	ID1M2 *																									27			19										96
97	ID2M2 *																									29			25										97
98	ID3M2 *																									31			24										98
99	ID4M2 *																									33			53										99
100	ID5M2 *																									35			60										100
101	ID6M2 *																									37			59										101
102	ID7M2 *																									41			58										102
103	ID8M2 *																									43			52										103
104	ID9M2 *																									45			44										104
105	ID10M2 *																									49			51										105
106	ID11M2 *																									51			45										106
107	ID12M2 *																									53			76										107
108	ID13M2 *																									55			73										108
109	ID14M2 *																									57			74										109
110	ID15M2 *																									59			75										110
111	ID16M2 *																									61			17										111
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. * Indicates two leadwires per connection.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY													REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
112	ID0M3 *																									26			20										112
113	ID1M3 *																									28			23										113
114	ID2M3 *																									30			22										114
115	ID3M3 *																									32			21										115
116	ID4M3 *																									34			57										116
117	ID5M3 *																									36			54										117
118	ID6M3 *																									38			56										118
119	ID7M3 *																									42			55										119
120	ID8M3 *																									44			78										120
121	ID9M3 *																									46			79										121
122	ID10M3 *																									50			81										122
123	ID11M3 *																									52			80										123
124	ID12M3 *																									54			84										124
125	ID13M3 *																									56			77										125
126	ID14M3 *																									58			83										126
127	ID15M3 *																									60			82										127
128	ID16M3 *																									62			18										128
129	ID0M4 *																															10		25					129
130	ID1M4 *																															7		27					130
131	ID2M4 *																															8		29					131
132	ID3M4 *																															9		31					132
133	ID4M4 *																															37		33					133
134	ID5M4 *																															32		35					134
135	ID6M4 *																															33		37					135
136	ID7M4 *																															34		41					136
137	ID8M4 *																															31		43					137
138	ID9M4 *																															46		45					138
139	ID10M4 *																															49		49					139
140	ID11M4 *																															50		51					140
141	ID12M4 *																															61		53					141
142	ID13M4 *																															69		55					142
143	ID14M4 *																															70		57					143
144	ID15M4 *																															71		59					144
145	ID16M4 *																															15		61					145
146	ID0M5 *																															14		26					146
147	ID1M5 *																															11		28					147
148	ID2M5 *																															12		30					148
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. * Indicates two leadwires per connection.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY											FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
149	ID3M5 *																															13		32					149
150	ID4M5 *																															38		34					150
151	ID5M5 *																															43		36					151
152	ID6M5 *																															41		38					152
153	ID7M5 *																															42		42					153
154	ID8M5 *																															72		44					154
155	ID9M5 *																															68		46					155
156	ID10M5 *																															66		50					156
157	ID11M5 *																															67		52					157
158	ID12M5 *																															65		54					158
159	ID13M5 *																															62		56					159
160	ID14M5 *																															63		58					160
161	ID15M5 *																															64		60					161
162	ID16M5 *																															16		62					162
163	ID0M6 *																															26			25				163
164	ID1M6 *																															19			27				164
165	ID2M6 *																															25			29				165
166	ID3M6 *																															24			31				166
167	ID4M6 *																															53			33				167
168	ID5M6 *																															60			35				168
169	ID6M6 *																															59			37				169
170	ID7M6 *																															58			41				170
171	ID8M6 *																															52			43				171
172	ID9M6 *																															44			45				172
173	ID10M6 *																															51			49				173
174	ID11M6 *																															45			51				174
175	ID12M6 *																															76			53				175
176	ID13M6 *																															73			55				176
177	ID14M6 *																															74			57				177
178	ID15M6 *																															75			59				178
179	ID16M6 *																															17			61				179
180	ID0M7 *																															20			26				180
181	ID1M7 *																															23			28				181
182	ID2M7 *																															22			30				182
183	ID3M7 *																															21			32				183
184	ID4M7 *																															57			34				184
185	ID5M7 *																															54			36				185
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. * Indicates two leadwires per connection.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU: TIMING AND CONTROL A1	ROM CONTROL A2	MICRO-INSTRUCTION DECODER 1 A3	MICRO-INSTRUCTION DECODER 2 A4	ARITHMETIC/ LOGIC A5	INSTRUCTION REGISTER DECODER A6	I/O CONTROL A7	I/O BUFFER A8	DIRECT MEMORY ACCESS A9	INPUT/OUTPUT: SELECT CODE 25 A10	SELECT CODE 24 A11	SELECT CODE 23 A12	SELECT CODE 22 A13	SELECT CODE 21 A14	SELECT CODE 20 A15	SELECT CODE 17 A16	SELECT CODE 16 A17	SELECT CODE 15 A18	SELECT CODE 14 A19	SELECT CODE 13 A20	SELECT CODE 12 A21	SELECT CODE 11 A22	SELECT CODE 10 A23	MEMORY: X-Y DRIVER/ SWITCH A101	CORE STACK/ SENSE AMPLIFIER A102	CORE STACK/ SENSE AMPLIFIER A103	X-Y DRIVER/ SWITCH A104	INHIBIT DRIVER A105	INHIBIT DRIVER LOAD A106	DATA CONTROL A107	INHIBIT DRIVER A108	X-Y DRIVER/ SWITCH A109	CORE STACK/ SENSE AMPLIFIER A110	CORE STACK/ SENSE AMPLIFIER A111	X-Y DRIVER/ SWITCH A112	FRONT PANEL (OPERATOR OR CONTROLLER) A24	POWER SUPPLY A25	REF NO.
186	ID6M7 *																													56			38				186
187	ID7M7 *																													55			42				187
188	ID8M7 *																													78			44				188
189	ID9M7 *																													79			46				189
190	ID10M7 *																													81			50				190
191	ID11M7 *																													80			52				191
192	ID12M7 *																													84			54				192
193	ID13M7 *																													77			56				193
194	ID14M7 *																													83			58				194
195	ID15M7 *																													82			60				195
196	ID16M7 *																													18			62				196
197	Spare																																				197
198	IEN5							35	79																											24		198
199	$\overline{\text{IMPV}}$	24							68																													199
200	$\overline{\text{INCM}}$	(37)																												(79)						33		200
201	INCP	43				3																																201
202	INM		67	3	7																																	202
203	INT	22						45																														203
204	INT5							66	77																													204
205	IOB0								13		26/35	26/35	26/35	26/35	26/35	26/35	26/35	26/35	26/35	26/35	26/35	26/35	26/35	26/35												71		205
206	IOB1								12		29/38	29/38	29/38	29/38	29/38	29/38	29/38	29/38	29/38	29/38	29/38	29/38	29/38	29/38												70		206
207	IOB2								11		30/41	30/41	30/41	30/41	30/41	30/41	30/41	30/41	30/41	30/41	30/41	30/41	30/41	30/41												68		207
208	IOB3								17		64/45	64/45	64/45	64/45	64/45	64/45	64/45	64/45	64/45	64/45	64/45	64/45	64/45	64/45												72		208
209	IOB4								16		77/42	77/42	77/42	77/42	77/42	77/42	77/42	77/42	77/42	77/42	77/42	77/42	77/42	77/42												54		209
210	IOB5								15		80/51	80/51	80/51	80/51	80/51	80/51	80/51	80/51	80/51	80/51	80/51	80/51	80/51	80/51												53		210
211	IOB6								10		81/53	81/53	81/53	81/53	81/53	81/53	81/53	81/53	81/53	81/53	81/53	81/53	81/53	81/53												63		211
212	IOB7								32		84/52	84/52	84/52	84/52	84/52	84/52	84/52	84/52	84/52	84/52	84/52	84/52	84/52	84/52												61		212
213	IOB8								31		27/54	27/54	27/54	27/54	27/54	27/54	27/54	27/54	27/54	27/54	27/54	27/54	27/54	27/54												32		213
214	IOB9								29		28/56	28/56	28/56	28/56	28/56	28/56	28/56	28/56	28/56	28/56	28/56	28/56	28/56	28/56												34		214
215	IOB10								28		31/58	31/58	31/58	31/58	31/58	31/58	31/58	31/58	31/58	31/58	31/58	31/58	31/58	31/58												46		215
216	IOB11								27		60/55	60/55	60/55	60/55	60/55	60/55	60/55	60/55	60/55	60/55	60/55	60/55	60/55	60/55												44		216
217	IOB12								26		78/57	78/57	78/57	78/57	78/57	78/57	78/57	78/57	78/57	78/57	78/57	78/57	78/57	78/57												14		217
218	IOB13								25		79/61	79/61	79/61	79/61	79/61	79/61	79/61	79/61	79/61	79/61	79/61	79/61	79/61	79/61												16		218
219	IOB14								30		82/65	82/65	82/65	82/65	82/65	82/65	82/65	82/65	82/65	82/65	82/65	82/65	82/65	82/65												20		219
220	IOB15								34		83/74	83/74	83/74	83/74	83/74	83/74	83/74	83/74	83/74	83/74	83/74	83/74	83/74	83/74												18		220
221	IOBI 16										18	18	18	18	18	18	18	18	18	18	18	18	18	18														221
222	IOG			76				43	46	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15												6		222
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. * Indicates two leadwires per connection. 3. ◯ Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT													MEMORY												FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
223	IOG1	83					21	38																														223
224	IOGE							37	83																														224
225	IOI							53	82		24	24	24	24	24	24	24	24	24	24	24	24	24	24													4/80		225
226	IOO			77					78	32	20	20	20	20	20	20	20	20	20	20	20	20	20	20													10		226
227	Spare																																						227
228	IR0		42				35	68																														228
229	IR1		45				36	63																														229
230	IR2		26				56	67																														230
231	IR3		50				34	30																														231
232	IR4		72				62	26																														232
233	IR5		66				70	29																														233
234	IR6		84				69		41																														234
235	IR7		75				75		38																														235
236	IR8		76				57		45																														236
237	IR9		61		54		63		65																														237
238	IR10		83	17			59																																238
239	IR11	9	80	71	24		58		63																														239
240	IR12	3	79				44																																240
241	IR13	7	78				49																																241
242	IR14	5	81				46																																242
243	IR15	12	82				45																																243
244	IRAR	56	52																																				244
245	IRQ1							79							6	33							6	33															245
246	IRQ2							82						6	33							6	33																246
247	IRQ3							78					6	33							6	33																	247
248	IRQ4							80				6	33							6	33																		248
249	IRQ5							83	37		6	33							6	33																			249
250	IRQ6							81			33							6	33																				250
251	IRQ7							84									6	33																					251
252	JMPS	73			46																																		252
253	JMPF			36	49																																		253
254	JSB		69		18																																		254
255	Spare										59	59	59	59	59	59	59	59	59	59	59	59	59	59															255
256	LPE								(76)																						(76)								256
257	LSI				8	24																																	257
258	MBSY			(29)																											(77)						(78)		258
259	MC				20	12																																	259
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. * Indicates two leadwires per connection. 3. ◯ Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT													MEMORY												FRONT PANEL	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
260	MOD0																										3				68								260
261	MOD1																										4				63								261
262	MOD2																									3					55								262
263	MOD3																									4					56								263
264	MOD4																														57			3					264
265	MOD5																														58			4					265
266	MOD6																														54				3				266
267	MOD7																														53				4				267
268	$\overline{\text{MOD0/1}}$																											46			59								268
269	$\overline{\text{MOD2/3}}$																								46						60								269
270	$\overline{\text{MOD4/5}}$																														62		46						270
271	$\overline{\text{MOD6/7}}$																														61					46			271
272	MOD0T/2T																									5	5				80			5	5				272
273	Spare																									5					80								273
274	MPC						13		80																														274
275	$\overline{\text{MPV}}$						4		36																														275
276	$\overline{\text{MPY}}$			59	60																																		276
277	MR0																								35			35			3		35			35			277
278	MR1																								36			36			5		36			36			278
279	MR2																								37			37			8		37			37			279
280	MR3																								33			33			10		33			33			280
281	MR4																								32			32			24		32			32			281
282	MR5																								31			31			23		31			31			282
283	MR6																								49			49			25		49			49			283
284	MR7																								52			52			26		52			52			284
285	MR8																								51			51			27		51			51			285
286	MR9																								53			53			4		53			53			286
287	MR10																								56			56			30		56			56			287
288	MR11																								55			55			32		55			55			288
289	MRTY																								54/57			54/57			84		54/57			54/57			289
290	MSG NOTE 3																									6	(6)				(83)			(6)	6				290
291	MWTY NOTE 4																								50/58			50/(58)			(28)		(50)(58)			50/58			291
292	OVFF				68		8																														51		292
293	P1A	81			65																																		293
294	PEH								69																												52		294
295	PEX	63		27					58																														295
296	PH1A	41							53																												49		296
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. (◯) Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire. 3. Leadwires are from A103-6 to A107-83 and A107-83 to A110-6 and first used on prefix 1449.

4. Leadwires are from A104-58 to A107-28 and A107-28 to A109-50/58 and first used on prefix 1449.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT													MEMORY												FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
297	PH1B	30						12	71																											50		297
298	PH2	28																																		28		298
299	PH3	26																																		30		299
300	PH5			41				13																												56		300
301	PINH Note 3																																			(79)		301
302	PNLA			60	28																															38		302
303	PNLB			72	26																															41		303
304	PNLP			32																																36		304
305	PON Note 4	6						(8)			(66)	66	66	66	66	66	66	66	66	66	66	66	66	66				42			(70)						(67)		305
306	POPIO							23			17	17	17	17	17	17	17	17	17	17	17	17	17	17													65		306
307	Spare																																					307
308	Spare																																					308
309	PRH5/PRL4							41	37	62																												309
310	PRH6/PRL5							51	73																													310
311	PRH11/PRL10																						23	3														311
312	PRH12/PRL11																					23	3															312
313	PRH13/PRL12																				23	3																313
314	PRH14/PRL13																			23	3																	314
315	PRH15/PRL14																		23	3																		315
316	PRH16/PRL15																	23	3																			316
317	PRH17/PRL16																23	3																				317
318	PRH21/PRL20														23	3																						318
319	PRH22/PRL21													23	3																							319
320	PRH23/PRL22												23	3																								320
321	PRH24/PRL23											23	3																									321
~~322~~	~~PRH25/PRL24~~										~~23~~																											~~322~~
323	PRL17							52									3																					323
324	PRSE							22																												7		324
325	PRSI	4																																		13		325
326	PWU							7																											26		TB2-5	326
327	QSI				42	83																																327
328	RB15				74	9																																328
329	$\overline{\text{RBE}}$				22	5																																329
330	RBS1				15	64																																330
331	RBS2				25	62																																331
332	RCIR			33				54																														332
333	RCTR			10			81																															333
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. ○ Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire. 3. Connection is to SIA-8. 4. Leadwires are from A7-8 to A24-67 and A10-66 to A107-70.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY											FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
334	READ	54		(28)	27					31																					(72)						77		334
335	RESET	8	70		30		(9)	20	75																						(82)								335
336	RFE				67		68																																336
337	RIOB			34					61	42																													337
338	RIR0		32				16																																338
339	RIR1		33				14																																339
340	RIR2		28				10																																340
341	RIR3		27				12																																341
342	RIR4		22				22																																342
343	RIR5		23				23																																343
344	RIR6		16				24																																344
345	RIR7		17				26																																345
346	RIR12		58		82																																		346
347	RIR17		57	12																																			347
348	RJMP	75	56																																				348
349	ROM8		15	57																																			349
350	ROM9		18	58																																			350
351	ROM10		24	54																																			351
352	ROM11		25	51																																			352
353	ROM12		37		78																																		353
354	ROM13		36		77																																		354
355	ROM14		35		80																																		355
356	ROM15		34		79																																		356
357	ROM16		14		43																																		357
358	ROM17		13	11																																			358
359	ROM18		8	14																																			359
360	ROM19		7	4																																			360
361	ROM20		3	9																																			361
362	ROM21		4		37																																		362
363	ROM22		5		34																																		363
364	ROM23		6		29																																		364
365	RP9			21		27																																	365
366	RPHI			23		28																																	366
367	RPLO			6		57																																	367
368	RRSB			24	57	35/36																															23		368
369	RSAV	71	41		17																																		369
370	RSP1			10		17																																	370
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. ◯ Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY															REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
371	RSP2			7		15																																	371
372	RSP3			5		13																																	372
373	RSP4			8		11																																	373
374	RSSP	69						46																															374
375	RUN	49									50	50	50	50	50	50	50	50	50	50	50	50	50	50															375
376	RW						74			34																					75						57		376
377	RWCW			31			27																																377
378	SA0																									15	15				13			15	15				378
379	SA1																									18	18				11			18	18				379
380	SA2																									17	17				7			17	17				380
381	SA3																									20	20				9			20	20				381
382	SA4																									19	19				17			19	19				382
383	SA5																									22	22				15			22	22				383
384	SA6																									21	21				19			21	21				384
385	SA7																									63	63				21			63	63				385
386	SA8																									64	64				31			64	64				386
387	SA9																									65	65				33			65	65				387
388	SA10																									66	66				35			66	66				388
389	SA11																									67	67				37			67	67				389
390	SA12																									68	68				41			68	68				390
391	SA13																									69	69				43			69	69				391
392	SA14																									70	70				45			70	70				392
393	SA15																									71	71				49			71	71				393
394	SA16																									72	72				71			72	72				394
395	SAM			62		77																																	395
396	SB0		46			78	32	62	4	15																					16								396
397	SB1		44			58	60	61	1	1																					18								397
398	SB2		29			76	61	60	5	18																					12								398
399	SB3		30			59	33	59	6	13																					14								399
400	SB4		19			52	65	64	7	12																					29								400
401	SB5		20			51	64	57	8	10																					38								401
402	SB6		12			49	67		9	20																					20								402
403	SB7		9			43	66		24	11																					22								403
404	SB8		53			31	52		14	5																					44								404
405	SB9		54			32	51		18	3																					46								405
406	SB10		43			29	54		19	9																					34								406
407	SB11		49			30	53		20	7																					36								407
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. ◯ indicates pins interconnected by a leadwire which is twisted with a grounded leadwire.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY												FRONT PANEL	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/SWITCH	CORE STACK/SENSE AMPLIFIER	CORE STACK/SENSE AMPLIFIER	X-Y DRIVER/SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/SWITCH	CORE STACK/SENSE AMPLIFIER	CORE STACK/SENSE AMPLIFIER	X-Y DRIVER/SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
408	SB12		31			**10**	38		**21**	**8**																					51								408
409	SB13		21			**8**	37		**22**	**4**																					42								409
410	SB14		10			**6**	42		**(23)**	**6**																					(50)								410
411	SB15	14	11		75	**4**	41		**33**	**84**																					52								411
412	SC1				71			**49**	74																												8		412
413	SC5			73				**44**	35																														413
414	SC6							**33**		50																													414
415	SC7							**36**		49																													415
416	SCE	66																																			**11**		416
417	SCF0	68																																			**5**		417
418	SCL0							69		51						16	34							16															418
419	SCL1							70		52					16	34							16	34															419
420	SCL2							72		59				16	34							16	34																420
421	SCL3							73		58			16	34							16	34																	421
422	SCL4							74		60		16	34							16	34																		422
423	SCL5							75		56	16	34							16	34																			423
424	SCL6							76		54	34							16	34																				424
425	SCL7							77		57							16	34																					425
426	SCM0							**16**		55																													426
427	SCM1							**15**		53							14	14/37	14/37	14/37	14/37	14/37	14/37	14/37															427
428	SCM2							**18**		61	14/37	14/37	14/37	14/37	14/37	14/37	37																						428
429	SCO	79																																			**3**		429
430	SCRY	44					**28**																																430
431	SELM	**53**		(22)					60	**35**																					(66)						**42**		431
432	SELT			**30**	**59**					**(41)**																					(74)								432
433	SFC				70			17	**52**		5	5	5	5	5	5	5	5	5	5	5	5	5	5															433
434	SFM			**74**		82																																	434
435	SFS				72			24	**59**		25	25	25	25	25	25	25	25	25	25	25	25	25	25															435
436	SFSB										73	73	73	73	73	73	73	73	73	73	73	73	73	73															436
437	SHIFT			78	**83**																																		437
438	SIOB			**46**					62	**33**																											**75**		438
439	SIR								**56**		32	32	32	32	32	32	32	32	32	32	32	32	32	32															439
440	SKF	17			**16**			**21**			12	12	12	12	12	12	12	12	12	12	12	12	12	12															440
441	SKIP		**77**	84	81		**6**																																441
442	SL1			65	6		**71**																																442
443	SL4				50		**50**																																443
444	Spare										68	68	68	68	68	68	68	68	68	68	68	68	68	68															444
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. [shaded] Shaded pin numbers indicate source of signal. 2. ◯ Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY												FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
445	Spare																																						445
446	SPH1B	31	74																																				446
447	SPH2	34	73						72																														447
448	SPH3	35	55																																				448
449	SPH5			38						46																													449
450	SQM			70		75																																	450
451	SR1			62	12		72																																451
452	$\overline{\text{SRAR}}$	61	60																																				452
453	SRH	74																																					453
454	SRIR	55	62	42	52		76																														62		454
455	SRQ10									72														19															455
456	SRQ11									73													19																456
457	SRQ12									70												19																	457
458	SRQ13									71											19																		458
459	SRQ14									63										19																			459
460	SRQ15									65									19																				460
461	SRQ16									75								19																					461
462	SRQ17									77							19																						462
463	SRQ20									64						19																							463
464	SRQ21									68					19																								464
465	SRQ22									67				19																									465
466	SRQ23									66			19																										466
467	SRQ24									69		19																											467
468	SRQ25									74	19																												468
469	SSCY	62																																					469
470	SSIN	64																																					470
471	STA			69		81																																	471
472	STB			63		79																																	472
473	STC							3	35	43	22	22	22	22	22	22	22	22	22	22	22	22	22	22															473
474	STCLK	36	59	18																																			474
475	STF				73			6	49		9	9	9	9	9	9	9	9	9	9	9	9	9	9															475
476	STI			44			30																																476
477	STORE			53						38																													477
478	STOF			82		84																															73		478
479	$\overline{\text{STP}}$			64		63																																	479
480	STQ			80		73																																	480
481	T3								34	37	11	11	11	11	11	11	11	11	11	11	11	11	11	11															481
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. ◯ Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY											FRONT PANEL	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
482	T4	16							44	80																												482
483	T6			26				58	43	81																										66		483
484	TBS1				45	53																																484
485	TBS2				44	54																																485
486	TBZ					25	19																															486
487	$\overline{\text{WCR1}}$							32		83																													487
488	$\overline{\text{WCR2}}$							27		79																													488
489	WSP1			55		65																																489
490	WSP2			56		67																																490
491	WSP3			45		69																																491
492	WSP4			49		71																																492
493	XT1 NOTE 3																								30/38			30/(38)			(65)		30/(38)			30/38		493
494	XT2 NOTE 4																								29/34			29/(34)			64		29/(34)			29/34		494
495	LOAD																														(67)					(9)		495
496	IEN10							50									8	8	8	8	8	8	8	8/23														496
497	IEN20							55			8	8	8	8	8	8/23																							497
498	T5			37				11	81	26																													498
499	PNLT				63																																35		499
500	UABF	59			31																																		500
501	ZABF	57			53																																		501
502	P1SK	13					29																																502
503	Spare																																						503
504	Spare																																						504
505	Spare																																						505
506	Spare																																						506
507	Spare																																						507
508	Spare																																						508
509	Spare																																						509
510	Spare																																						510
511	Spare																																						511
512	Spare																																						512
513	Spare																																						513
514	Spare																																						514
515	Spare																																						515
516	Spare																																						516
517	Spare																																						517
518	Spare																																						518
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	

NOTES: 1. Shaded pin numbers indicate source of signal. 2. ◯ Indicates pins interconnected by a leadwire which is twisted with a grounded leadwire. 3. Leadwires are from A104-38 to A107-65 and A107-65 to A109-38 and first used on prefix 1449.

4. Leadwires are from A104-34 to A107-64 and from A107-64 to A109-34 and first used on prefix 1449.

Table 3-1. Backplane, Functional Wiring List (Continued)

REF NO.	SIGNAL	CPU									INPUT/OUTPUT														MEMORY											FRONT PANEL (OPERATOR OR CONTROLLER)	POWER SUPPLY	REF NO.
		TIMING AND CONTROL	ROM CONTROL	MICRO-INSTRUCTION DECODER 1	MICRO-INSTRUCTION DECODER 2	ARITHMETIC/ LOGIC	INSTRUCTION REGISTER DECODER	I/O CONTROL	I/O BUFFER	DIRECT MEMORY ACCESS	SELECT CODE 25	SELECT CODE 24	SELECT CODE 23	SELECT CODE 22	SELECT CODE 21	SELECT CODE 20	SELECT CODE 17	SELECT CODE 16	SELECT CODE 15	SELECT CODE 14	SELECT CODE 13	SELECT CODE 12	SELECT CODE 11	SELECT CODE 10	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH	INHIBIT DRIVER	INHIBIT DRIVER LOAD	DATA CONTROL	INHIBIT DRIVER	X-Y DRIVER/ SWITCH	CORE STACK/ SENSE AMPLIFIER	CORE STACK/ SENSE AMPLIFIER	X-Y DRIVER/ SWITCH			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111	A112	A24	A25	
519	Spare																																						519
520	-2V	47/48	←										BUS											47/48	47/48	←				BUS					→	47/48	47/48	TB1-2,3	520
521	-12V										69/70	←						BUS						69/70	73/74	73/74	73/74							73/74	73/74	73/74		TB2-2	521
522	-20V																								75/76	75/76	75/76	75/76	35/36			35/36	75/76	75/76	75/76	75/76		TB2-1	522
523	+4.85V	39/40	←										BUS											39/40	39/40	←				BUS					→	39/40	39/40	TB1-4,5	523
524	+4.85V (lamp)																																				81/82	TB1-4,5	524
525	+12V										43/44	←						BUS						43/44	13/14	13/14	13/14						13/14	13/14	13/14		TB2-3	525
526	+20V																								9/10			9/10		*			9/10			9/10		TB1-1	526
527	+30V										36	36	36	36	36	36	36	36	36	36	36	36	36	36														TB2-4	527
528	GND	1/2	←										BUS											1/2	1/2	←				BUS					→	1/2	1/2	TB1-6,7	528
529	GND	85/86	←										BUS											85/86	85/86	←				BUS					→	85/86	85/86	TB1-6,7	529
530	GND (lamp)																																				83/84	TB1-6,7	530
531	GND																									9/10	9/10				1/2			9/10	9/10			TB1-6,7	531
532	GND (Bus)																													#/85								TB1-6,7	532
533	TSEN1																													51								TB2-7	533
534	TSEN2																													53								TB2-9	534
535	IPU																								81													TB2-6	535

NOTES: 1. Shaded pin numbers indicate source of signal. 2. * All even numbered pins except 2, 40, 48, and 86. 3. # All odd numbered pins except 1, and 33 thru 53.

Table 3-2. Front Panel Connector XA24, Point-to-Point Wiring List

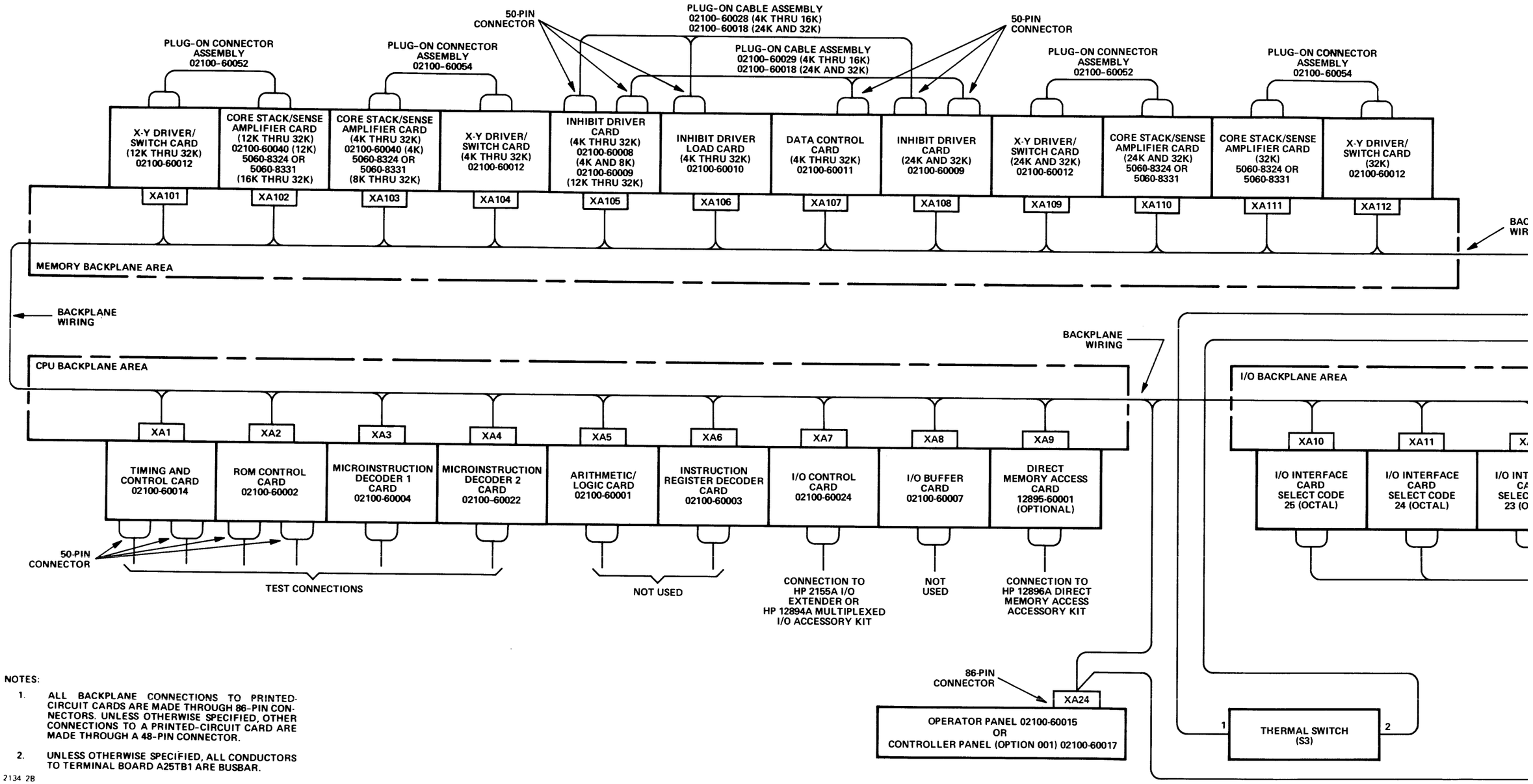
FROM XA24, PIN	TO	FROM XA24, PIN	TO	FROM XA24, PIN	TO
1,2	XA16-1,2	31	NC	62	XA1-74
3	XA1-79	32	XA11-27	63	XA15-53
4	XA7-53	33	XA1-37	64	XA1-78*
5	XA1-68	34	XA11-28	65	XA12-17
6	XA10-15	35	XA4-63	66	XA8-43
7	XA7-22	36	XA3-32	67	XA7-8*
8	XA8-74	37	NC	68	XA15-30
9	XA107-67*	38	XA4-28	69	XA24-86
10	XA8-78*	39,40	XA23-39,40	70	XA16-29
11	XA1-66	41	XA4-26	71	XA16-26
12	XA7-42	42	XA9-35	72	XA16-64
13	XA1-4	43	XA4-19	73	XA9-38
14	XA10-57	44	XA12-55	74	XA8-50
15	NC	45	XA24-2	75	XA9-33
16	XA16-61	46	XA13-31	76	XA3-25
17	NC	47,48	XA23-47,48	77	XA9-31
18	XA8-34	49	XA8-53	78	XA3-29*
19	NC	50	XA7-12	79	S1A-8*
20	XA8-30	51	XA6-8	80	XA24-4
21	XA4-64	52	XA8-69	81,82	XA22-39,40
22	XA4-10	53	XA14-51	83,84	XA17-1,2
23	XA5-36	54	XA14-77	85,86	XA18-1,2
24	XA7-35	55	XA9-36*		
25	NC	56	XA7-13		
26	NC	57	XA9-34*		
27	NC	58	XA1-62		
28	XA1-28	59	XA1-64		
29	NC	60	XA1-42*		
30	XA1-26	61	XA15-52		

* Indicates leadwire which is twisted with a grounded leadwire.

Table 3-3. Power Distribution, Point-to-Point Wiring List

FROM	TO	COLOR
A25TB1-1	XA101-9,10	wht-blk-red
A25TB1-1	XA112-9,10	wht-blk-red
A25TB2-1	XA102-75,76	wht-grn
A25TB2-1	XA111-75,76	wht-grn
A25TB2-2	XA23-69,70	wht-vio
A25TB2-2	XA112-73,74	wht-vio
A25TB2-3	XA23-43,44	wht-red
A25TB2-3	XA112-13,14	wht-red
A25TB2-4	XA112-18	wht-orn
A25TB2-5	XA112-26	wht-blk-brn
A25TB2-6	XA112-22	wht-blu
A25TB2-7	XA106-51	wht-yel
A25TB2-8	S3-2	wht-brn
A25TB2-9	S3-1	wht-blk
A25TB2-9	XA106-53	wht-blk
A26A1E1	XA101-85	blk
A26A1E2	XA103-75	wht-grn
A26A1E3	XA102-73	wht-vio
A26A1E4	XA101-48	vio
A26A1E5	XA101-40	orn
A26A1E6	XA102-14	wht-red
A26A1E7	XA104-10	wht-blk-red
A26A1E8	XA112-18	wht-orn
A26J1	XA112-22	wht-blu
A26TB1-3	S1B-2	wht-yel-grn
A26TB1-4	S1B-6	wht-brn-gra
A26TB1-5	S1B-5	gra
A26TB1-7	S1B-1	wht-red-gra
S1B-1	A26TB1-7	wht-red-gra
S1B-2	A26TB1-3	wht-yel-grn

FROM	TO	COLOR
S1B-5	A26TB1-5	gra
S1B-6	A26TB1-4	wht-brn-gra
S3-1	A25TB2-9	wht-blk
S3-2	A25TB2-8	wht-brn
XA23-43,44	A25TB2-3	wht-red
XA23-69,70	A25TB2-2	wht-vio
XA101-9,10	A25TB1-1	wht-blk-red
XA101-13,14	XA111-13,14	wht-red
XA101-40	A26A1E5	orn
XA101-48	A26A1E4	vio
XA101-73,74	XA110-73,74	wht-vio
XA101-85	A26A1E1	blk
XA102-14	A26A1E6	wht-red
XA102-73	A26A1E3	wht-vio
XA102-75,76	A25TB2-1	wht-grn
XA103-75	A26A1E2	wht-grn
XA104-10	A26A1E7	wht-blk-red
XA106-51	A25TB2-7	wht-yel
XA106-53	A25TB2-9	wht-blk
XA110-73,74	XA101-73,74	wht-vio
XA111-13,14	XA101-13,14	wht-red
XA111-75,76	A25TB2-1	wht-grn
XA112-9,10	A25TB1-1	wht-blk-red
XA112-13,14	A25TB2-3	wht-red
XA112-18	A25TB2-4	wht-orn
XA112-18	A26A1E8	wht-orn
XA112-22	A25TB2-6	wht-blu
XA112-22	A26J1	wht-blu
XA112-26	A25TB2-5	wht-blk-brn
XA112-73,74	A25TB2-2	wht-vio

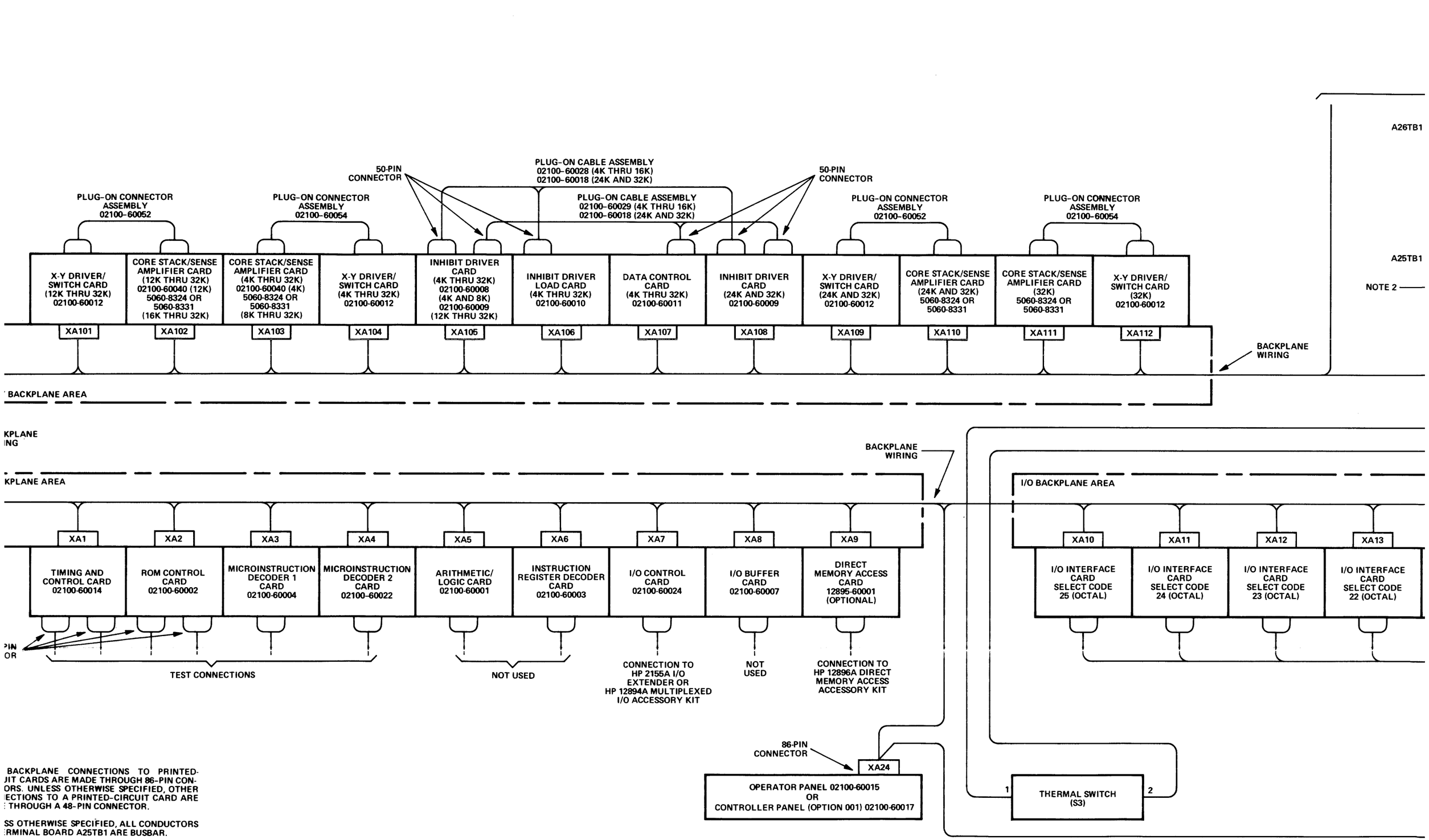


NOTES:

1. ALL BACKPLANE CONNECTIONS TO PRINTED-CIRCUIT CARDS ARE MADE THROUGH 86-PIN CONNECTORS. UNLESS OTHERWISE SPECIFIED, OTHER CONNECTIONS TO A PRINTED-CIRCUIT CARD ARE MADE THROUGH A 48-PIN CONNECTOR.

2. UNLESS OTHERWISE SPECIFIED, ALL CONDUCTORS TO TERMINAL BOARD A25TB1 ARE BUSBAR.

2134 2B



BACKPLANE CONNECTIONS TO PRINTED-
JIT CARDS ARE MADE THROUGH 86-PIN CON-
ORS. UNLESS OTHERWISE SPECIFIED, OTHER
ECTIONS TO A PRINTED-CIRCUIT CARD ARE
THROUGH A 48-PIN CONNECTOR.

SS OTHERWISE SPECIFIED, ALL CONDUCTORS
RMINAL BOARD A25TB1 ARE BUSBAR.

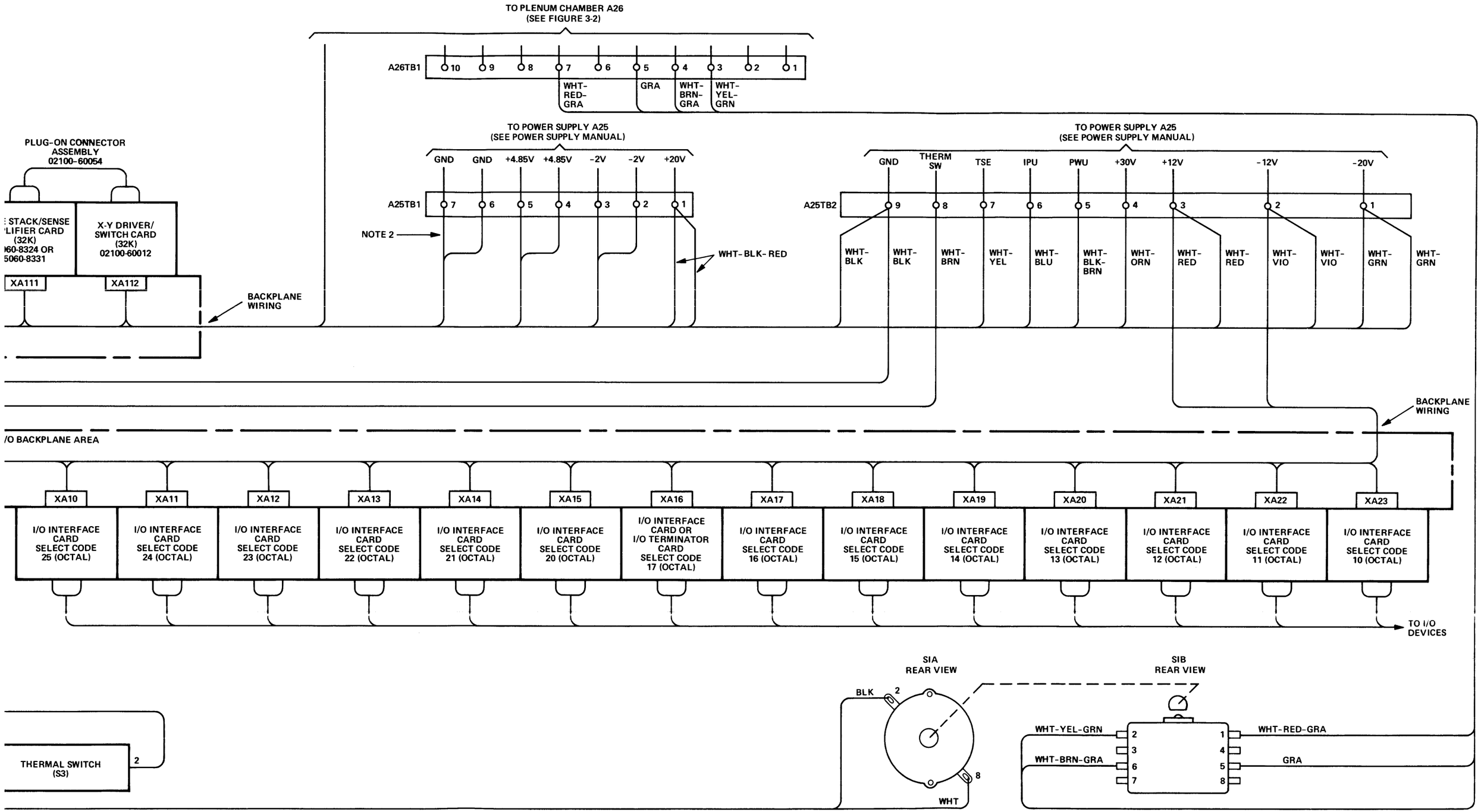
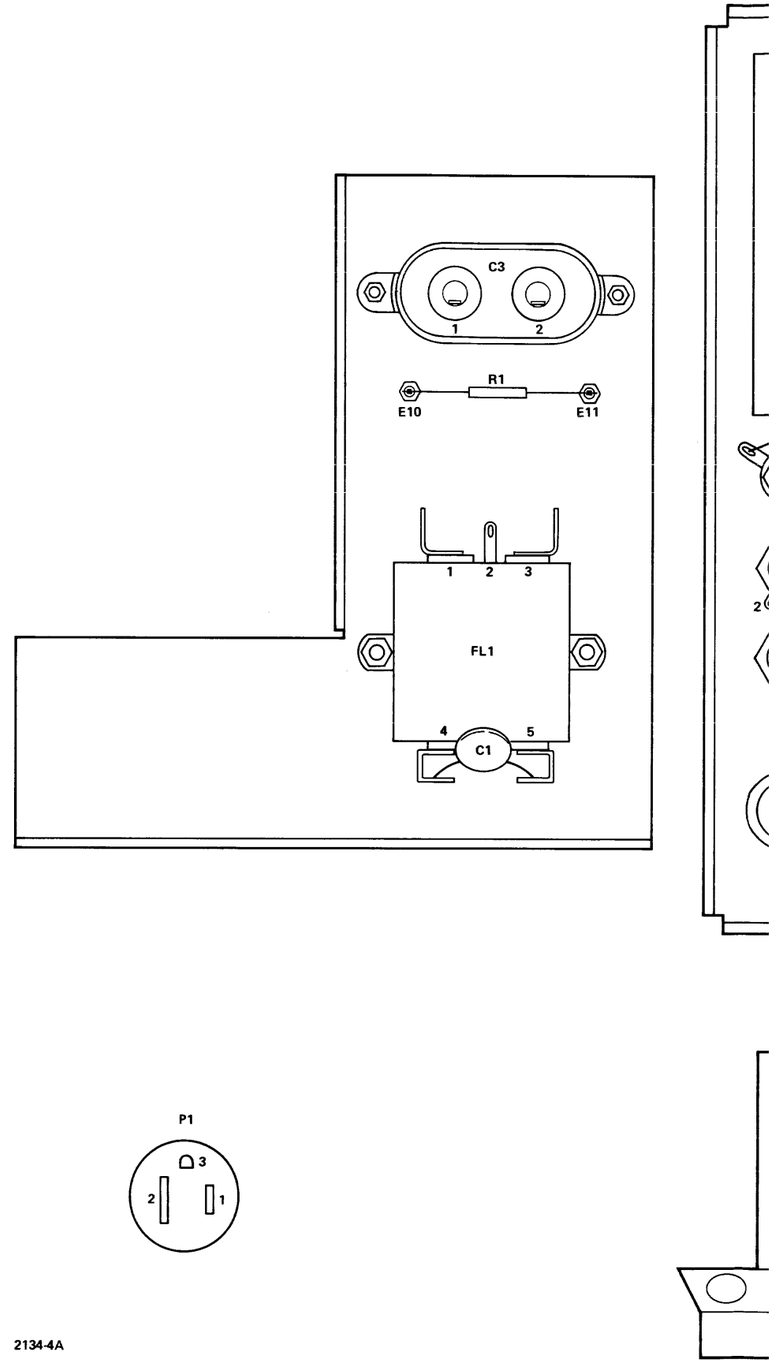


Figure 3-1. Backplane, Wiring Diagram

Table 3-4. Plenum Chamber A26, Point-to-Point Wiring List

FROM	TO	COLOR		FROM	TO	COLOR
A1E1	XA101-85	blk		TB1-2	XF1-1	wht-blk-gra
A1E2	XA103-75	wht-grn		TB1-2	P1-1	blk
A1E3	XA102-73	wht-vio		TB1-3	S1B-2	wht-yel-grn
A1E4	XA101-48	vio		TB1-3	FL1-4	wht-yel-grn
A1E5	XA101-40	orn		TB1-4	FL1-5	wht-brn-gra
A1E6	XA102-14	wht-red		TB1-4	S1B-6	wht-brn-gra
A1E7	XA104-10	wht-blk-red		TB1-5	S1B-5	gra
A1E8	XA112-18	wht-orn		TB1-5	XF2-1	wht-yel
B1-J1	TB2-1	blk		TB1-5	A25A6E1	gra
B1-J1	TB2-2	blk		TB1-6	A25A6E3	wht-blu-gra
B2-J1	TB2-1	blk		TB1-7	S1B-1	wht-red-gra
B2-J1	TB2-2	blk		TB1-7	TB2-1	wht-red-gra
C3-1	E10	wht-grn-gra		TB1-7	A25A6E2	wht-red-gra
C3-2	TB1-1	wht-red-gra		TB1-7	A25TB3-11	wht-red-gra
E9	P1-3	grn		TB1-8	A25TB3-6	wht-yel-gra
E9	FL1-2	grn-yel		TB1-9	TB2-2	wht-grn-gra
E9	Shield*	grn-yel		TB1-9	A25TB3-12	wht-grn-gra
E10	C3-1	wht-grn-gra		TB1-10	XF2-2	wht-vio
E11	XF2-1	gra		TB1-10	A25TB3-5	wht-vio-gra
FL1-1	TB1-1	wht-gra		TB2-1	B1-J1	blk
FL1-2	E9	grn-yel		TB2-1	B2-J1	blk
FL1-3	XF1-2	gra		TB2-1	TB1-7	wht-red-gra
FL1-4	TB1-3	wht-yel-grn		TB2-2	B1-J1	blk
FL1-5	TB1-4	wht-brn-gra		TB2-2	B2-J1	blk
J1	XA101-81	wht-blu		TB2-2	TB1-9	wht-grn-gra
P1-1	TB1-2	blk		XF1-1	TB1-2	wht-blk-gra
P1-2	TB1-1	wht		XF1-2	FL1-3	gra
P1-3	E9	grn		XF2-1	TB1-5	wht-yel
TB1-1	C3-2	wht-red-gra		XF2-1	E11	gra
TB1-1	FL1-1	wht-gra		XF2-2	TB1-10	wht-vio
TB1-1	P1-2	wht				

* Shield is located on wiring to switch S1B.



Wiring List

TO	COLOR
XF1-1	wht-blk-gra
P1-1	blk
S1B-2	wht-yel-grn
FL1-4	wht-yel-grn
FL1-5	wht-brn-gra
S1B-6	wht-brn-gra
S1B-5	gra
XF2-1	wht-yel
A25A6E1	gra
A25A6E3	wht-blu-gra
S1B-1	wht-red-gra
TB2-1	wht-red-gra
A25A6E2	wht-red-gra
A25TB3-11	wht-red-gra
A25TB3-6	wht-yel-gra
TB2-2	wht-grn-gra
A25TB3-12	wht-grn-gra
XF2-2	wht-vio
A25TB3-5	wht-vio-gra
B1-J1	blk
B2-J1	blk
TB1-7	wht-red-gra
B1-J1	blk
B2-J1	blk
TB1-9	wht-grn-gra
TB1-2	wht-blk-gra
FL1-3	gra
TB1-5	wht-yel
E11	gra
TB1-10	wht-vio

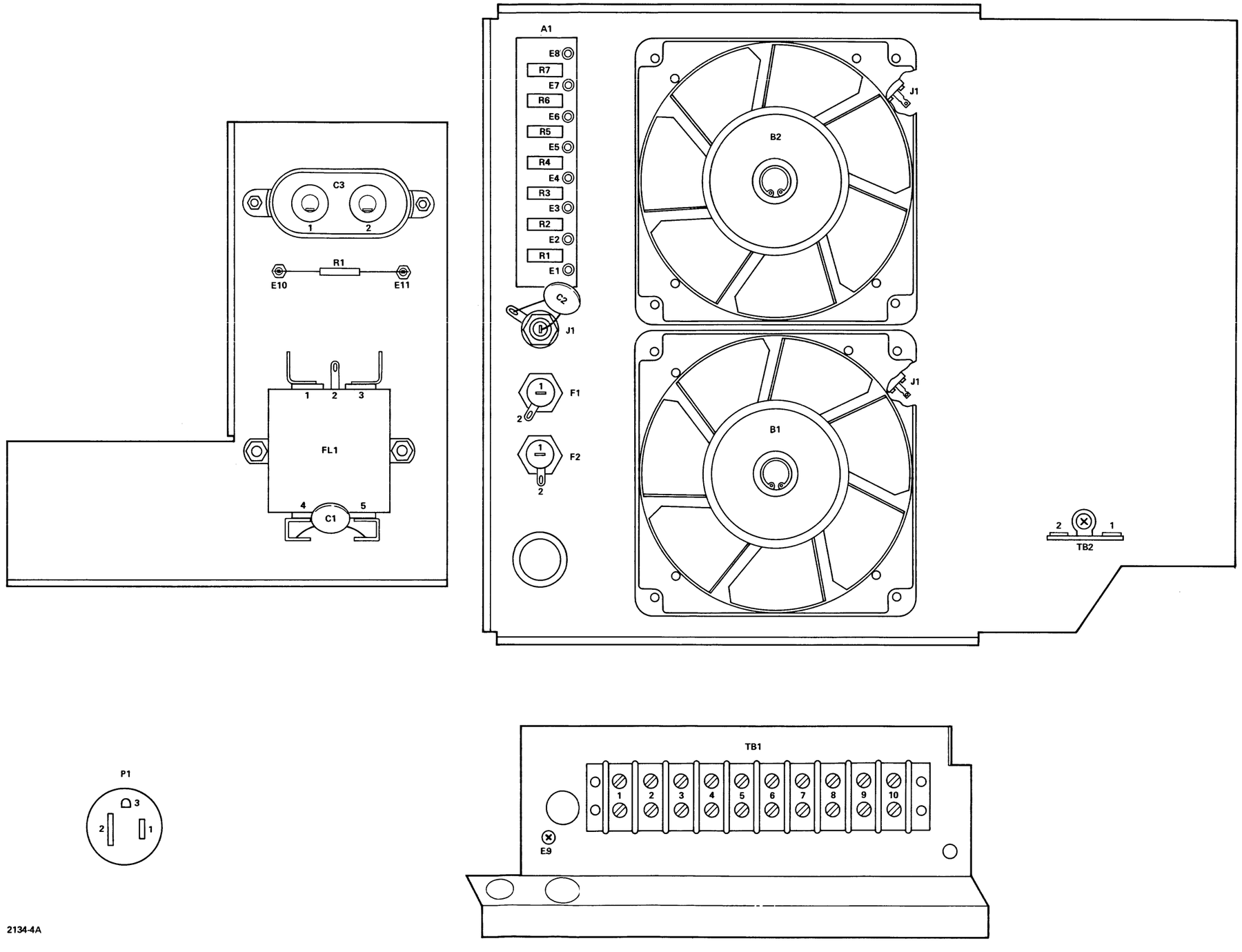
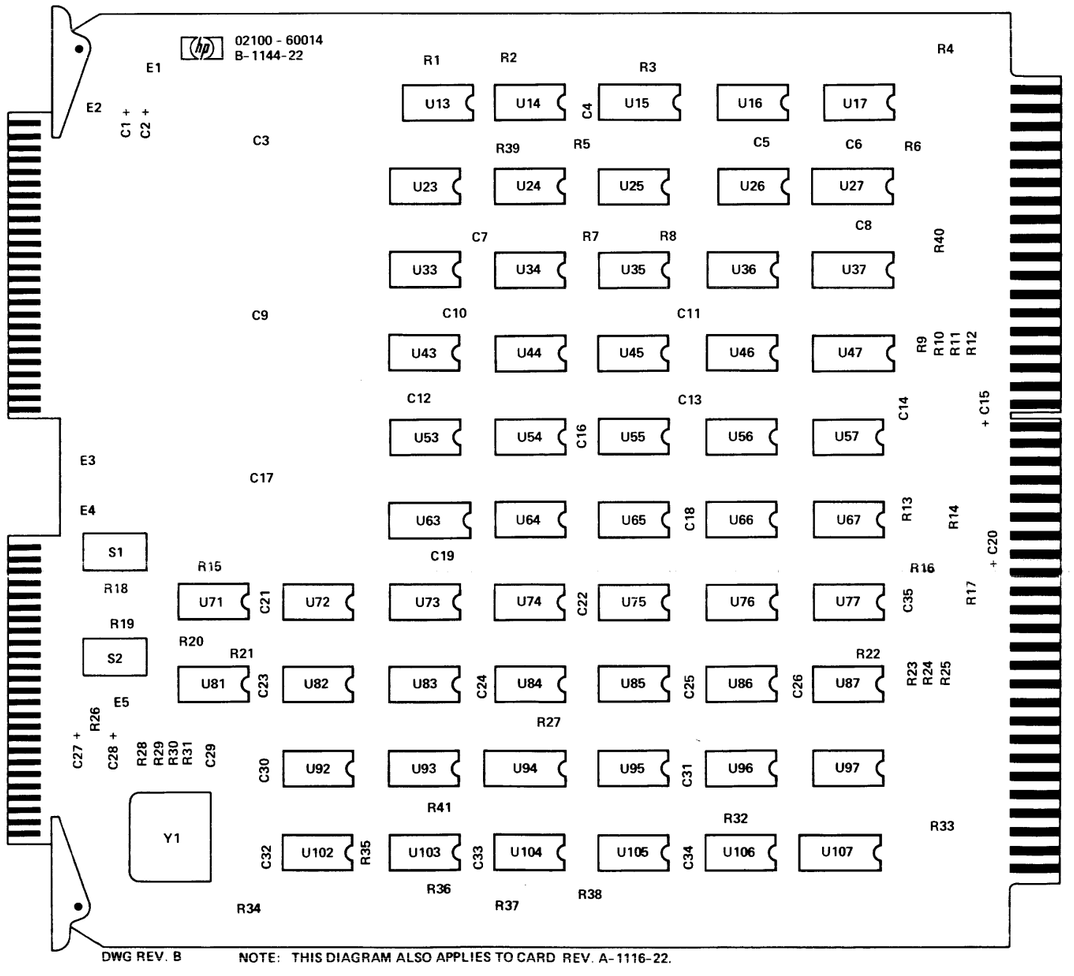


Figure 3-2. Plenum Chamber A26, Wiring Diagram



See table 4-3 for replaceable parts.

PRSI [325]
PON [305]
P1A [293]

EOP [42]

FF DEFINITIONS

DHLT	= DELAYED HALT	
$\overline{\text{EPCRY}}$	= "NOT" ENABLE P-REGISTER CARRY	
FDIV1	= FREQUENCY DIVIDE 1	
FDIV2	= FREQUENCY DIVIDE 2	
$\overline{\text{INCP}}$	= "NOT" INCREMENT P	
$\overline{\text{PCRY}}$	= "NOT" P-REGISTER CARRY	INT [203]
$\overline{\text{PH1A}}$	= "NOT" PHASE 1A	
PH1B	= PHASE 1B	
PH2	= PHASE 2	CT3 [31]
PH3	= PHASE 3	
RH	= RUN-HALT	
SCY	= SINGLE CYCLE	IR15 [243]
SG1	= STEP GENERATOR 1	
SG2	= STEP GENERATOR 2	$\overline{\text{IMPV}}$ [199]
SIN	= SINGLE INSTRUCTION	

SB15 [41]

IR14 [242]

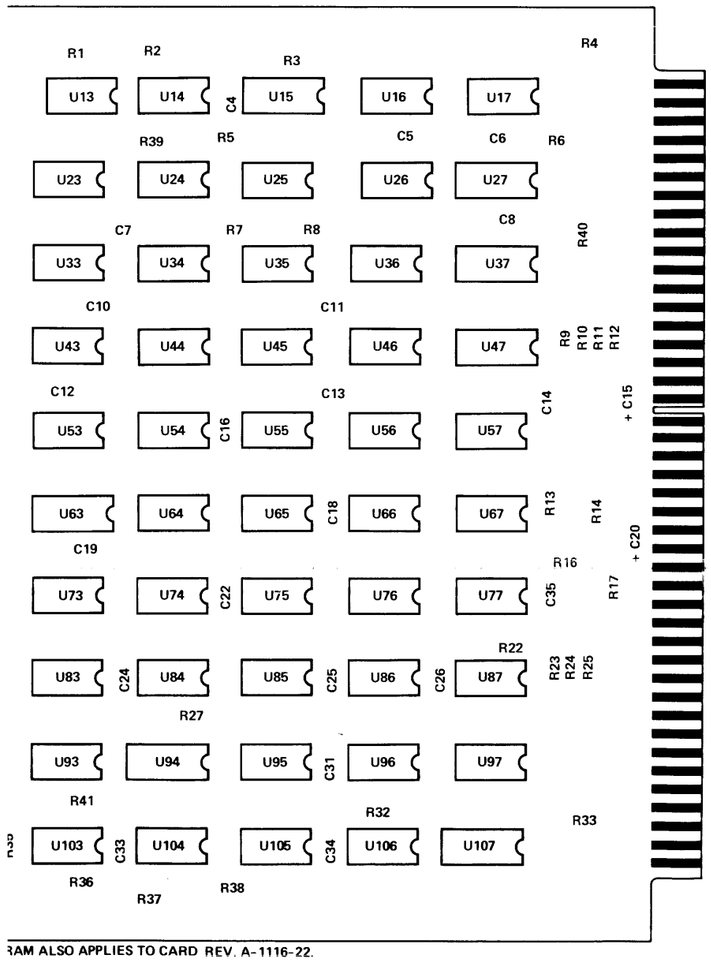
NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. U11, U12, U21, U22, U31, U32, U41, U42, U51, U52, U61, AND U62 ARE NOT ON CARD REV. 1116. THESE AUXILIARY ROM CIRCUITS WILL BE AVAILABLE AS A FUTURE OPTION.
5. CONNECTION IS TO J1-38 ON CARD REV. 1116.
6. CONNECTION IS TO J1-40 ON CARD REV. 1116.

IR13 [241]

IR12 [240]

IR11 [239]



RAM ALSO APPLIES TO CARD REV. A-1116-22.

FF DEFINITIONS

DHLT	= DELAYED HALT
$\overline{EPCRY}$	= "NOT" ENABLE P-REGISTER CARRY
FDIV1	= FREQUENCY DIVIDE 1
FDIV2	= FREQUENCY DIVIDE 2
$\overline{INCP}$	= "NOT" INCREMENT P
$\overline{PCRY}$	= "NOT" P-REGISTER CARRY
$\overline{PH1A}$	= "NOT" PHASE 1A
PH1B	= PHASE 1B
PH2	= PHASE 2
PH3	= PHASE 3
RH	= RUN-HALT
SCY	= SINGLE CYCLE
SG1	= STEP GENERATOR 1
SG2	= STEP GENERATOR 2
SIN	= SINGLE INSTRUCTION

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
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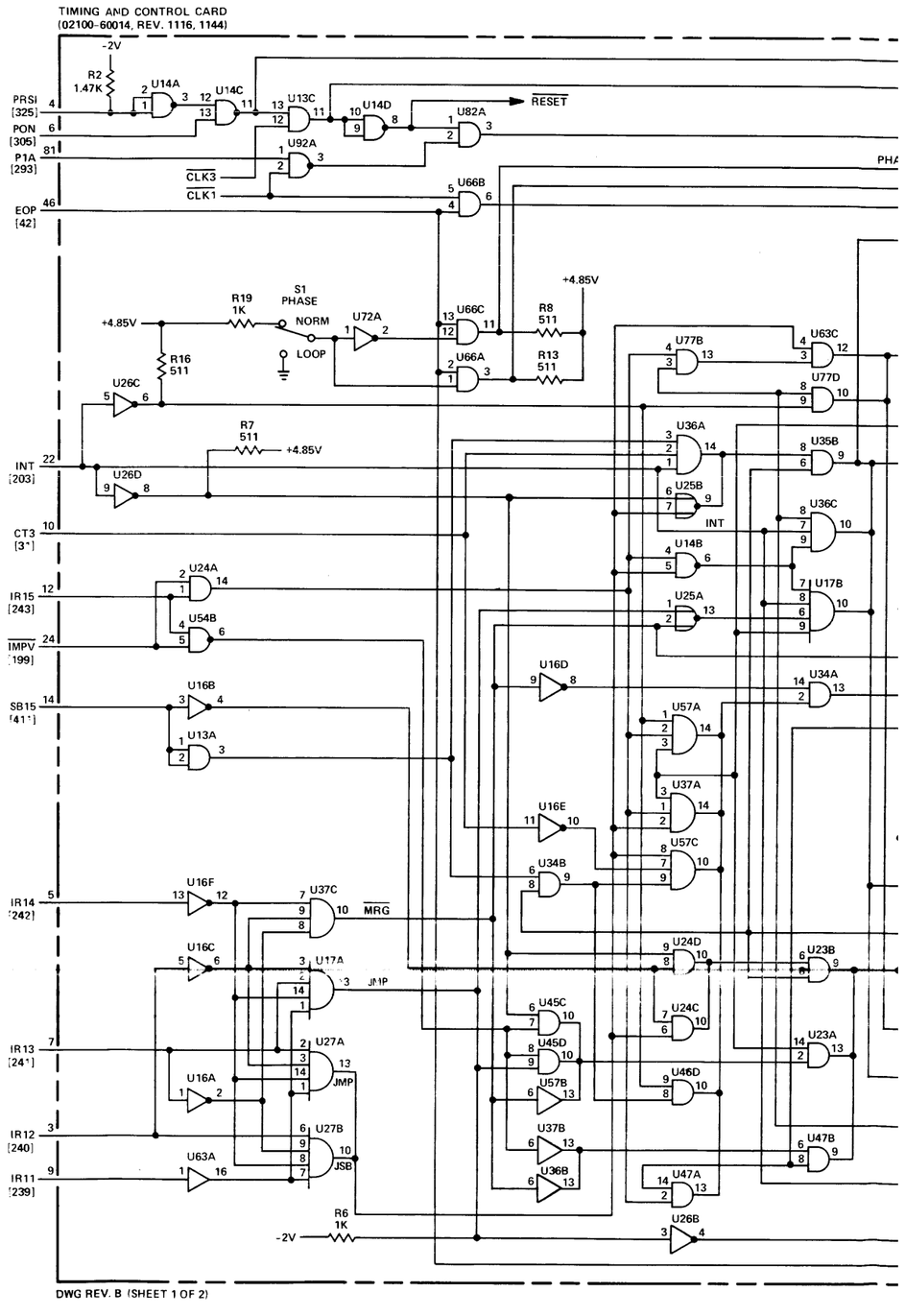
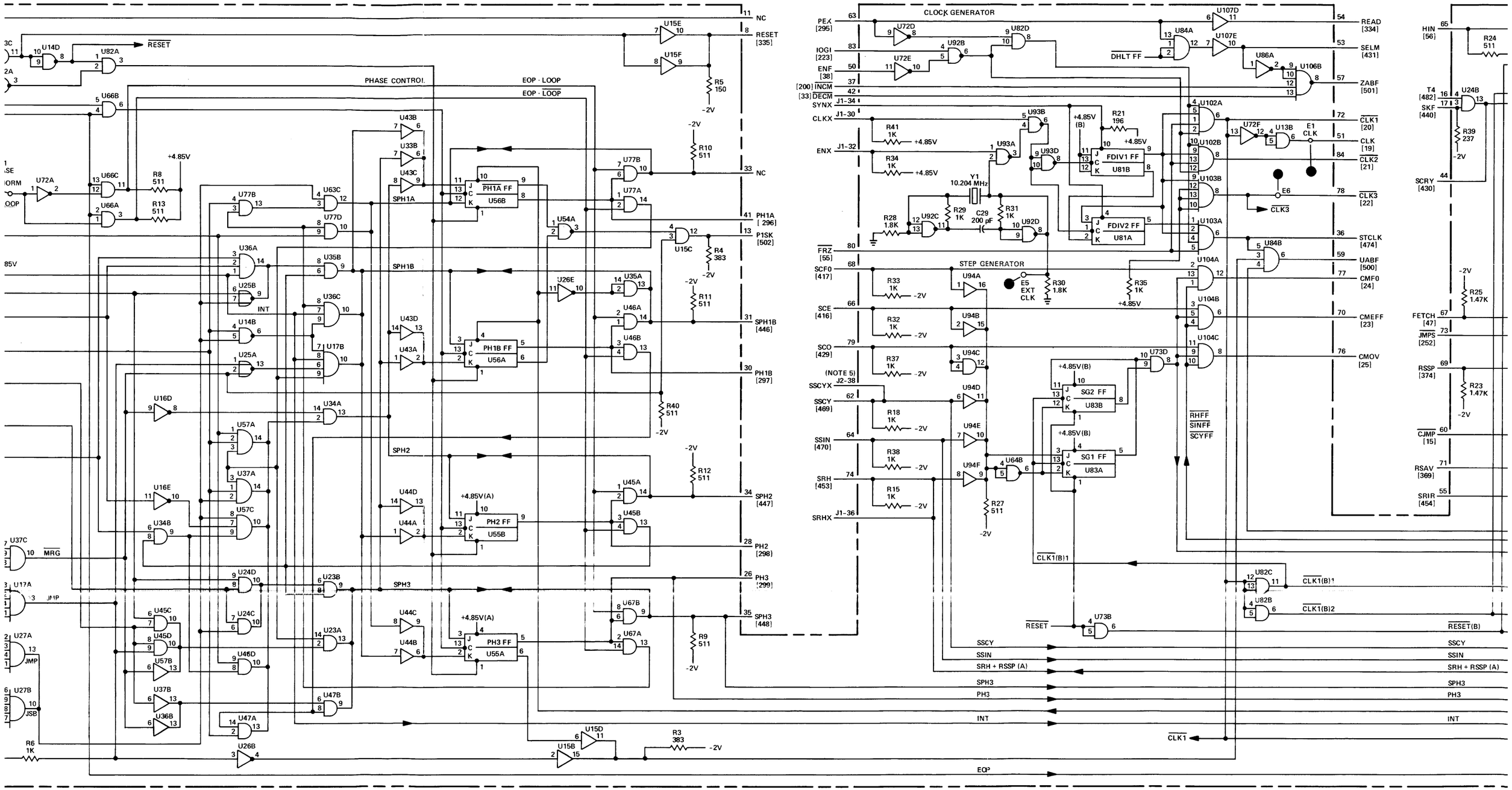
6. CONNECTION IS TO J1-40 ON CARD REV. 1116.



DWG REV. B (SHEET 1 OF 2)


RESET
PHASE CONTROL
EOP · LOOP
EOP · LOOP
+4.85V
PH1A FF
U56B
PH1B FF
U56A
PH2 FF
U55B
PH3 FF
U55A
SPH1A
SPH1B
SPH2
SPH3
INT
MRG
JMP
JSB
NC
RESET [335]
PH1A [296]
P1SK [502]
SPH1B [446]
PH1B [297]
SPH2 [447]
PH2 [298]
PH3 [299]
SPH3 [448]
CLOCK GENERATOR
Y1 10.204 MHz
FDIV1 FF U81B
FDIV2 FF U81A
STEP GENERATOR
SG2 FF U83B
SG1 FF U83A
DHLT FF
PEX [295]
IOGI [223]
ENF [38]
INCM [200]
DECM [33]
SYNX J1-34
CLKX J1-30
ENX J1-32
FRZ [55]
SCF0 [417]
SCE [416]
SCO [429]
SSCYX (NOTE 5) J2-38
SSCY [469]
SSIN [470]
SRH [453]
SRHX J1-36
READ [334]
SELM [431]
ZABF [501]
CLK1 [20]
CLK [19]
CLK2 [21]
CLK3 [22]
STCLK [474]
UABF [500]
CMF0 [24]
CMEFF [23]
CMOV [25]
RHFF
SINFF
SCYFF
HIN [56]
T4 [482]
SKF [440]
SCRY [430]
FETCH [47]
JMPS [252]
RSSP [374]
CJMP [15]
RSAV [369]
SRIR [454]
CLK1(B)1
CLK1(B)2
RESET(B)
CLK1
EQP
SSCY
SSIN
SRH + RSSP (A)
SPH3
PH3
INT

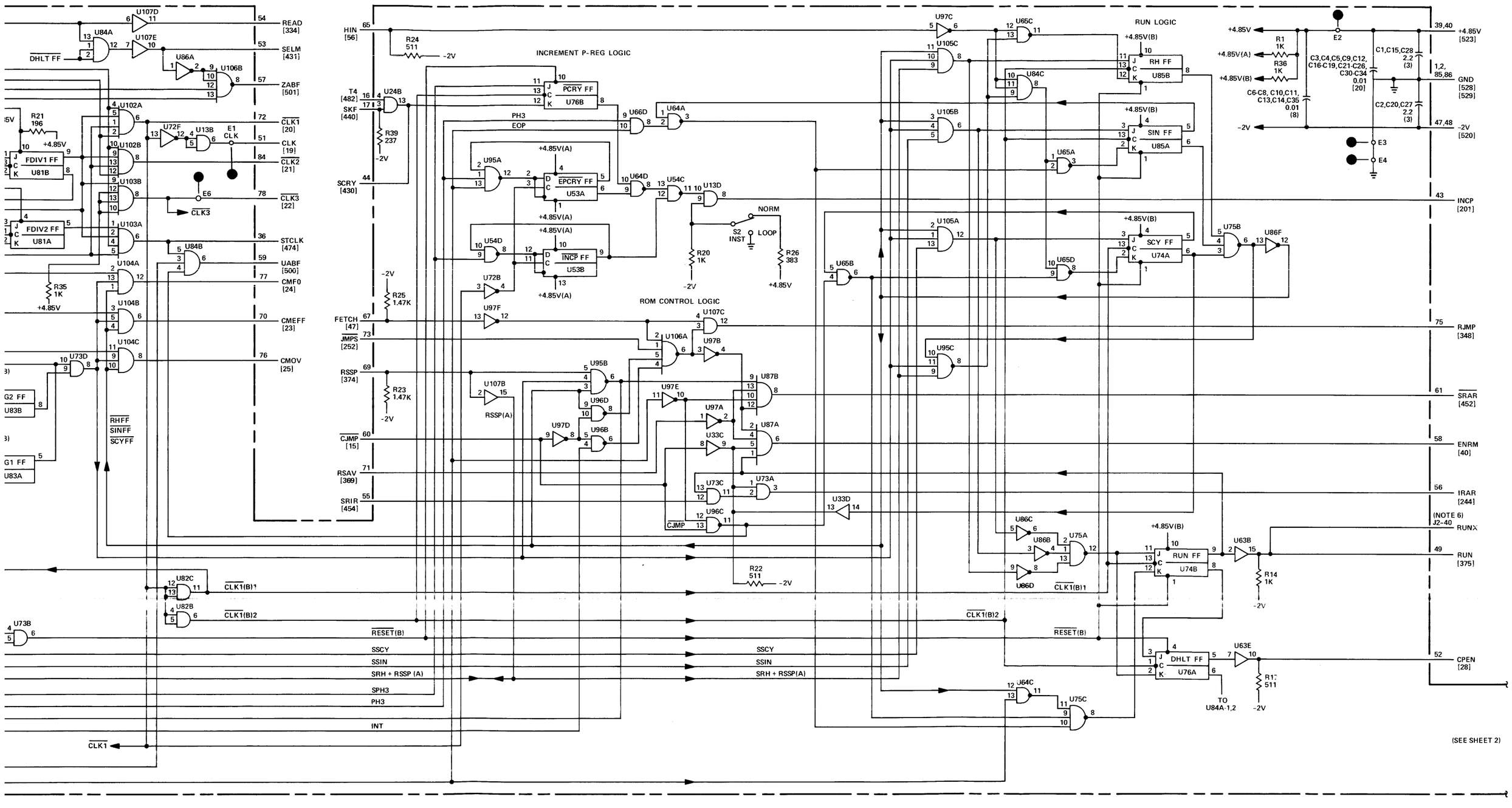


Figure 4-4. A1 Timing and Control Card, Parts Location and Schematic Diagrams (Sheet 1 of 2)

4-1. INTRODUCTION.

4-2. This section contains replaceable parts lists, parts location diagrams, and schematic diagrams for the printed circuit cards in the computer. The section also contains additional illustrations and listings which are intended to help locate parts and facilitate using the diagrams.

4-3. ABBREVIATIONS AND MNEMONICS.

4-4. Abbreviations of signal names (mnemonics) used in this manual are defined in table 4-1, together with a reference number (see paragraph 4-19) if the signal appears at the 86-pin backplane connector. Signals that appear at the front edge 48- or 50-pin connector of the card do not include a reference number.

4-5. ASSEMBLY LOCATIONS.

4-6. Figure 4-1 shows the location of the major assemblies of the computer, including optional controller panel card A24 and direct memory access card A9. I/O terminator card A16 is shown installed in slot 16 and must be removed when the eighth I/O card is installed in the I/O section. The memory section loading reflects 32K memory size. Refer to table 4-2 and figure 4-2 for other memory size loading configurations.

Note: The card cage and the extractor handles on the cards are color coded. This is intended to prevent accidental installation of a card into a slot not intended for that card. (Installing a card in a wrong slot can result in damage to the computer.)

4-7. CARD CONNECTORS.

4-8. Figure 4-3 identifies the connector pin numbers of the two types of printed circuit cards used in the computer card cage. Pin numbers for the 86-pin connector on the operator and controller panel cards are the same as for the 86-pin connector of the cards shown in figure 4-3, i.e. pin number one is to the left on the component side. The 86-pin connectors of the cards for the card cage are notched so that they cannot be plugged in backwards. This will not prevent plugging cards in the wrong slot, however, so be sure that cards are in the correct slot before inserting them.

4-9. REPLACEABLE PARTS LISTS.

4-10. Tables 4-3 through 4-21 are the replaceable parts lists for the printed circuit cards used in the card cage and on the front panel and are included in this manual to supplement the parts location and schematic diagrams. The Illustrated Parts Breakdown (IPB) Manual provides a complete list of replaceable parts for the computer, descriptions of the table columns, and parts ordering information.

4-11. Parts are listed by complete reference designation and include an HP part number, quantity per card, description, manufacturer's code, and manufacturer's part number. The total quantity of a part used on the card is listed with the first entry for that part number.

4-12. Replaceable parts are tabulated only once for each type of card even though that type may be used in more than one slot. The table of replaceable parts is located near the diagram for the lowest numbered slot in which the card is used. For example, an X-Y driver/switch card is used in slots 101, 104, 109, and 112. Table 4-15 applies to all four cards and is located near the parts location and schematic diagrams for A101 X-Y driver/switch card. Reference to table 4-15 is included under the card parts location diagram for the four slot locations. A replaceable parts table reference is included under all card parts location diagrams.

4-13. Replaceable parts lists for the power supply are provided in the 02100-60053 Power Supply Operating and Service Manual, part number 5951-3038.

4-14. PARTS LOCATION AND SCHEMATIC DIAGRAMS.

4-15. Figures 4-4 through 4-30 are the parts location and schematic diagrams for the printed circuit cards used in the card cage and on the front panel. The illustrations are arranged in order by reference designation i.e. A1, A2, etc. The parts location diagram for each card is located adjacent to the schematic diagram and is repeated if the schematic diagram has more than one sheet. In cases where a card type is used in more than one slot, the parts location diagram is repeated but the replaceable parts list is not (see paragraph 4-12). The schematic diagrams for identical cards used in different slots are the same except for mnemonics and signals used.

4-16. Refer to table 4-1 for definitions of the mnemonics used on the schematic diagrams and to paragraph 4-19 for a description of the bracketed reference numbers located adjacent to the mnemonics.

4-17. Each card in the computer contains a revision code (see figure 4-3). The first character of the code is a letter which identifies the etched-foil pattern on the card. The next four digits, referred to as a date code, identify the electrical characteristics of the card with components

mounted. The entire revision code is either stamped on the card with marking ink, or as part of the etched-foil pattern. If both a stamped and an etched code are used, the stamped revision code identifies the card with components mounted, and the etched revision code identifies the card without components.

4-18. The date code portion of the card revision code is also shown on the schematic diagram as part of the card title and part number, usually in the upper left-hand corner of the diagram. Always check the date code on both the card and the schematic diagram. If they do not agree, the schematic diagram does not apply to the card. In these cases, refer to manual supplements for applicable information.

4-19. REFERENCE NUMBERS.

4-20. Reference numbers within brackets are located on the schematic diagrams adjacent to the signal mnemonic. These numbers are intended as an aid in tracing signals between the schematic diagrams. For example, the PON signal at pin 6 near the top left of figure 4-4 has the reference number 305. The reference number list to the left of the schematic diagram shows that the signal source is pin 8 of card A7 as indicated by A7-8 and an asterisk. Locate the schematic diagram for card A7, I/O control (IOC) card. The schematic diagram for card A7 has two sheets and a check of the reference number list for sheet 1 indicates that reference number 305 is on sheet 1. This is because only the reference numbers found on sheet 1 are listed in the reference number list for sheet 1.

4-21. The reference numbers are also included in the signal index, table 4-1, and in the backplane wiring list, table 3-1. To trace a signal when only the signal mnemonic is known, first find the reference number of the signal in table 4-1. Then refer to table 3-1 to determine which schematic diagrams contain the signal. Table 4-1 is in alphabetical order of signal mnemonics and table 3-1 is in numerical order of reference numbers.

Table 4-1. Signal Index

SIGNAL MNEMONIC	DEFINITION	REF NO.
$\overline{\text{AAB}}$	Address A- or B-register	1
$\overline{\text{AAFF}}$	"not" A Addressable FF	2
$\overline{\text{ABF}}$	"not" A or B Addressable FFs	3
ADR	operand Address (S-bus field decoded)	4
ALU0	Arithmetic Logic Unit bit 0	5
ALU14	Arithmetic Logic Unit bit 14	6
ALU15	Arithmetic Logic Unit bit 15	7
ALX14	gated ALU bit 15	8
ALX16	gated ALU bit 15	9
$\overline{\text{AR0}}$	A-Register, bit 0	10
$\overline{\text{ARS}}$	"not" Arithmetic Shift (function field decoded)	11
$\overline{\text{ARSS}}$	"not" Arithmetic Shift Sign bit	12
BAFF	B-Addressable FF	13
C0X	Common 0, X	–
C0Y	Common 0, Y	–
C1X	Common 1, X	–
C1Y	Common 1, Y	–
C2X	Common 2, X	–
C2Y	Common 2, Y	–
C3X	Common 3, X	–
C3Y	Common 3, Y	–
C4X	Common 4, X	–
C4Y	Common 4, Y	–
C5X	Common 5, X	–
C5Y	Common 5, Y	–
C6X	Common 6, X	–
C6Y	Common 6, Y	–
C7X	Common 7, X	–
C7Y	Common 7, Y	–
CA0X	Common Anode 0, X	–
CA0Y	Common Anode 0, Y	–
CA1X	Common Anode 1, X	–
CA1Y	Common Anode 1, Y	–
CA2X	Common Anode 2, X	–
CA2Y	Common Anode 2, Y	–
CA3X	Common Anode 3, X	–
CA3Y	Common Anode 3, Y	–
CA4X	Common Anode 4, X	–
CA4Y	Common Anode 4, Y	–
CA5X	Common Anode 5, X	–
CA5Y	Common Anode 5, Y	–
CA6X	Common Anode 6, X	–
CA6Y	Common Anode 6, Y	–
CA7X	Common Anode 7, X	–
CA7Y	Common Anode 7, Y	–
CC0X	Common Cathode 0, X	–
CC0Y	Common Cathode 0, Y	–
CC1X	Common Cathode 1, X	–
CC1Y	Common Cathode 1, Y	–
CC2X	Common Cathode 2, X	–
CC2Y	Common Cathode 2, Y	–
CC3X	Common Cathode 3, X	–
CC3Y	Common Cathode 3, Y	–
CC4X	Common Cathode 4, X	–
CC4Y	Common Cathode 4, Y	–
CC5X	Common Cathode 5, X	–
CC5Y	Common Cathode 5, Y	–

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
CC6X	Common Cathode 6, X	–
CC6Y	Common Cathode 6, Y	–
CC7X	Common Cathode 7, X	–
CC7Y	Common Cathode 7, Y	–
$\overline{\text{CIN}}$	"not" Carry In	14
CJMP	"not" Conditional Jump (function field decoded)	15
CL	Constant to Left half (S-bus field decoded)	16
CLC	Clear Control (I/O)	17
CLF	Clear Flag (I/O)	18
CLK	Clock	19
CLKX	Clock, external	–
$\overline{\text{CLK1}}$	"not" Clock 1	20
$\overline{\text{CLK2}}$	"not" Clock 2	21
$\overline{\text{CLK3}}$	"not" Clock 3	22
CMEFF	Complement Extend FF	23
CMF0	Complement Flag 0 (I/O)	24
CMOV	Complement Overflow	25
$\overline{\text{COND}}$	Conditional (S-bus field decoded)	26
$\overline{\text{COUT}}$	"not" Carry Out	27
CPEN	Control Panel Enable	28
CR	Constant to Right half (S-bus field decoded)	29
CRS	Control Reset (I/O)	30
CT3	Count of indirect phase 3	31
$\overline{\text{CW}}$	Clear-Write	32
$\overline{\text{DECM}}$	"not" Decrement M-register	33
$\overline{\text{DIV}}$	"not" Divide (function field decoded)	34
DTRY	Data Ready	35
EDT	End Data Transfer	36
EEOP	Enable End Of Phase	37
ENF	Enable Flag (I/O)	38
ENOV	Enable Overflow	39
ENRM	Enable ROM	40
ENRMX	Enable ROM, external	–
ENSS	Enable Special and Skip fields	41
ENX	Enable, external	–
EOP	End Of Phase (skip field decoded)	42
$\overline{\text{EPRSI}}$	External Preset Indicator	43
$\overline{\text{EREQ1}}$	Enable Request 1	–
$\overline{\text{EREQ2}}$	Enable Request 2	–
EXTEND	Extend	44
FBFF6	Flag Buffer FF s.c. 6	45
FBFF7	Flag Buffer FF s.c. 7	46
FETCH	Fetch	47
FLAG	Flag (CPU)	48
FLG1	Flag bit 1 (I/O)	49
FLG2	Flag bit 2 (I/O)	50
FLG2X	Flag bit 2, external	–
FLG3	Flag bit 3, external	–
FLG4	Flag bit 4, external	–
FLG5	Flag bit 5, external	–
FLG6	Flag bit 6, external	–
FN0	Function Number 0	51
FN1	Function Number 1	52
FN2	Function Number 2	53
$\overline{\text{FN3}}$	Function Number 3	54
$\overline{\text{FRZ}}$	"not" Freeze	55
HIN	Halt Instruction (I-register decoded)	56

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
$\overline{HT6}$	Hold time T6	57
$\overline{IA0}$	"not" Interrupt Address, bit 0	–
$\overline{IA1}$	"not" Interrupt Address, bit 1	–
$\overline{IA2}$	"not" Interrupt Address, bit 2	–
$\overline{IA3}$	"not" Interrupt Address, bit 3	–
$\overline{IA4}$	"not" Interrupt Address, bit 4	–
$\overline{IA5}$	"not" Interrupt Address, bit 5	–
IAK	Interrupt Acknowledge	58
IDC0	Inhibit Driver Collector, bit 0	–
IDC1	Inhibit Driver Collector, bit 1	–
IDC2	Inhibit Driver Collector, bit 2	–
IDC3	Inhibit Driver Collector, bit 3	–
IDC4	Inhibit Driver Collector, bit 4	–
IDC5	Inhibit Driver Collector, bit 5	–
IDC6	Inhibit Driver Collector, bit 6	–
IDC7	Inhibit Driver Collector, bit 7	–
IDC8	Inhibit Driver Collector, bit 8	–
IDC9	Inhibit Driver Collector, bit 9	–
IDC10	Inhibit Driver Collector, bit 10	–
IDC11	Inhibit Driver Collector, bit 11	–
IDC12	Inhibit Driver Collector, bit 12	–
IDC13	Inhibit Driver Collector, bit 13	–
IDC14	Inhibit Driver Collector, bit 14	–
IDC15	Inhibit Driver Collector, bit 15	–
IDC16	Inhibit Driver Collector, bit 16	–
IDEM0-3	Inhibit Driver Enable Modules 0 thru 3	59
IDEM0-3X	Inhibit Driver Enable Modules 0 thru 3, external	–
IDEM4-7	Inhibit Driver Enable Modules 4 thru 7	60
IDEM4-7X	Inhibit Driver Enable Modules 4 thru 7, external	–
IDOM0	Inhibit Driver, bit 0, Module 0	61
IDOM1	Inhibit Driver, bit 0, Module 1	78
IDOM2	Inhibit Driver, bit 0, Module 2	95
IDOM3	Inhibit Driver, bit 0, Module 3	112
IDOM4	Inhibit Driver, bit 0, Module 4	129
IDOM5	Inhibit Driver, bit 0, Module 5	146
IDOM6	Inhibit Driver, bit 0, Module 6	163
IDOM7	Inhibit Driver, bit 0, Module 7	180
ID1M0	Inhibit Driver, bit 1, Module 0	62
ID1M1	Inhibit Driver, bit 1, Module 1	79
ID1M2	Inhibit Driver, bit 1, Module 2	96
ID1M3	Inhibit Driver, bit 1, Module 3	113
ID1M4	Inhibit Driver, bit 1, Module 4	130
ID1M5	Inhibit Driver, bit 1, Module 5	147
ID1M6	Inhibit Driver, bit 1, Module 6	164
ID1M7	Inhibit Driver, bit 1, Module 7	181
ID2M0	Inhibit Driver, bit 2, Module 0	63
ID2M1	Inhibit Driver, bit 2, Module 1	80
ID2M2	Inhibit Driver, bit 2, Module 2	97
ID2M3	Inhibit Driver, bit 2, Module 3	114
ID2M4	Inhibit Driver, bit 2, Module 4	131
ID2M5	Inhibit Driver, bit 2, Module 5	148
ID2M6	Inhibit Driver, bit 2, Module 6	165
ID2M7	Inhibit Driver, bit 2, Module 7	182
ID3M0	Inhibit Driver, bit 3, Module 0	64
ID3M1	Inhibit Driver, bit 3, Module 1	81
ID3M2	Inhibit Driver, bit 3, Module 2	98
ID3M3	Inhibit Driver, bit 3, Module 3	115

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
ID3M4	Inhibit Driver, bit 3, Module 4	132
ID3M5	Inhibit Driver, bit 3, Module 5	149
ID3M6	Inhibit Driver, bit 3, Module 6	166
ID3M7	Inhibit Driver, bit 3, Module 7	183
ID4M0	Inhibit Driver, bit 4, Module 0	65
ID4M1	Inhibit Driver, bit 4, Module 1	82
ID4M2	Inhibit Driver, bit 4, Module 2	99
ID4M3	Inhibit Driver, bit 4, Module 3	116
ID4M4	Inhibit Driver, bit 4, Module 4	133
ID4M5	Inhibit Driver, bit 4, Module 5	150
ID4M6	Inhibit Driver, bit 4, Module 6	167
ID4M7	Inhibit Driver, bit 4, Module 7	184
ID5M0	Inhibit Driver, bit 5, Module 0	66
ID5M1	Inhibit Driver, bit 5, Module 1	83
ID5M2	Inhibit Driver, bit 5, Module 2	100
ID5M3	Inhibit Driver, bit 5, Module 3	117
ID5M4	Inhibit Driver, bit 5, Module 4	134
ID5M5	Inhibit Driver, bit 5, Module 5	151
ID5M6	Inhibit Driver, bit 5, Module 6	168
ID5M7	Inhibit Driver, bit 5, Module 7	185
ID6M0	Inhibit Driver, bit 6, Module 0	67
ID6M1	Inhibit Driver, bit 6, Module 1	84
ID6M2	Inhibit Driver, bit 6, Module 2	101
ID6M3	Inhibit Driver, bit 6, Module 3	118
ID6M4	Inhibit Driver, bit 6, Module 4	135
ID6M5	Inhibit Driver, bit 6, Module 5	152
ID6M6	Inhibit Driver, bit 6, Module 6	169
ID6M7	Inhibit Driver, bit 6, Module 7	186
ID7M0	Inhibit Driver, bit 7, Module 0	68
ID7M1	Inhibit Driver, bit 7, Module 1	85
ID7M2	Inhibit Driver, bit 7, Module 2	102
ID7M3	Inhibit Driver, bit 7, Module 3	119
ID7M4	Inhibit Driver, bit 7, Module 4	136
ID7M5	Inhibit Driver, bit 7, Module 5	153
ID7M6	Inhibit Driver, bit 7, Module 6	170
ID7M7	Inhibit Driver, bit 7, Module 7	187
ID8M0	Inhibit Driver, bit 8, Module 0	69
ID8M1	Inhibit Driver, bit 8, Module 1	86
ID8M2	Inhibit Driver, bit 8, Module 2	103
ID8M3	Inhibit Driver, bit 8, Module 3	120
ID8M4	Inhibit Driver, bit 8, Module 4	137
ID8M5	Inhibit Driver, bit 8, Module 5	154
ID8M6	Inhibit Driver, bit 8, Module 6	171
ID8M7	Inhibit Driver, bit 8, Module 7	188
ID9M0	Inhibit Driver, bit 9, Module 0	70
ID9M1	Inhibit Driver, bit 9, Module 1	87
ID9M2	Inhibit Driver, bit 9, Module 2	104
ID9M3	Inhibit Driver, bit 9, Module 3	121
ID9M4	Inhibit Driver, bit 9, Module 4	138
ID9M5	Inhibit Driver, bit 9, Module 5	155
ID9M6	Inhibit Driver, bit 9, Module 6	172
ID9M7	Inhibit Driver, bit 9, Module 7	189
ID10M0	Inhibit Driver, bit 10, Module 0	71
ID10M1	Inhibit Driver, bit 10, Module 1	88
ID10M2	Inhibit Driver, bit 10, Module 2	105
ID10M3	Inhibit Driver, bit 10, Module 3	122
ID10M4	Inhibit Driver, bit 10, Module 4	139

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
ID10M5	Inhibit Driver, bit 10, Module 5	156
ID10M6	Inhibit Driver, bit 10, Module 6	173
ID10M7	Inhibit Driver, bit 10, Module 7	190
ID11M0	Inhibit Driver, bit 11, Module 0	72
ID11M1	Inhibit Driver, bit 11, Module 1	89
ID11M2	Inhibit Driver, bit 11, Module 2	106
ID11M3	Inhibit Driver, bit 11, Module 3	123
ID11M4	Inhibit Driver, bit 11, Module 4	140
ID11M5	Inhibit Driver, bit 11, Module 5	157
ID11M6	Inhibit Driver, bit 11, Module 6	174
ID11M7	Inhibit Driver, bit 11, Module 7	191
ID12M0	Inhibit Driver, bit 12, Module 0	73
ID12M1	Inhibit Driver, bit 12, Module 1	90
ID12M2	Inhibit Driver, bit 12, Module 2	107
ID12M3	Inhibit Driver, bit 12, Module 3	124
ID12M4	Inhibit Driver, bit 12, Module 4	141
ID12M5	Inhibit Driver, bit 12, Module 5	158
ID12M6	Inhibit Driver, bit 12, Module 6	175
ID12M7	Inhibit Driver, bit 12, Module 7	192
ID13M0	Inhibit Driver, bit 13, Module 0	74
ID13M1	Inhibit Driver, bit 13, Module 1	91
ID13M2	Inhibit Driver, bit 13, Module 2	108
ID13M3	Inhibit Driver, bit 13, Module 3	125
ID13M4	Inhibit Driver, bit 13, Module 4	142
ID13M5	Inhibit Driver, bit 13, Module 5	159
ID13M6	Inhibit Driver, bit 13, Module 6	176
ID13M7	Inhibit Driver, bit 13, Module 7	193
ID14M0	Inhibit Driver, bit 14, Module 0	75
ID14M1	Inhibit Driver, bit 14, Module 1	92
ID14M2	Inhibit Driver, bit 14, Module 2	109
ID14M3	Inhibit Driver, bit 14, Module 3	126
ID14M4	Inhibit Driver, bit 14, Module 4	143
ID14M5	Inhibit Driver, bit 14, Module 5	160
ID14M6	Inhibit Driver, bit 14, Module 6	177
ID14M7	Inhibit Driver, bit 14, Module 7	194
ID15M0	Inhibit Driver, bit 15, Module 0	76
ID15M1	Inhibit Driver, bit 15, Module 1	93
ID15M2	Inhibit Driver, bit 15, Module 2	110
ID15M3	Inhibit Driver, bit 15, Module 3	127
ID15M4	Inhibit Driver, bit 15, Module 4	144
ID15M5	Inhibit Driver, bit 15, Module 5	161
ID15M6	Inhibit Driver, bit 15, Module 6	178
ID15M7	Inhibit Driver, bit 15, Module 7	195
ID16M0	Inhibit Driver, bit 16, Module 0	77
ID16M1	Inhibit Driver, bit 16, Module 1	94
ID16M2	Inhibit Driver, bit 16, Module 2	111
ID16M3	Inhibit Driver, bit 16, Module 3	128
ID16M4	Inhibit Driver, bit 16, Module 4	145
ID16M5	Inhibit Driver, bit 16, Module 5	162
ID16M6	Inhibit Driver, bit 16, Module 6	179
ID16M7	Inhibit Driver, bit 16, Module 7	196
IEN5	Interrupt Enable s.c. 5	198
IEN10	Interrupt Enable s.c. 10	496
IEN20	Interrupt Enable s.c. 20	497
IMPV	"not" Interrupt due to Memory Protect Violation	199
INCM	"not" Increment M-register	200
INCP	Increment P-register	201

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
INM	Index Mode	202
INT	Interrupt	203
INTX	"not" Interrupt, external	–
INT5	Interrupt from s.c. 5	204
IOB0	Input/Output Bus bit 0	205
IOB1	Input/Output Bus bit 1	206
IOB2	Input/Output Bus bit 2	207
IOB3	Input/Output Bus bit 3	208
IOB4	Input/Output Bus bit 4	209
IOB5	Input/Output Bus bit 5	210
IOB6	Input/Output Bus bit 6	211
IOB7	Input/Output Bus bit 7	212
IOB8	Input/Output Bus bit 8	213
IOB9	Input/Output Bus bit 9	214
IOB10	Input/Output Bus bit 10	215
IOB11	Input/Output Bus bit 11	216
IOB12	Input/Output Bus bit 12	217
IOB13	Input/Output Bus bit 13	218
IOB14	Input/Output Bus bit 14	219
IOB15	Input/Output Bus bit 15	220
IOBI 16	Input/Output Bus Input bit 16	221
IOG	Input/Output Group	222
IOG1	Input/Output Group (special field decoded)	223
IOGE	Input/Output Group Enable	224
IOI	Input/Output group Input	225
IOO	Input/Output group Output	226
IPU	Internal Power Up	535
IR0	I-Register bit 0	228
IR1	I-Register bit 1	229
IR2	I-Register bit 2	230
IR3	I-Register bit 3	231
IR4	I-Register bit 4	232
IR5	I-Register bit 5	233
IR6	I-Register bit 6	234
IR7	I-Register bit 7	235
IR8	I-Register bit 8	236
IR9	I-Register bit 9	237
IR10	I-Register bit 10	238
IR11	I-Register bit 11	239
IR12	I-Register bit 12	240
IR13	I-Register bit 13	241
IR14	I-Register bit 14	242
IR15	I-Register bit 15	243
IRAR	Increment ROM Address Register	244
IRQ1	Interrupt Request 1	245
IRQ1X	Interrupt Request 1, external	–
IRQ2	Interrupt Request 2	246
IRQ2X	Interrupt Request 2, external	–
IRQ3	Interrupt Request 3	247
IRQ3X	Interrupt Request 3, external	–
IRQ4	Interrupt Request 4	248
IRQ4X	Interrupt Request 4, external	–
IRQ5	Interrupt Request 5	249
IRQ5X	Interrupt Request 5, external	–
IRQ6	Interrupt Request 6	250
IRQ6X	Interrupt Request 6, external	–
IRQ7	Interrupt Request 7	251
JMPS	"not" Jump (skip field decoded)	252

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
$\overline{\text{JMPF}}$	"not" Jump (function field decoded)	253
$\overline{\text{JSB}}$	"not" Jump to Subroutine (function field decoded)	254
LOAD	Load Memory	495
LPE	Loader Protect Enable	256
LSI	Left Shift Input	257
MBSY	Memory Busy	258
MC	Mode Control	259
MIT	Memory Inhibit Time	–
MOD0	Module 0	260
MOD0, 4	Modules 0 and 4	–
MOD1	Module 1	261
MOD1, 5	Modules 1 and 5	–
MOD2	Module 2	262
MOD2,6	Modules 2 and 6	–
MOD3	Module 3	263
MOD3, 7	Modules 3 and 7	–
MOD4	Module 4	264
MOD5	Module 5	265
MOD6	Module 6	266
$\overline{\text{MOD7}}$	Module 7	267
$\overline{\text{MOD0/1}}$	"not" Modules 0 and 1	268
$\overline{\text{MOD2/3}}$	"not" Modules 2 and 3	269
$\overline{\text{MOD4/5}}$	"not" Modules 4 and 5	270
$\overline{\text{MOD6/7}}$	"not" Modules 6 and 7	271
MOD0T/2T	Module 0/2 Time	272
$\overline{\text{MPC}}$	Memory Protect Control	274
$\overline{\text{MPV}}$	"not" Memory Protect Violation	275
MPY	"not" Multiply	276
MR0	M-Register bit 0	277
MR1	M-Register bit 1	278
MR2	M-Register bit 2	279
MR3	M-Register bit 3	280
MR4	M-Register bit 4	281
MR5	M-Register bit 5	282
MR6	M-Register bit 6	283
MR7	M-Register bit 7	284
MR8	M-Register bit 8	285
MR9	M-Register bit 9	286
MR10	M-Register bit 10	287
MR11	M-Register bit 11	288
MRTY	Memory Read Time Y	289
MSG	Memory Sense Gate	290
MWTY	Memory Write Time Y	291
OVFF	Overflow FF	292
P1A	Phase 1A (function field decoded)	293
P1SK	Phase 1 Skip	502
PEH	Parity Error Halt (indicator)	294
PEX	Parity Error	295
PH1A	Phase 1A	296
PH1B	Phase 1B	297
PH2	Phase 2	298
PH3	Phase 3	299
PH5	Phase 5	300
PINH	Panel Inhibit	301
PNLA	Panel Select A-register	302
PNLB	Panel Select B-register	303
PNLP	Panel Select P-register	304

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
PNLT	Panel select T-register	499
PON	Power On Normal	305
POPIO	Power On Preset I/O	306
PRH5/PRL4	Priority High s.c. 5, Priority Low s.c. 4	309
PRH6/PRL5	Priority High s.c. 6, Priority Low s.c. 5	310
PRH11/PRL10	Priority High s.c. 11, Priority Low s.c. 10	311
PRH12/PRL11	Priority High s.c. 12, Priority Low s.c. 11	312
PRH13/PRL12	Priority High s.c. 13, Priority Low s.c. 12	313
PRH14/PRL13	Priority High s.c. 14, Priority Low s.c. 13	314
PRH15/PRL14	Priority High s.c. 15, Priority Low s.c. 14	315
PRH16/PRL15	Priority High s.c. 16, Priority Low s.c. 15	316
PRH17/PRL16	Priority High s.c. 17, Priority Low s.c. 16	317
PRH21/PRL20	Priority High s.c. 21, Priority Low s.c. 20	318
PRH22/PRL21	Priority High s.c. 22, Priority Low s.c. 21	319
PRH23/PRL22	Priority High s.c. 23, Priority Low s.c. 22	320
PRH24/PRL23	Priority High s.c. 24, Priority Low s.c. 23	321
PRH25/PRL24	Priority High s.c. 25, Priority Low s.c. 24	322
PRL17	Priority Low s.c. 17	323
PRSE	Preset External	324
PRSI	Preset Internal	325
PWU	Power Up	326
PWUX	Power Up, external	–
QSI	Q-register Shift Input	327
RA0	ROM Address bit 0	–
RA1	ROM Address bit 1	–
RA2	ROM Address bit 2	–
RA3	ROM Address bit 3	–
RA4	ROM Address bit 4	–
RA5	ROM Address bit 5	–
RA6	ROM Address bit 6	–
RA7	ROM Address bit 7	–
RA8	ROM Address bit 8	–
RA9	ROM Address bit 9	–
RAR0	ROM Address Register bit 0	–
RAR1	ROM Address Register bit 1	–
RAR2	ROM Address Register bit 2	–
RAR3	ROM Address Register bit 3	–
RAR4	ROM Address Register bit 4	–
RAR5	ROM Address Register bit 5	–
RAR6	ROM Address Register bit 6	–
RAR7	ROM Address Register bit 7	–
RAR8	ROM Address Register bit 8	–
RAR9	ROM Address Register bit 9	–
$\overline{\text{RB15}}$	R-Bus bit 15	328
$\overline{\text{RBE}}$	"not" R-bus Enable	329
RBS1	R-Bus Select 1	330
RBS1X	R-Bus Select 1, external	–
RBS2	R-Bus Select 2	331
RBS2X	R-Bus Select 2, external	–
RCIR	Read Central Interrupt Register	332
RCTR	Read Counter	333
READ	Read	334
RESET	system Reset	335
RFE	Rotate Flag and Extend bits (CPU)	336
RIOB	Read I/O Bus	337
RIR0	ROM Instruction Register bit 0	338
RIR1	ROM Instruction Register bit 1	339

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
RIR2	ROM Instruction Register bit 2	340
RIR3	ROM Instruction Register bit 3	341
RIR4	ROM Instruction Register bit 4	342
RIR5	ROM Instruction Register bit 5	343
RIR6	ROM Instruction Register bit 6	344
RIR7	ROM Instruction Register bit 7	345
RIR12	ROM Instruction Register bit 12	346
RIR17	ROM Instruction Register bit 17	347
RJMP	ROM Jump	348
RMX	ROM External	–
ROM8	ROM bit 8	349
ROM9	ROM bit 9	350
ROM10	ROM bit 10	351
ROM11	ROM bit 11	352
ROM12	ROM bit 12	353
ROM13	ROM bit 13	354
ROM14	ROM bit 14	355
ROM15	ROM bit 15	356
ROM16	ROM bit 16	357
ROM17	ROM bit 17	358
ROM18	ROM bit 18	359
ROM19	ROM bit 19	360
ROM20	ROM bit 20	361
ROM21	ROM bit 21	362
ROM22	ROM bit 22	363
ROM23	ROM bit 23	364
ROMX0	ROM bit 0, external	–
ROMX1	ROM bit 1, external	–
ROMX2	ROM bit 2, external	–
ROMX3	ROM bit 3, external	–
ROMX4	ROM bit 4, external	–
ROMX5	ROM bit 5, external	–
ROMX6	ROM bit 6, external	–
ROMX7	ROM bit 7, external	–
ROMX8	ROM bit 8, external	–
ROMX9	ROM bit 9, external	–
ROMX10	ROM bit 10, external	–
ROMX11	ROM bit 11, external	–
ROMX12	ROM bit 12, external	–
ROMX13	ROM bit 13, external	–
ROMX14	ROM bit 14, external	–
ROMX15	ROM bit 15, external	–
ROMX16	ROM bit 16, external	–
ROMX17	ROM bit 17, external	–
ROMX18	ROM bit 18, external	–
ROMX19	ROM bit 19, external	–
ROMX20	ROM bit 20, external	–
ROMX21	ROM bit 21, external	–
ROMX22	ROM bit 22, external	–
ROMX23	ROM bit 23, external	–
RP9	Read P-register bit 9	365
RPHI	Read P-register High bits (10 through 15)	366
RPLO	Read P-register Low bits (0 through 9)	367
RRSB	Read R-bus to S-bus	368
RRSBX	Read R-bus to S-bus, external	–
RSAV	Read Save-Register	369
RSP1	Read SP1-register	370

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
RSP1X	Read SP1-register, external	–
RSP2	Read SP2-register	371
RSP2X	Read SP2-register, external	–
RSP3	Read SP3-register	372
RSP3X	Read SP3-register, external	–
RSP4	Read SP4-register	373
RSP4X	Read SP4-register, external	–
RSSP	Restart Pulse	374
RUN	Run signal	375
RUNX	Run signal, external	–
RW	Read-Write	376
RWCW	Read-Write/Clear-Write	377
SA0	Sense Amplifier bit 0	378
SA1	Sense Amplifier bit 1	379
SA2	Sense Amplifier bit 2	380
SA3	Sense Amplifier bit 3	381
SA4	Sense Amplifier bit 4	382
SA5	Sense Amplifier bit 5	383
SA6	Sense Amplifier bit 6	384
SA7	Sense Amplifier bit 7	385
SA8	Sense Amplifier bit 8	386
SA9	Sense Amplifier bit 9	387
SA10	Sense Amplifier bit 10	388
SA11	Sense Amplifier bit 11	389
SA12	Sense Amplifier bit 12	390
SA13	Sense Amplifier bit 13	391
SA14	Sense Amplifier bit 14	392
SA15	Sense Amplifier bit 15	393
SA16	Sense Amplifier bit 16	394
SAM	Select A-register Mode	395
SB0	S-Bus bit 0	396
SB1	S-Bus bit 1	397
SB2	S-Bus bit 2	398
SB3	S-Bus bit 3	399
SB4	S-Bus bit 4	400
SB5	S-Bus bit 5	401
SB6	S-Bus bit 6	402
SB7	S-Bus bit 7	403
SB8	S-Bus bit 8	404
SB9	S-Bus bit 9	405
SB10	S-Bus bit 10	406
SB11	S-Bus bit 11	407
SB12	S-Bus bit 12	408
SB13	S-Bus bit 13	409
SB14	S-Bus bit 14	410
SB15	S-Bus bit 15	411
SC1	Select Code 1	412
SC5	Select Code 5	413
SC6	Select Code 6	414
SC7	Select Code 7	415
SCE	Set/Clear Extend	416
SCF0	Set/Clear Flag Zero	417
SCL0	Select Code Least significant bit 0	418
$\overline{\text{SCL0X}}$	Select Code Least significant bit 0, external	–
SCL0X	"not" Select Code Least significant bit 0, external	–
SCL1	Select Code Least significant bit 1	419
SCL1X	Select Code Least significant bit 1, external	–

Table 4-1. Signal Index (Continued)

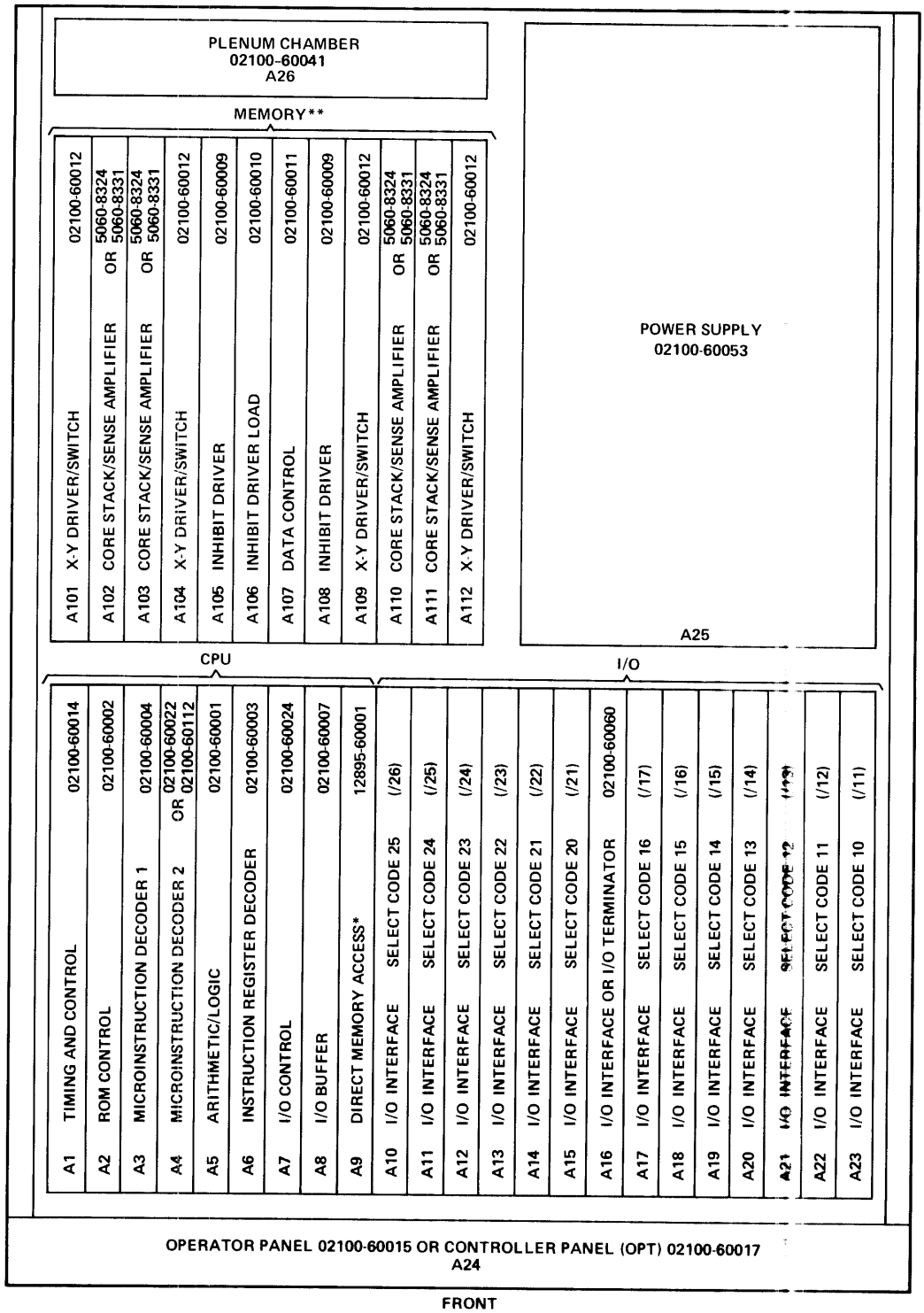
SIGNAL MNEMONIC	DEFINITION	REF NO.
$\overline{\text{SCL1X}}$	"not" Select Code Least significant bit 1, external	–
SCL2	Select Code Least significant bit 2	420
SCL2X	Select Code Least significant bit 2, external	–
$\overline{\text{SCL2X}}$	"not" Select Code Least significant bit 2, external	–
SCL3	Select Code Least significant bit 3	421
SCL3X	Select Code Least significant bit 3, external	–
$\overline{\text{SCL3X}}$	"not" Select Code Least significant bit 3, external	–
SCL4	Select Code Least significant bit 4	422
SCL4X	Select Code Least significant bit 4, external	–
$\overline{\text{SCL4X}}$	"not" Select Code Least significant bit 4, external	–
SCL5	Select Code Least significant bit 5	423
SCL5X	Select Code Least significant bit 5, external	–
$\overline{\text{SCL5X}}$	"not" Select Code Least significant bit 5, external	–
SCL6	Select Code Least significant bit 6	424
SCL6X	Select Code Least significant bit 6, external	–
$\overline{\text{SCL6X}}$	"not" Select Code Least significiant bit 6, external	–
SCL7	Select Code Least significant bit 7	425
SCL7X	Select Code Least significant bit 7, external	–
$\overline{\text{SCL7X}}$	"not" Select Code Least significant bit 7, external	–
SCM0	Select Code Most significant bit 0	426
SCM0X	"not" Select Code Most significant bit 0, external	–
SCM1	Select Code Most significant bit 1	427
SCM1X	"not" Select Code Most significant bit 1, external	–
SCM2	Select Code Most significant bit 2	428
SCM2X	Select Code Most significant bit 2, external	–
$\overline{\text{SCM2X}}$	"not" Select Code Most significant bit 2, external	–
SCM3	Select Code Most significant bit 3	–
$\overline{\text{SCM3}}$	"not" Select Code Most significant bit 3	–
SCM4	Select Code Most significant bit 4	–
$\overline{\text{SCM4}}$	"not" Select Code Most significant bit 4	–
SCM5	Select Code Most significant bit 5	–
$\overline{\text{SCM5}}$	"not" Select Code Most significant bit 5	–
SCM6	Select Code Most significant bit 6	–
$\overline{\text{SCM6}}$	"not" Select Code Most significant bit 6	–
SCM7	Select Code Most significant bit 7	–
$\overline{\text{SCM7}}$	"not" Select Code Most significant bit 7	–
SCO	Set/Clear Overflow	429
SCRY	Set Carry	430
SELM	Select M-register	431
SELT	Select T-register	432
SFC	Skip if Flag is Clear (I/O)	433
SFM	Select F-register Mode	434
SFS	Skip if Flag is Set (I/O)	435
SFSB	Skip if Flag is Set (I/O) (buffered)	436
SHIFT	Shift	437
SIOB	S-bus to I/O-bus	438
SIR	Set Interrupt Request	439
SKF	Skip on Flag (I/O)	440
SKIP	Skip (ROM instruction)	441
SL1	Shift Left 1	442
$\overline{\text{SL4}}$	"not" Shift Left 4	443
SPH1B	Set Phase 1B	446
SPH2	Set Phase 2	447
SPH3	Set Phase 3	448
SPH5	Set Phase 5	449
SQM	Select Q-register Mode	450
SR1	Shift Right 1	451

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
$\overline{\text{SRAR}}$	"not" Set ROM Address Register	452
SRH	Set Run Halt logic	453
SRHX	Set Run Halt logic, external	–
SRIR	Set ROM Instruction Register	454
SRQ10	Service Request s.c. 10	455
SRQ11	Service Request s.c. 11	456
SRQ12	Service Request s.c. 12	457
SRQ13	Service Request s.c. 13	458
SRQ14	Service Request s.c. 14	459
SRQ15	Service Request s.c. 15	460
SRQ16	Service Request s.c. 16	461
SRQ17	Service Request s.c. 17	462
SRQ20	Service Request s.c. 20	463
SRQ21	Service Request s.c. 21	464
SRQ22	Service Request s.c. 22	465
SRQ23	Service Request s.c. 23	466
SRQ24	Service Request s.c. 24	467
SRQ25	Service Request s.c. 25	468
SRQ25X	Service Request s.c. 25, external	–
SRQ26X	Service Request s.c. 26, external	–
SRQ27X	Service Request s.c. 27, external	–
SSCY	Set Single Cycle	469
SSCYX	Set Single Cycle, external	–
SSIN	Set Single Instruction	470
SSSR1	Set Service Select Register, Channel 1	–
SSSR2	Set Service Select Register, Channel 2	–
STA	Store in A-register	471
STB	Store in B-register	472
STC	Set Control	473
STCLK	Store Clock	474
STF	Set Flag (I/O)	475
STI	Store in I-Register	476
STORE	Store (T- or M-register)	477
$\overline{\text{STOF}}$	Store in F-register	478
$\overline{\text{STP}}$	Store in P-register	479
STQ	Store in Q-register	480
SYNX	Sync External	–
T3	Time period 3 to I/O	481
T4	Time period 4	482
T5	Time period 5	498
T6	Time period 6	483
TBS1	T-Bus Select 1	484
TBS2	T-Bus Select 2	485
$\overline{\text{TBZ}}$	T-Bus all Zeros	486
$\overline{\text{TR0}}$	"not" T-Register bit 0	–
$\overline{\text{TR1}}$	"not" T-Register bit 1	–
$\overline{\text{TR2}}$	"not" T-Register bit 2	–
$\overline{\text{TR3}}$	"not" T-Register bit 3	–
$\overline{\text{TR4}}$	"not" T-Register bit 4	–
$\overline{\text{TR5}}$	"not" T-Register bit 5	–
$\overline{\text{TR6}}$	"not" T-Register bit 6	–
$\overline{\text{TR7}}$	"not" T-Register bit 7	–
$\overline{\text{TR8}}$	"not" T-Register bit 8	–
$\overline{\text{TR9}}$	"not" T-Register bit 9	–
$\overline{\text{TR10}}$	"not" T-Register bit 10	–
$\overline{\text{TR11}}$	"not" T-Register bit 11	–
$\overline{\text{TR12}}$	"not" T-Register bit 12	–

Table 4-1. Signal Index (Continued)

SIGNAL MNEMONIC	DEFINITION	REF NO.
$\overline{\text{TR13}}$	"not" T-Register bit 13	–
$\overline{\text{TR14}}$	"not" T-Register bit 14	–
$\overline{\text{TR15}}$	"not" T-Register bit 15	–
$\overline{\text{TR16}}$	"not" T-Register bit 16	–
UABF	Update A/B addressable FF	500
$\overline{\text{WCR1}}$	"not" Word Count Register 1	487
$\overline{\text{WCR2}}$	"not" Word Count Register 2	488
WSP1	Write SP1-register	489
WSP2	Write SP2-register	490
WSP3	Write SP3-register	491
WSP4	Write SP4-register	492
XENRM	External Enable ROM	–
XT1	X-line Time 1	493
XT2	X-line Time 2	494
ZABF	Zero A- and B-register FF	501



NOTES: *DIRECT MEMORY ACCESS CARD IS AN ACCESSORY TO THE COMPUTER AND IS NOT PART OF THE BASIC CONFIGURATION.

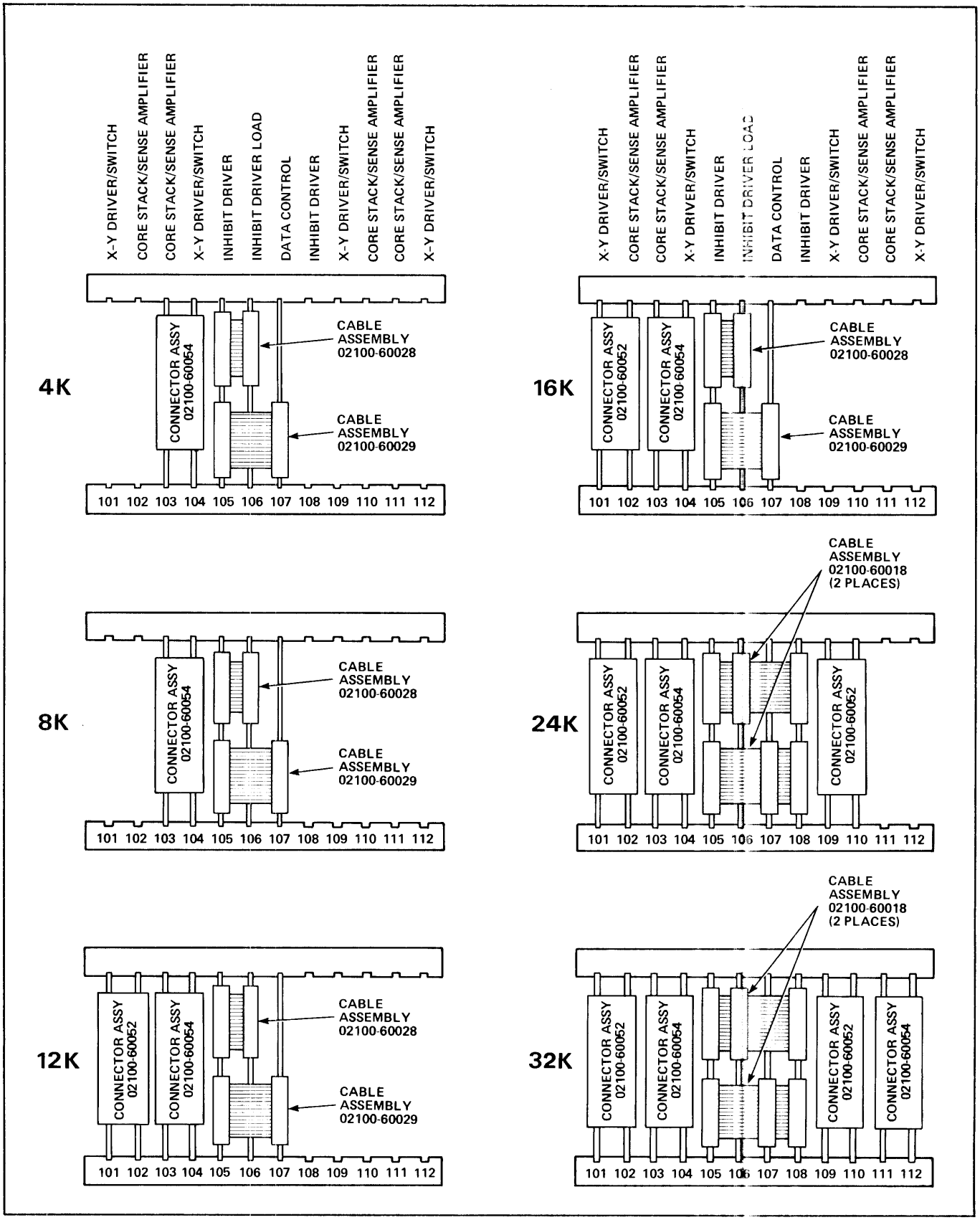
**MEMORY SECTION LOADING SHOWN IS FOR 32K MEMORY. REFER TO FIGURE 4-2 FOR OTHER MEMORY SIZE LOADING.

2133-3C

Figure 4-1. Major Assembly Locations

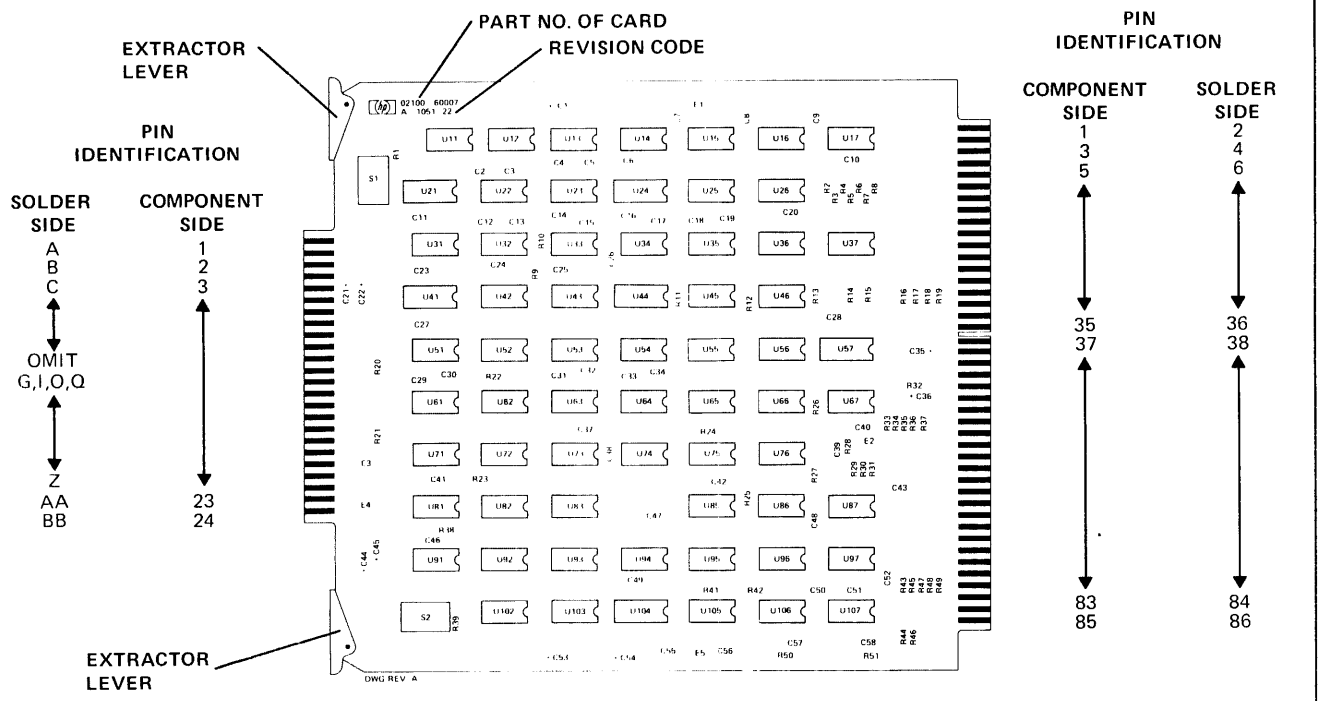
Table 4-2. Memory Section Card Part Numbers

CARD	MEMORY SIZE					
	4K	8K	12K	16K	24K	32K
4K Core Stack/Sense Amplifier (02100-60040)	A103	–	A102	–	–	–
8K Core Stack/Sense Amplifier (5060-8324) or (5060-8331)	–	A103	A103	A102, A103	A102, A103, A110	A102, A103, A110, A111
X-Y Driver/Switch (02100-60012)	A104	A104	A101, A104	A101, A104	A101, A104, A109	A101, A104, A109, A112
Inhibit Driver (02100-60008)	A105	A105	–	–	–	–
Inhibit Driver (02100-60009)	–	–	A105	A105	A105, A108	A105, A108
Inhibit Driver Load (02100-60010)	A106	A106	A106	A106	A106	A106
Data Control (02100-60011)	A107	A107	A107	A107	A107	A107

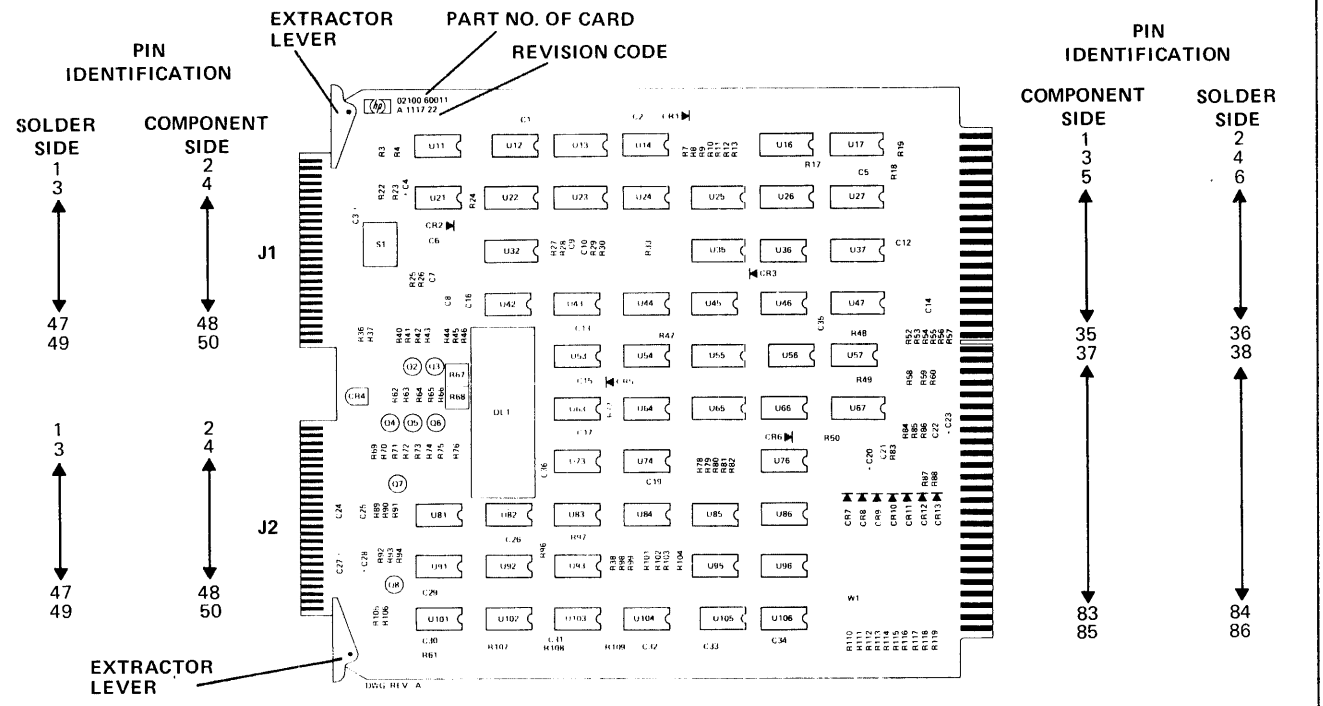


2133-2

Figure 4-2. Card Cage Loading Configuration for Each Memory Size



A. ONE 48-PIN EDGE-CONNECTOR



B. TWO 50-PIN EDGE CONNECTORS

NOTE: INTEGRATED CIRCUITS ARE NUMBERED IN ROW AND COLUMN ORDER.

2133-1

Figure 4-3. Particulars for Typical Printed Circuit Cards

Table 4-3. A1 Timing and Control Card, Replaceable Parts

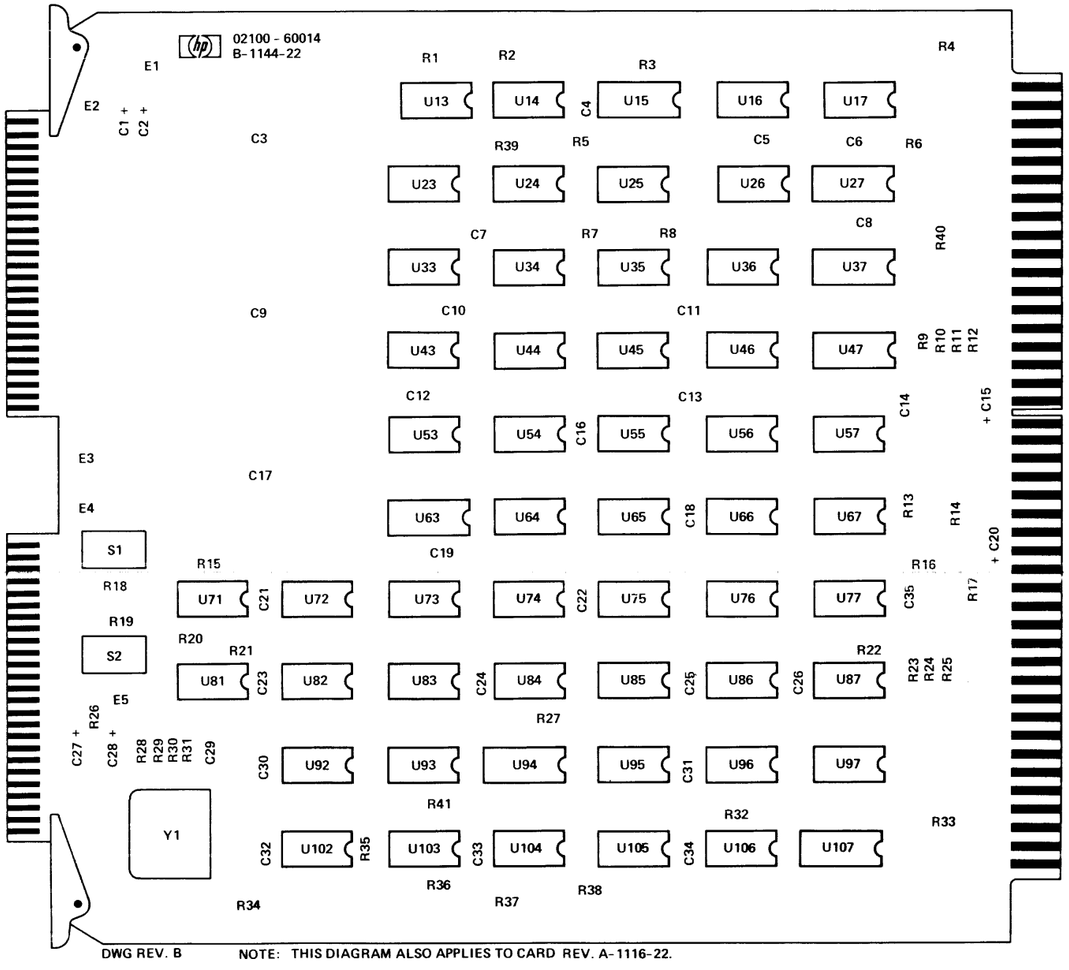
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A1	02100-60014	1	TIMING AND CONTROL CARD	28480	02100-60014
A1C1	0180-0197	6	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A1C2	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A1C3	0160-2055	28	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C4	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C5	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C15	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A1C16	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C20	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A1C21	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C22	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C23	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C25	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C26	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C27	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A1C28	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A1C29	0140-0198	1	C:FXD MICA 200 PF 5%	72136	RDM15F201J3C
A1C30	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C31	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C32	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C33	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C34	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1C35	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A1E1	0360-0294	5	TERMINAL:SOLDER POINT	28480	0360-0294
A1E2	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A1E3	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A1E4	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A1E5	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A1R1	0757-0280	15	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R2	0757-1094	3	R:FXD MET FLM 1.47K OHM 1% 1/8W	28480	0757-1094
A1R3	0698-3446	3	R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A1R4	0698-3446		R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A1R5	0757-0284	1	R:FXD MET FLM 150 OHM 1% 1/8W	28480	0757-0284
A1R6	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R7	0757-0416	13	R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R8	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R9	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R10	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R11	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R12	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R13	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R14	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R15	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R16	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R17	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R18	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R19	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R20	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R21	0698-3440	1	R:FXD MET FLM 196 OHM 1% 1/8W	28480	0698-3440
A1R22	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R23	0757-1094		R:FXD MET FLM 1.47K OHM 1% 1/8W	28480	0757-1094
A1R24	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R25	0757-1094		R:FXD MET FLM 1.47K OHM 1% 1/8W	28480	0757-1094
A1R26	0698-3446		R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A1R27	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R28	0683-1825	2	R:FXD COMP 1800 OHM 5% 1/4W	01121	CB 1825
A1R29	0683-1025	2	R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
A1R30	0683-1825		R:FXD COMP 1800 OHM 5% 1/4W	01121	CB 1825
A1R31	0683-1025		R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
A1R32	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R33	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R34	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280

Table 4-3. A1 Timing and Control Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A1R35	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R36	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R37	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R38	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1R39	0698-3442	1	R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A1R40	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A1R41	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A1S1	3101-1213	2	SWITCH:TOGGLE DPST-DB SUB-MINIATURE	81640	T8001
A1S2	3101-1213		SWITCH:TOGGLE DPST-DB SUB-MINIATURE	81640	T8001
A1U13	1820-0141	4	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A1U14	1820-0370	6	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A1U15	1820-0485	4	IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A1U16	1820-0424	5	IC:TTL HS HEX INVERTER	04713	SN74H04N
A1U17	1820-0954	2	IC:CTL DUAL 4-INPT AND GATE	07263	U6A995479X
A1U23	1820-0186	5	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A1U24	1820-0966	4	IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A1U25	1820-0187	1	IC:CTL DUAL 2-INPT NOR GATE	07263	U6A985249X
A1U26	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A1U27	1820-0954		IC:CTL DUAL 4-INPT AND GATE	07263	U6A995479X
A1U33	1820-0965	3	IC:CTL QUAD 1-INPT AND GATE	07263	U6A996579X
A1U34	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A1U35	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A1U36	1820-0964	3	IC:CTL TRIPLE 3-3-1 INPT AND GATE	14433	MIC 964
A1U37	1820-0964		IC:CTL TRIPLE 3-3-1 INPT AND GATE	14433	MIC 964
A1U43	1820-0965		IC:CTL QUAD 1-INPT AND GATE	07263	U6A996579X
A1U44	1820-0965		IC:CTL QUAD 1-INPT AND GATE	07263	U6A996579X
A1U45	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A1U46	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A1U47	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A1U53	1820-0512	1	IC:TTL DUAL D F/F	01295	SN74H74N
A1U54	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A1U55	1820-0609	5	IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A1U56	1820-0609		IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A1U57	1820-0964		IC:CTL TRIPLE 3-3-1 INPT AND GATE	14433	MIC 964
A1U63	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A1U64	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A1U65	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A1U66	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A1U67	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A1U71	1820-0371	3	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A1U72	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A1U73	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A1U74	1820-0609		IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A1U75	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A1U76(NOTE 1)	1820-0451	2	IC:TTL DUAL J-K F/F	04713	MC3062P
A1U77	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A1U81(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A1U82	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A1U83	1820-0609		IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A1U84	1820-0372	3	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A1U85	1820-0609		IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A1U86	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A1U87	1820-0374	1	IC:TTL HS DUAL 4-INPT AND GATE	01295	SN74H21N
A1U92	1820-0681	1	IC:TTL QUAD 2-INPT NAND GATE	01295	SN74S00N
A1U93	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A1U94	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A1U95	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A1U96	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A1U97	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A1U102	1820-0140	2	IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A1U103	1820-0140		IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A1U104	1820-0372		IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A1U105	1820-0372		IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A1U106	1820-0373	1	IC:TTL HS DUAL 4-INPT NAND GATE	01295	SN74H20N
A1U107	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A1XY1	1200-0199	1	SOCKET:CRYSTAL	91506	8000-AG9
A1Y1	0410-0432	1	CRYSTAL:QUARTZ	28480	0410-0432

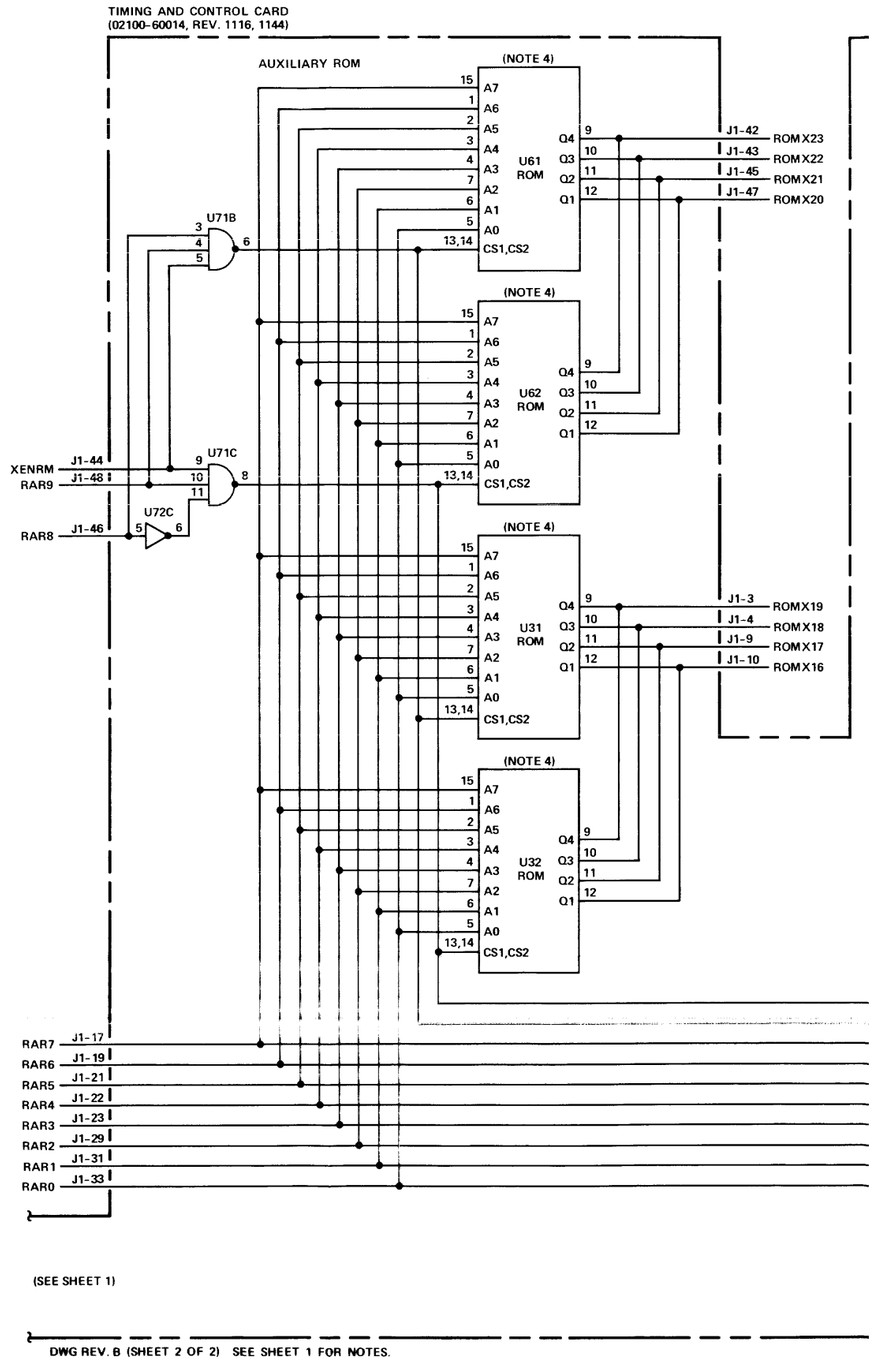
NOTES: 1. Part no. 1820-0695 used on some cards; the two parts are interchangeable.

REF. NO.	BACKPLANE LOCATION					
				* INDICATES SIGNAL SOURCE		
A1						
15	A1-60	A4-62*				
19	A1-51*	A5-61				
20	A1-72*	A3-79				
21	A1-84*	A4-69	A6-31	A8-70		
22	A1-78*	A3-81	A7-56	A8-42	A9-76	A24-64
	A107-69					
23	A1-70*	A6-55				
24	A1-77*	A7-25				
25	A1-76*	A4-61				
28	A1-52*	A4-19	A24-43			
31	A1-10	A8-64*				
33	A1-42	A24-60*	A107-6			
38	A1-50	A7-4	A8-57*	A9-29	A10-46 THRU A23-46	
40	A1-58*	A2-63				
42	A1-46	A2-65*	A4-55			
47	A1-67	A4-64	A24-21*			
55	A1-80	A3-35*	A6-43			
56	A1-65	A7-65*	A8-50*	A24-74		
199	A1-24	A8-68*				
200	A1-37	A24-33*	A107-79			
201	A1-43*	A5-3				
203	A1-22	A7-45*				
223	A1-83	A6-21*	A7-38			
239	A1-9	A2-80	A3-71	A4-24	A6-58*	A8-63
240	A1-3	A2-79	A6-44*			
241	A1-7	A2-78	A6-49*			
242	A1-5	A2-81	A6-46*			
243	A1-12	A2-82	A6-45*			
244	A1-56*	A2-52				
252	A1-73	A4-46*				
293	A1-81	A4-65*				
295	A1-63	A3-27	A8-58*			
296	A1-41*	A8-53	A24-49			
297	A1-30*	A7-12	A8-71	A24-50		
298	A1-28*	A24-28				
299	A1-26*	A24-30				
305	A1-6	A7-8*	A24-67	A104-42	A107-70	
	A10-66 THRU A23-66					
325	A1-4	A24-13*				
334	A1-54*	A3-28*	A4-27	A9-31*	A24-77*	A107-72
335	A1-8*	A2-70	A4-30	A6-9	A7-20	A8-75
	A107-82					
348	A1-75*	A2-56				
369	A1-71	A2-41	A4-17*			
374	A1-69	A7-46*				
375	A1-49*	A10-50 THRU A23-50				
411	A1-14	A2-11*	A4-75	A5-4*	A6-41	A8-33*
	A9-84*	A107-52				
416	A1-66	A24-11*				
417	A1-68	A24-5*				
429	A1-79	A24-3*				
430	A1-44	A6-28*				
431	A1-53*	A3-22*	A8-60	A9-35*	A24-42*	A107-66
440	A1-17	A4-16*	A7-21*	A10-12* THRU A23-12*		
446	A1-31*	A2-74				
447	A1-34*	A2-73	A8-72			
448	A1-35*	A2-55				
452	A1-61*	A2-60				
453	A1-74	A24-62*				
454	A1-55	A2-62	A3-42	A4-52	A6-76*	
469	A1-62	A24-58*				
470	A1-64	A24-59*				
474	A1-36*	A2-59	A3-18			
482	A1-16	A8-44*	A9-80			
500	A1-59*	A4-31				
501	A1-57*	A4-53				
502	A1-13*	A6-29				



DWG REV. B NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1116-22.

See table 4-3 for replaceable parts.



DWG REV. B (SHEET 2 OF 2) SEE SHEET 1 FOR NOTES.

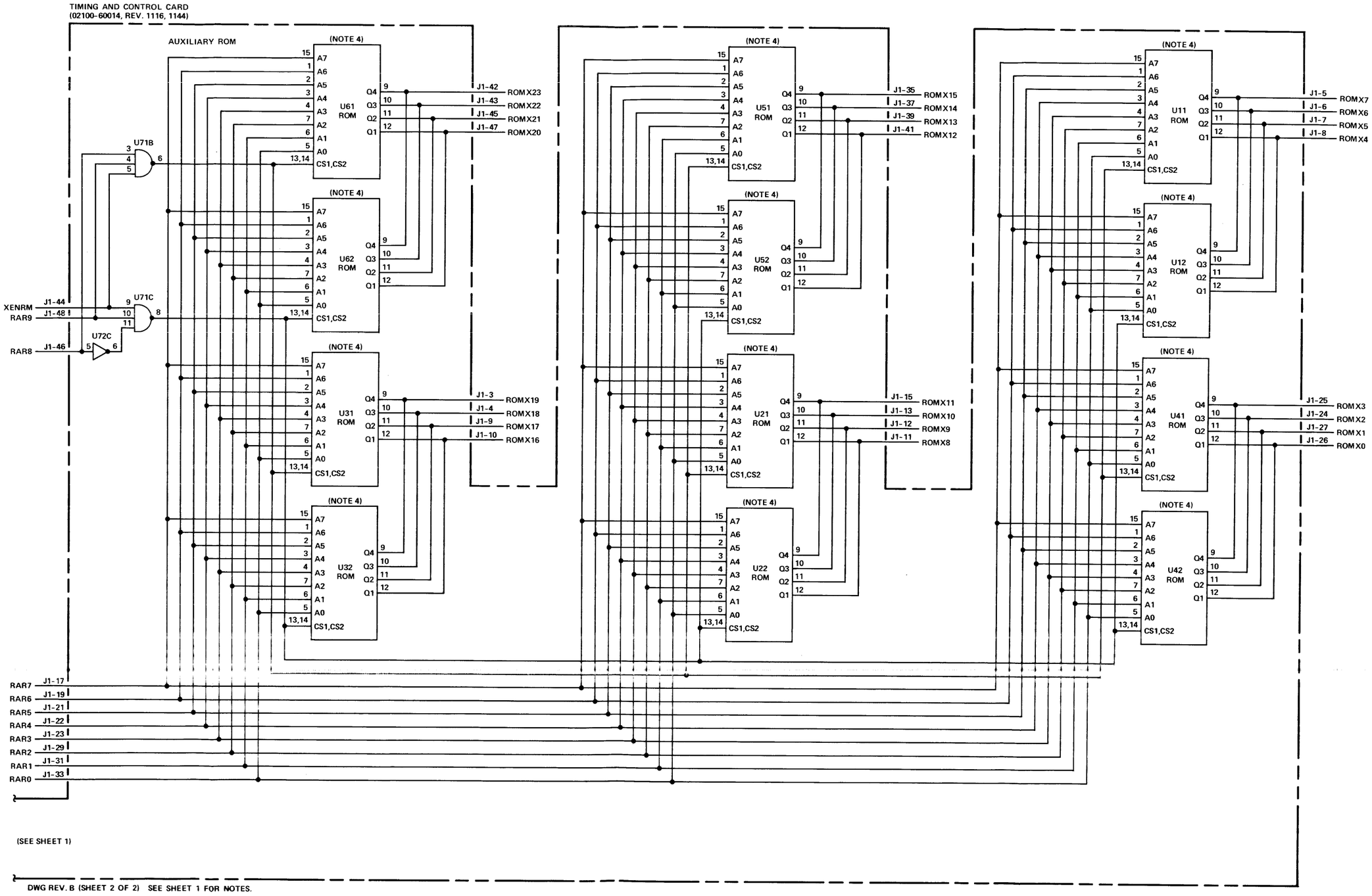


Figure 4-4. A1 Timing and Control Card, Parts Location and Schematic Diagrams (Sheet 2 of 2)

Table 4-4. A2 ROM Control Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A2	02100-60002	1	ROM CONTROL CARD	28480	02100-60002
A2C1	0160-2055	26	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C2	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C3	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C4	0180-0197	6	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A2C5	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A2C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C15	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A2C16	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C19	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A2C20	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C21	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C22	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C23	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C25	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A2C26	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A2C27	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C28	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C29	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C30	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C31	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2C32	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A2E1	0360-0294	3	TERMINAL:SOLDER POINT	28480	0360-0294
A2E2	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A2E3	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A2R1	0698-7229	42	R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R2	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R3	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R4	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R5	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R6	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R7	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R8	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R9	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R10	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R11	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R12	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R13	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R14	0698-7226	2	R:FXD FLM 383 OHM 2% 1/8W	28480	0698-7226
A2R15	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R16	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R17	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R18	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R19	0698-7236	6	R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A2R20	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A2R21	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R22	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R23	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R24	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R25	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R26	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A2R27	0698-7225	15	R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R28	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R29	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R30	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R31	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R32	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R33	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R34	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R35	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R36	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R37	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R38	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225

Table 4-4. A2 ROM Control Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A2R39	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R40	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R41	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R42	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R43	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R44	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R45	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R46	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R47	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A2R48	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R49	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R50	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R51	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R52	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R53	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A2R54	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R55	0698-7220	1	R:FXD FLM 215 OHM 2% 1/8W	28480	0698-7220
A2R56	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R57	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R58	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R59	0698-7234	1	R:FXD FLM 825 OHM 2% 1/8W	28480	0698-7234
A2R60	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R61	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R62	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R63	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R64	0698-7221	2	R:FXD FLM 237 OHM 2% 1/8W	28480	0698-7221
A2R65	0698-7221		R:FXD FLM 237 OHM 2% 1/8W	28480	0698-7221
A2R66	0698-7216	1	R:FXD MET FLM 147 OHM 2% 1/8W	28480	0698-7216
A2R67	0698-7225		R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A2R68	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A2R69	0698-7222	3	R:FXD FLM 261 OHM 2% 1/8W	28480	0698-7222
A2R70	0698-7222		R:FXD FLM 261 OHM 2% 1/8W	28480	0698-7222
A2R71	0698-7222		R:FXD FLM 261 OHM 2% 1/8W	28480	0698-7222
A2R72	0698-7226		R:FXD FLM 383 OHM 2% 1/8W	28480	0698-7226
A2R73(NOTE 1)	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A2U13	1820-0971	4	IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A2U14	1820-0966	12	IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U15	1816-2062	1	IC:ROM # 062	28480	1816-2062
A2U16	1816-2065	1	IC:ROM # 065	28480	1816-2065
A2U17	1816-2064	1	IC:ROM # 064	28480	1816-2064
A2U23	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A2U24	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U25(NOTE 2)	1816-0056	1	IC:ROM 4 X 256	28480	1816-0056
A2U26(NOTE 2)	1816-0059	1	IC:ROM 4 X 256	28480	1816-0059
A2U27(NOTE 2)	1816-0058	1	IC:ROM 4 X 256	28480	1816-0058
A2U31	1820-0953	4	IC:CTL TRIPLE 2-2-3 INPT AND GATE	14433	MIC 953
A2U32	1820-0231	3	IC:TTL 4-BIT SYNC BINARY COUNTER	07263	U6B931659X
A2U34	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U35(NOTE 2)	1816-0055	1	IC:ROM 4 X 256	28480	1816-0055
A2U36	1820-0437	2	IC:TTL QUAD D F/F	04713	MC4015P
A2U37(NOTE 2)	1816-0054	1	IC:ROM 4 X 256	28480	1816-0054
A2U41	1820-0379	4	IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A2U42	1820-0301	3	IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A2U44	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U45	1816-2061	1	IC:ROM # 061	28480	1816-2061
A2U46	1820-0437		IC:TTL QUAD D F/F	04713	MC4015P
A2U47	1816-2060	1	IC:ROM # 060	28480	1816-2060
A2U51	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A2U52	1820-0231		IC:TTL 4-BIT SYNC BINARY COUNTER	07263	U6B931659X
A2U53	1820-0231		IC:TTL 4-BIT SYNC BINARY COUNTER	07263	U6B931659X
A2U54	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A2U55	1816-2063	1	IC:ROM # 063	28480	1816-2063
A2U56	1820-0376	1	IC:TTL DUAL 4-INPT NAND POWER GATE	01295	SN74H74N
A2U57	1820-0374	1	IC:TTL HS DUAL 4-INPT AND GATE	01295	SN74H21N
A2U61	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A2U62	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A2U63	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U64	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U65(NOTE 2)	1816-0057	1	IC:ROM 4 X 256	28480	1816-0057
A2U66	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U67	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A2U71	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A2U72	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U73	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U74	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X

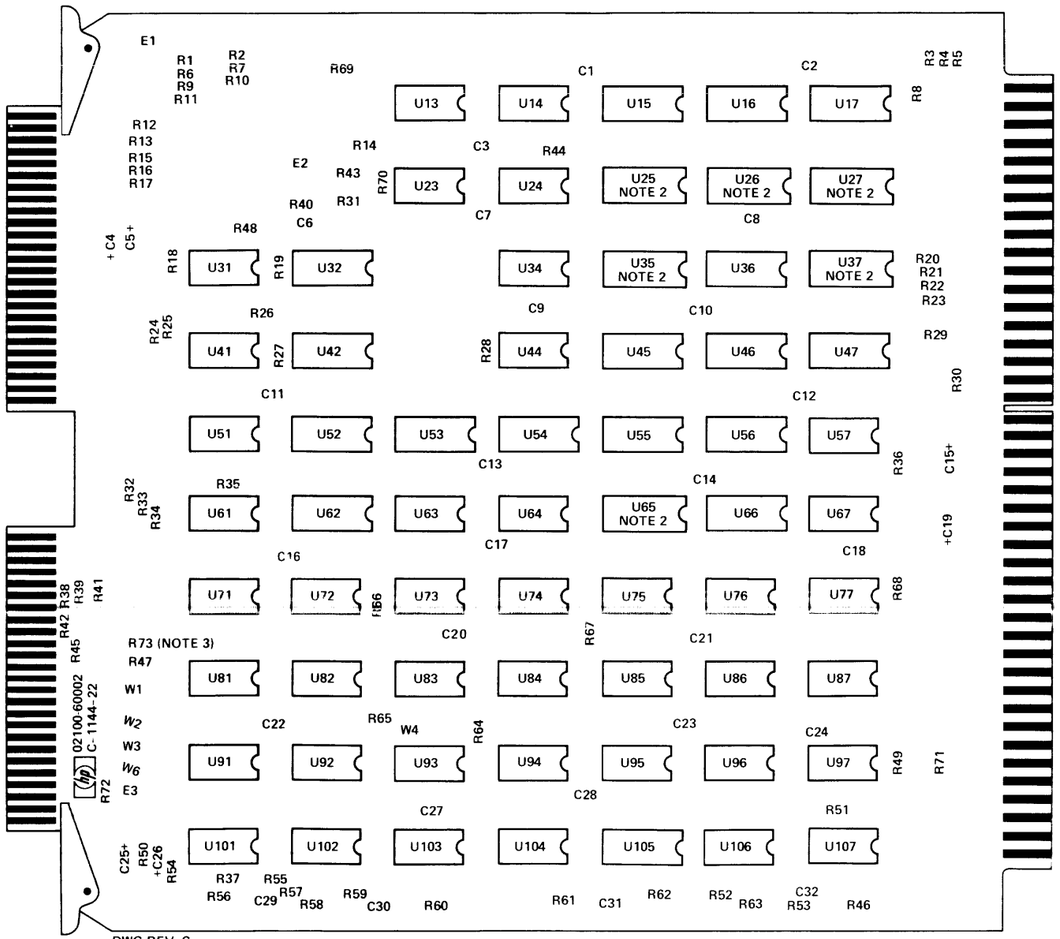
NOTES: 1. First used on card rev. 1144.
2. Used only on cards having floating-point capability.

Table 4-4. A2 ROM Control Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A2U75	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U76	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U77	1820-0186	4	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A2U81	1820-0141	2	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A2U82	1820-0370	2	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A2U83	1820-0965	2	IC:CTL QUAD 1-INPT AND GATE	07263	U6A996579X
A2U84	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A2U85	1820-0424	1	IC:TTL HS HEX INVERTER	04713	SN74H04N
A2U86	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A2U87	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A2U91	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A2U92	1820-0371	1	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A2U93	1820-0953		IC:CTL TRIPLE 2-2-3 INPT AND GATE	14433	MIC 953
A2U94	1820-0965		IC:CTL QUAD 1-INPT AND GATE	07263	U6A996579X
A2U95	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A2U96	1820-0372	1	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A2U97	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A2U101	1820-0953		IC:CTL TRIPLE 2-2-3 INPT AND GATE	14433	MIC 953
A2U102	1820-0953		IC:CTL TRIPLE 2-2-3 INPT AND GATE	14433	MIC 953
A2U103	1820-0954	1	IC:CTL DUAL 4-INPT AND GATE	07263	U6A995479X
A2U104	1820-0239	1	IC:TTL QUAD 2-INPT NOR GATE	28480	1820-0239
A2U105	1820-0485	1	IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A2U106(NOTE 3)	1820-0451	1	IC:TTL DUAL J-K F/F	04713	MC3062P
A2U107	1820-0187	1	IC:CTL DUAL 2-INPT NOR GATE	07263	U6A985249X
A2W1	8159-0005	5	JUMPER WIRE	28480	8159-0005
A2W2	8159-0005		JUMPER WIRE	28480	8159-0005
A2W3	8159-0005		JUMPER WIRE	28480	8159-0005
A2W4	8159-0005		JUMPER WIRE	28480	8159-0005
A2W6	8159-0005		JUMPER WIRE	28480	8159-0005
A2XU25	1200-0767	6	SOCKET:IC 16 CONTACT DUAL LINE	91506	316AG5D-3R
A2XU26	1200-0767		SOCKET:IC 16 CONTACT DUAL LINE	91506	316AG5D-3R
A2XU27	1200-0767		SOCKET:IC 16 CONTACT DUAL LINE	91506	316AG5D-3R
A2XU35	1200-0767		SOCKET:IC 16 CONTACT DUAL LINE	91506	316AG5D-3R
A2XU37	1200-0767		SOCKET:IC 16 CONTACT DUAL LINE	91506	316AG5D-3R
A2XU65	1200-0767		SOCKET:IC 16 CONTACT DUAL LINE	91506	316AG5D-3R
(NOTE 4)	0340-0788	6	INSULATOR:IC SOCKET	91506	316-6PI

NOTES: 3. Part no. 1820-0695 used on some cards; the two parts are interchangeable.
4. One 0340-0788 insulator is used with each 1200-0767 socket.

REF. NO.	BACKPLANE LOCATION					
			* INDICATES SIGNAL SOURCE			
A2						
37	A2-64	A3-68*				
40	A1-58*	A2-63				
42	A1-46	A2-65*	A4-55			
232	A2-72	A6-62*	A7-26			
233	A2-66	A6-70*	A7-29			
234	A2-84	A6-69*	A8-41			
235	A2-75	A6-75*	A8-38			
236	A2-76	A6-57*	A8-45			
237	A2-61	A4-54	A6-63*	A8-65		
238	A2-83	A3-17	A6-59*			
239	A1-9	A2-80	A3-71	A4-24	A6-58*	A8-63
240	A1-3	A2-79	A6-44*			
241	A1-7	A2-78	A6-49*			
242	A1-5	A2-81	A6-46*			
243	A1-12	A2-82	A6-45*			
244	A1-56*	A2-52				
254	A2-69	A4-18*				
335	A1-8* A107-82	A2-70	A4-30	A6-9	A7-20	A8-75
346	A2-58	A4-82*				
347	A2-57	A3-12*				
348	A1-75*	A2-56				
369	A1-71	A2-41	A4-17*			
441	A2-77*	A3-84	A4-81	A6-6*		
446	A1-31*	A2-74				
447	A1-34*	A2-73	A8-72			
448	A1-35*	A2-55				
452	A1-61*	A2-60				
474	A1-36*	A2-59	A3-18			



DWG REV. C

See table 4-4 for replaceable parts.

NOTES:
1. THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1106-22 AND B-1132-22.
2. U25, U26, U27, U35, U37, AND U65 USED ONLY FOR OPTIONS SUCH AS FLOATING-POINT CAPABILITY.
3. R73 FIRST USED ON CARD REV. C-1144-22.

FF DEFINI

LEP = LEGAL E

NER = NON-EX

NOTES:
1. RESISTANCE VALUES ARE IN Oh ARE IN UF UNLESS OTHERWISE
2. ALL PIN NUMBERS REFER TO 86 WISE INDICATED.
3. NUMERALS WITHIN BRACKETS | NUMBERS.
4. U25, U26, U27, U35, U37, AND U6 ROM CONTROL CARD. THESE IC POINT CAPABILITY OR OTHER F
5. PRINTED CIRCUIT TRACE TO PIN
6. R73 AND U81B NOT USED ON RE REVISIONS CONNECTED AS SHO
7. JUMPER CONNECTIONS FOR VAI

Modules Installed	W1	W2
0	A to B	D to K
0, 1	A to B	None
0, 2	None	D to K
0, 3	A to B	C to D
0, 1, 2	A to D	None
0, 1, 3	A to B	None
0, 2, 3	None	C to D
0, 1, 2, 3	None	None

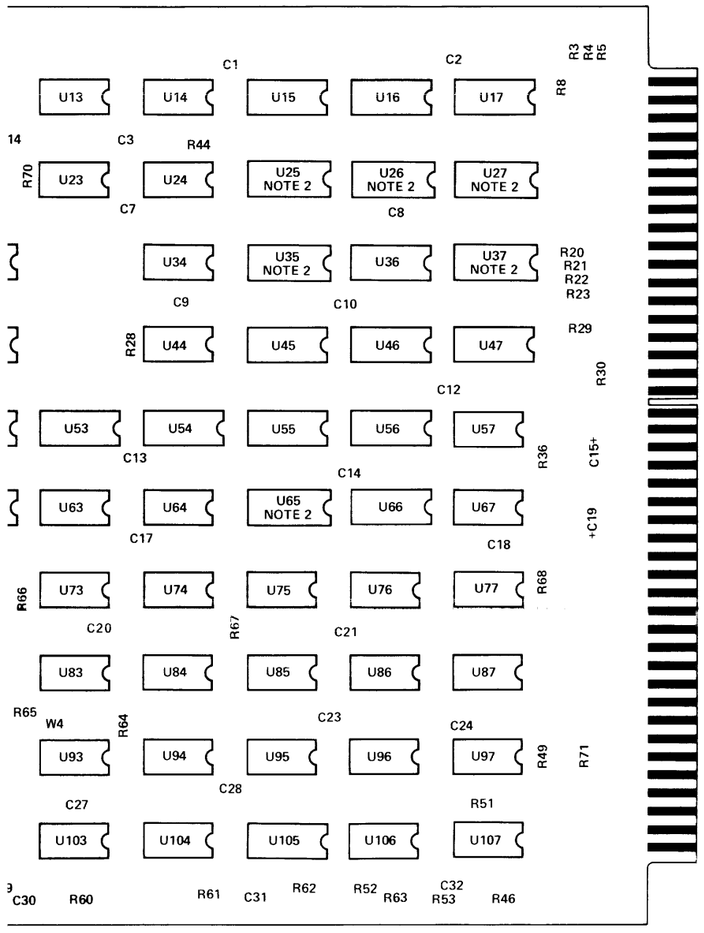
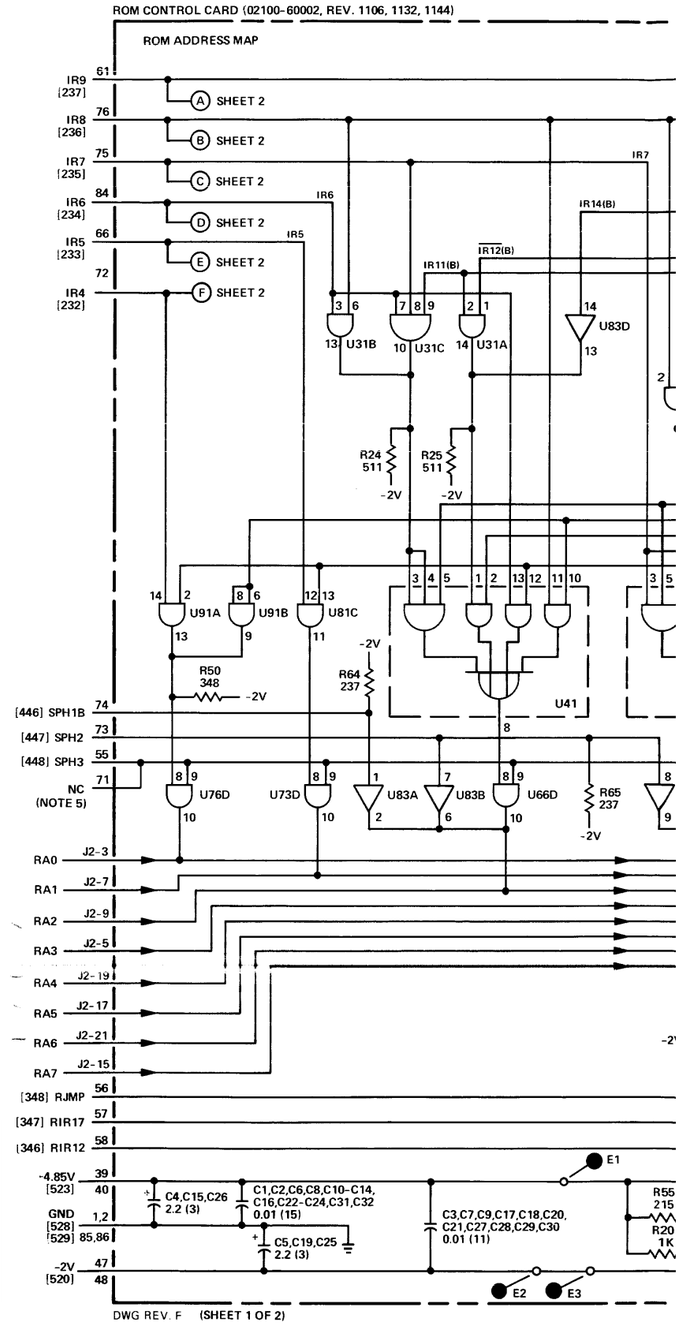


DIAGRAM ALSO APPLIES TO CARD REV. A-1106-22 AND
-22.

I26, U27, U35, U37, AND U65 USED ONLY FOR OPTIONS SUCH
OATING - POINT CAPABILITY.

IRST USED ON CARD REV. C-1144-22.



FF DEFINITIONS

LEP = LEGAL ENTRY POINT

NER = NON-EXTENT ROM

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. U25, U26, U27, U35, U37, AND U65 ARE NOT USED ON STANDARD ROM CONTROL CARD. THESE ICs ARE USED FOR FLOATING POINT CAPABILITY OR OTHER FUTURE OPTIONS.
5. PRINTED CIRCUIT TRACE TO PIN 71 NOT ON CARD REV. 1106.
6. R73 AND U81B NOT USED ON REVISIONS PRIOR TO 1144; EARLIER REVISIONS CONNECTED AS SHOWN BY DASHED LINE.
7. JUMPER CONNECTIONS FOR VARIOUS MODULE CONFIGURATIONS:

Modules Installed	Jumpers to be Installed					
	W1	W2	W3	W4	W5	W6
0	A to B	D to K	E to F	X	None	H to L
0, 1	A to B	None	None	X	None	H to L
0, 2	None	D to K	E to F	None	X	None
0, 3	A to B	C to D	E to F	X	X	G to H
0, 1, 2	A to D	None	E to F	X	None	None
0, 1, 3	A to B	None	None	X	None	G to H
0, 2, 3	None	C to D	E to F	None	X	None
0, 1, 2, 3	None	None	None	X	None	None

ROM CONTROL CARD (02100-60002, REV. 1106, 1132, 1144)

ROM ADDRESS MAP

IR9 [237] 61 — A SHEET 2
IR8 [236] 76 — B SHEET 2
IR7 [235] 75 — C SHEET 2
IR6 [234] 84 — D SHEET 2
IR5 [233] 66 — E SHEET 2
IR4 [232] 72 — F SHEET 2

[238] IR10 83 — [239] IR11 80 — [240] IR12 79 — [241] IR13 78 — [242] IR14 81 — [243] IR15 82

RA9 J2-11 — RA8 J2-13 — [452] SRAR 60 — [244] IRAR 52

U105A R63 511 -2V — U105E R18 511 -2V — U82C — U85D R54 511 -2V — U105F R61 511 -2V — U85B — U105B R52 511 -2V — U105D R60 511 -2V

IR14(B)

IR15(B) IR10(B) IR15(B) IR14(B) IR13 IR12(B) IR12(B) IR11(B)

IR9 IR8 IR7 IR6 IR5 IR14(B) IR12(B) IR11(B) IR12(B)

U31B U31C U31A U83D +4.85V(A) U101B U101A U93B U104B U93C U93A U104D U102A U104C U94D U94B U94C U107B

U102C R57 348 R58 511 +4.85V — U103A — U101C — U103B — +4.85V(A)

R24 511 -2V — R25 511 -2V — R37 511 -2V — R51 511 -2V — R35 511 -2V — R34 511 -2V — R56 511 -2V — R27 348 -2V — R59 825 -2V — R26 1K -2V

IOG
ASG
SRG+MRG
MAC+EAG

U91A U91B U81C — U105C — U84A U84B

R50 348 -2V — R64 237 -2V — R62 511 -2V — R28 348 -2V

U41 U71 U51 U61

W4 (NOTE 7)

SPH1B 74
SPH2 73
SPH3 55
NC (NOTE 5) 71

U76D U73D U83A U83B U66D R65 237 -2V U83C U24D U63D U95C U14D R66 147 -2V U34D U44D U64D

SPH3

J2-3 J2-7 J2-9 J2-5 J2-19 J2-17 J2-21 J2-15

W5 (NOTE 7)

R71 261 -2V — U97B — U63C — U64B — U95A — U95B — U66B — U66A

RJMP 56 — RJMP(B)

U76C U73B U66C U24C U34B U34A U44C U64C

RIR17 57 — RIR7
RIR12 58 — RIR6
RIR5
RIR4
RIR3
RIR2
RIR1
RIR0

L SB0 — K SB1 — J SB2 — H SB3

SHEET 2

85V [523] 39 — C4,C15,C26 2.2 (3)
GND [528] [529] 1,2 85,86 — C1,C2,C6,C8,C10-C14, C16,C22-C24,C31,C32 0.01 (15) — C5,C19,C25 2.2 (3)
-2V [520] 47 48 — C3,C7,C9,C17,C18,C20, C21,C27,C28,C29,C30 0.01 (11)

E1 — R55 215 — +4.85V — +4.85V(A) — R20 1K — +4.85V(B) — -2V
E2 E3

U87A RESET

ROM ADDRESS REGISTER

U52 COUNTER — U53 COUNTER — U32 COUNTER
P3 P2 P1 P0 CLR CLK CNT PAR ENBL CRY IN Q3 Q2 Q1 Q0
CARRY
RESET STCLK IRAR SRAR

R41 348 -2V — R39 348 -2V
R45 348 R42 348 R43 348 R44 348 -2V
R31 348 R38 348 R40 348 R48 348

R19 1K +4.85V

0 1 2 3 4 5 6 7
SPH3 8 9

DWG REV. F (SHEET 1 OF 2)

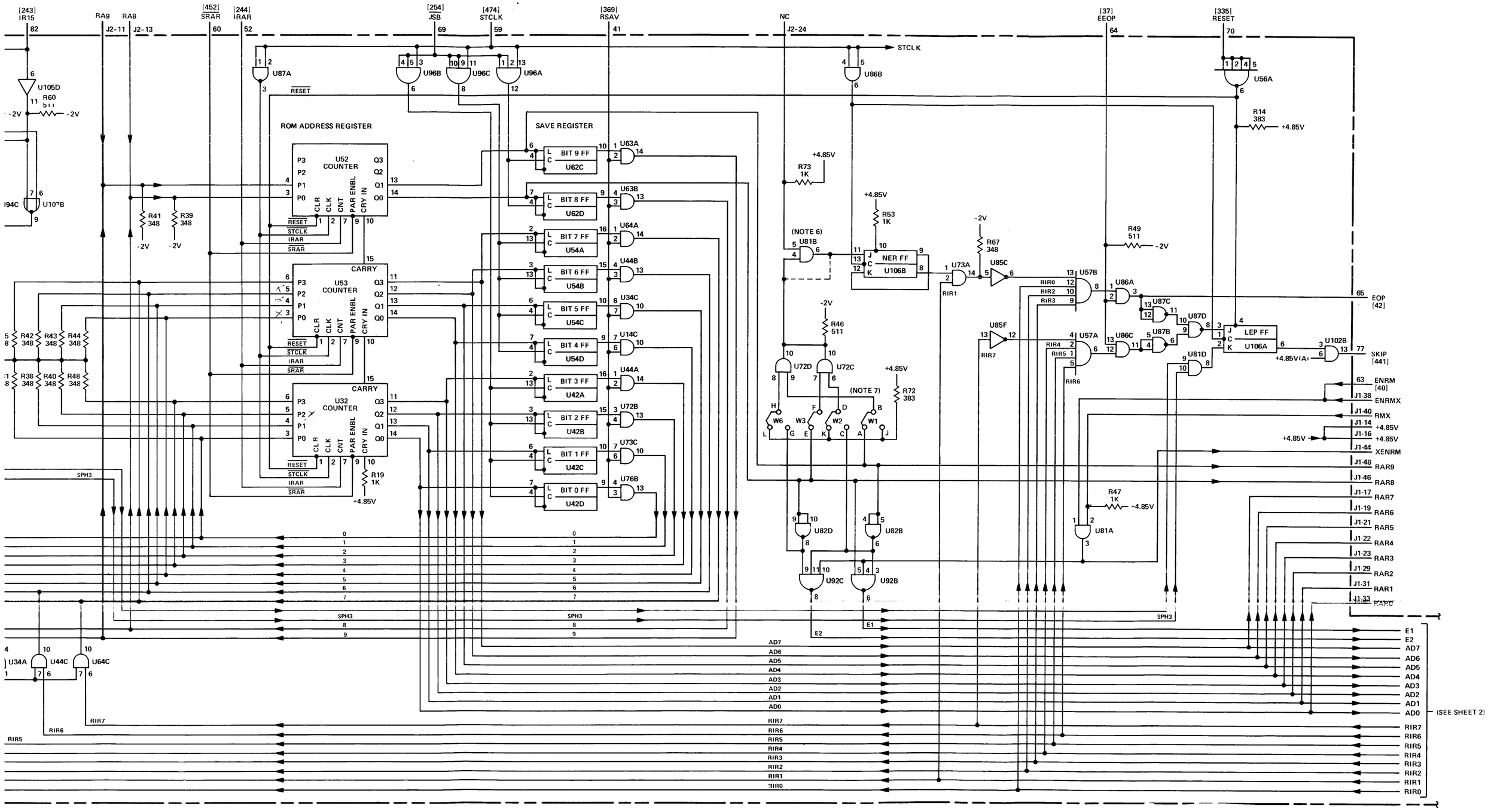
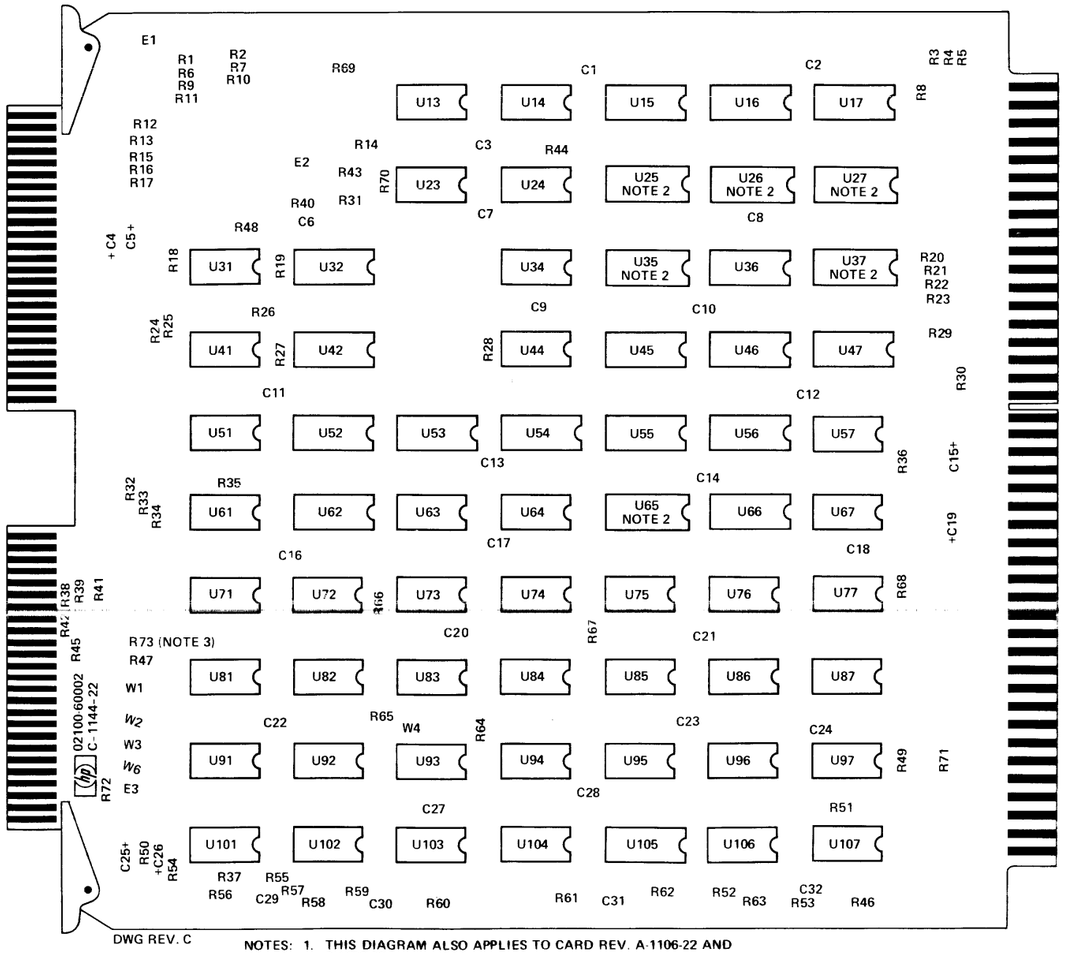


Figure 4-5. A2 ROM Control Card, Parts Location and Schematic Diagrams (Sheet 1 of 2)

(Information continues on next page)

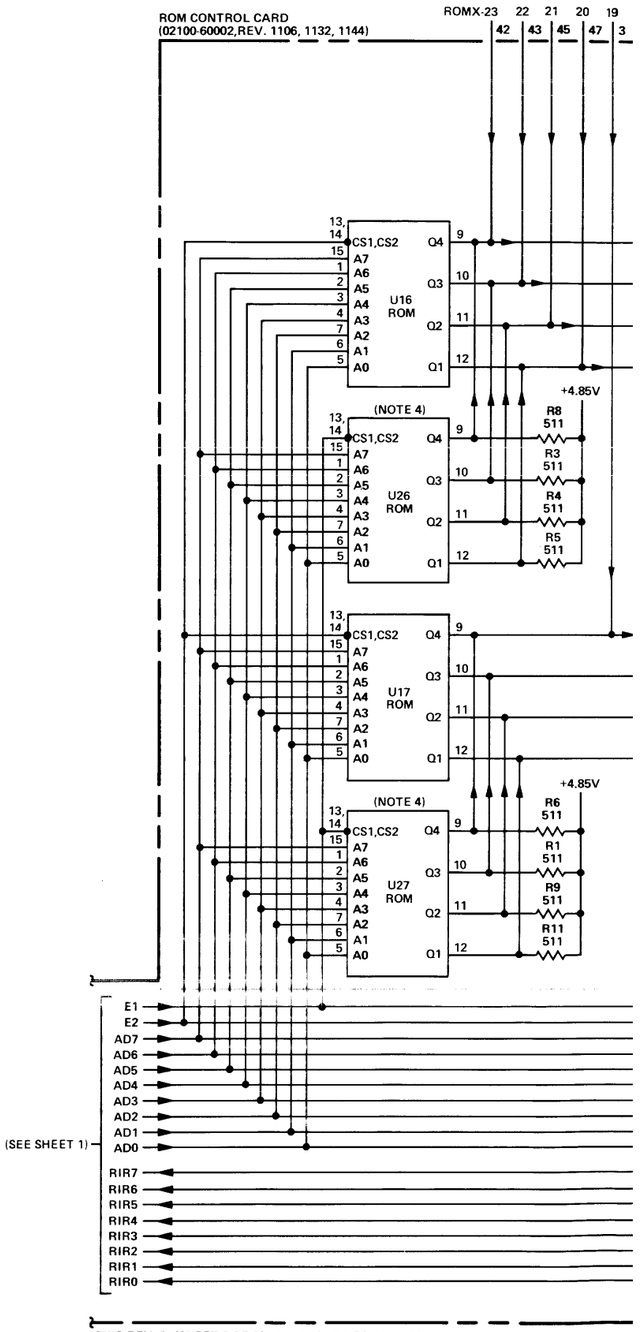
* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION					
A2						
4	A2-68	A3-16*				
16	A2-51	A3-13*				
29	A2-38	A3-15*				
202	A2-67	A3-3	A4-7*			
228	A2-42	A6-35*	A7-68			
229	A2-45	A6-36*	A7-63			
230	A2-26	A6-56*	A7-67			
231	A2-50	A6-34*	A7-30			
338	A2-32*	A6-16				
339	A2-33*	A6-14				
340	A2-28*	A6-10				
341	A2-27*	A6-12				
342	A2-22*	A6-22				
343	A2-23*	A6-23				
344	A2-16*	A6-24				
345	A2-17*	A6-26				
349	A2-15*	A3-57				
350	A2-18*	A3-58				
351	A2-24*	A3-54				
352	A2-25*	A3-51				
353	A2-37*	A4-78				
354	A2-36*	A4-77				
355	A2-35*	A4-80				
356	A2-34*	A4-79				
357	A2-14*	A4-43				
358	A2-13*	A3-11				
359	A2-8*	A3-14				
360	A2-7*	A3-4				
361	A2-3*	A3-9				
362	A2-4*	A4-37				
363	A2-5*	A4-34				
364	A2-6*	A4-29				
396	A2-46* A107-16	A5-78*	A6-32	A7-62*	A8-3*	A9-16*
397	A2-44* A107-18	A5-80*	A6-60	A7-61*	A8-4*	A9-14*
398	A2-29* A107-12	A5-76*	A6-61	A7-60*	A8-5*	A9-18*
399	A2-30* A107-14	A5-59*	A6-33	A7-59*	A8-6*	A9-13*
400	A2-19* A107-29	A5-52*	A6-65	A7-64*	A8-7*	A9-12*
401	A2-20* A107-38	A5-51*	A6-64	A7-57*	A8-8*	A9-10*
402	A2-12*	A5-49*	A6-67	A8-9*	A9-20*	A107-20
403	A2-9*	A5-43*	A6-66	A8-24*	A9-11*	A107-22
404	A2-53*	A5-31*	A6-52	A8-14*	A9-5*	A107-44
405	A2-54*	A5-32*	A6-51	A8-18*	A9-3*	A107-46
406	A2-43*	A5-29*	A6-54	A8-19*	A9-9*	A107-34
407	A2-49*	A5-30*	A6-53	A8-20*	A9-7*	A107-36
408	A2-31*	A5-10*	A6-38	A8-21*	A9-8*	A107-51
409	A2-21*	A5-8*	A6-37	A8-22*	A9-4*	A107-42
410	A2-10*	A5-6*	A6-42	A8-23*	A9-6*	A107-50
411	A1-14 A9-84*	A2-11* A107-52	A4-75	A5-4*	A6-41	A8-33*
454	A1-55	A2-62	A3-42	A4-52	A6-76*	

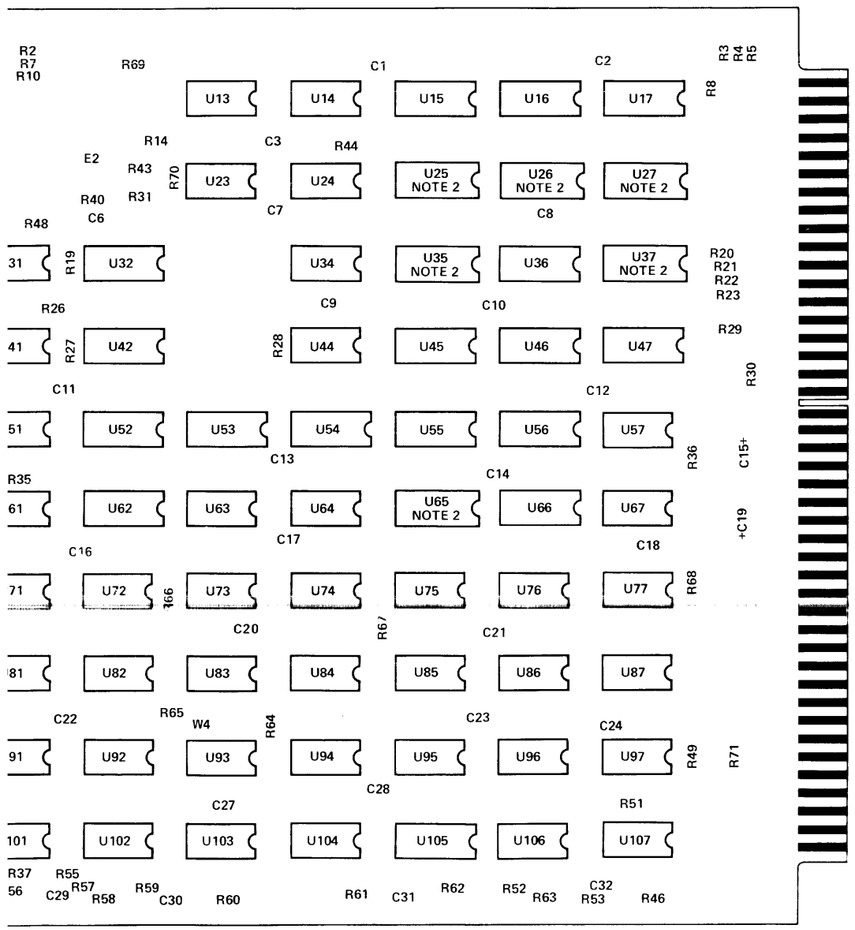


See table 4-4 for replaceable parts.

NOTES:
1. THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1106-22 AND B-1132-22.
2. U25, U26, U27, U35, U37, AND U65 USED ONLY FOR OPTIONS SUCH AS FLOATING - POINT CAPABILITY.
3. R73 FIRST USED ON CARD REV. C-1144-22.



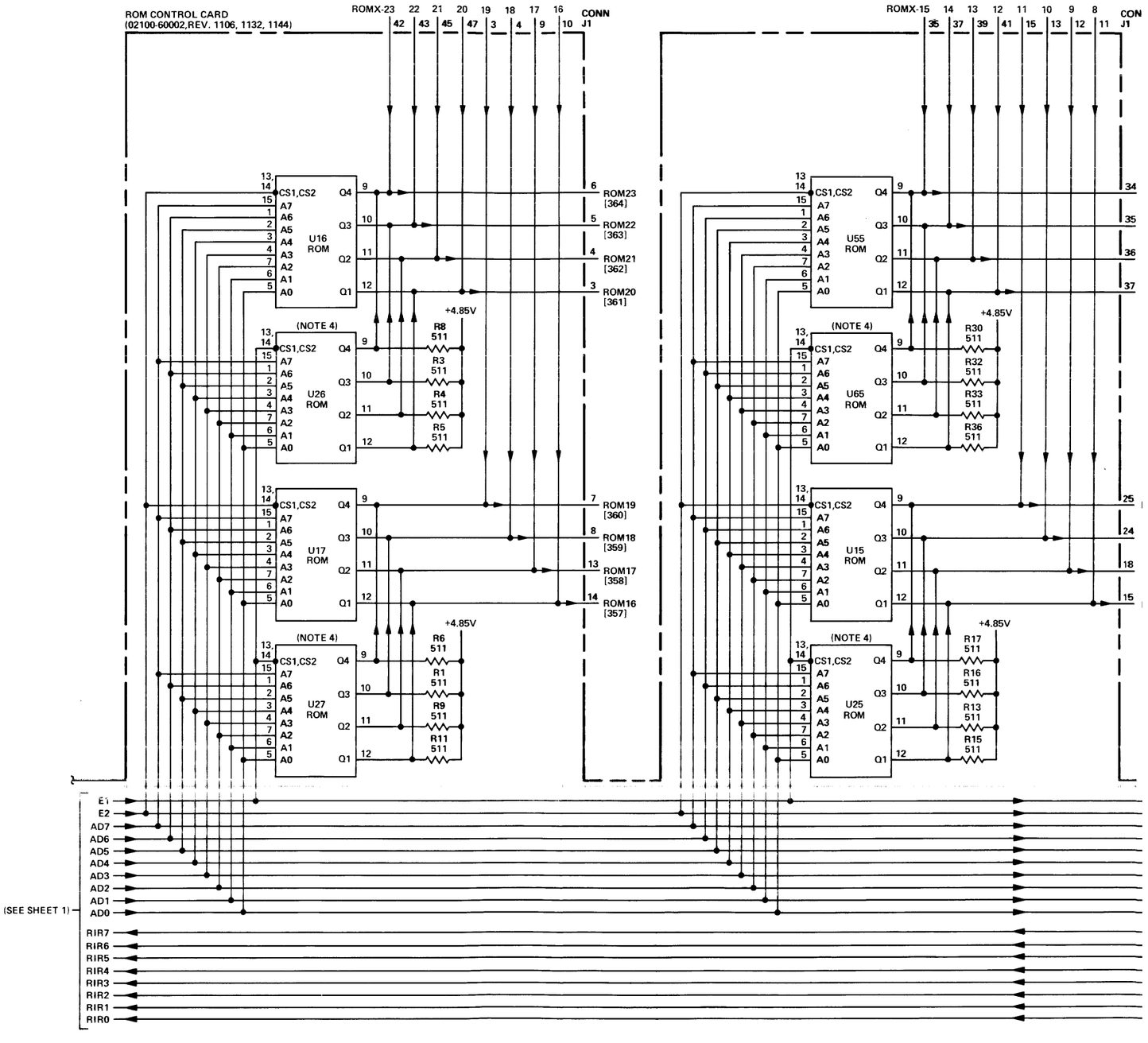
DWG REV. B (SHEET 2 OF 2) SEE SHEET 1 FOR NOTES



NOTES: 1. THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1106-22 AND B-1132-22.

2. U25, U26, U27, U35, U37, AND U65 USED ONLY FOR OPTIONS SUCH AS FLOATING-POINT CAPABILITY.

3. R73 FIRST USED ON CARD REV. C-1144-22.



DWG REV. B (SHEET 2 OF 2) SEE SHEET 1 FOR NOTES

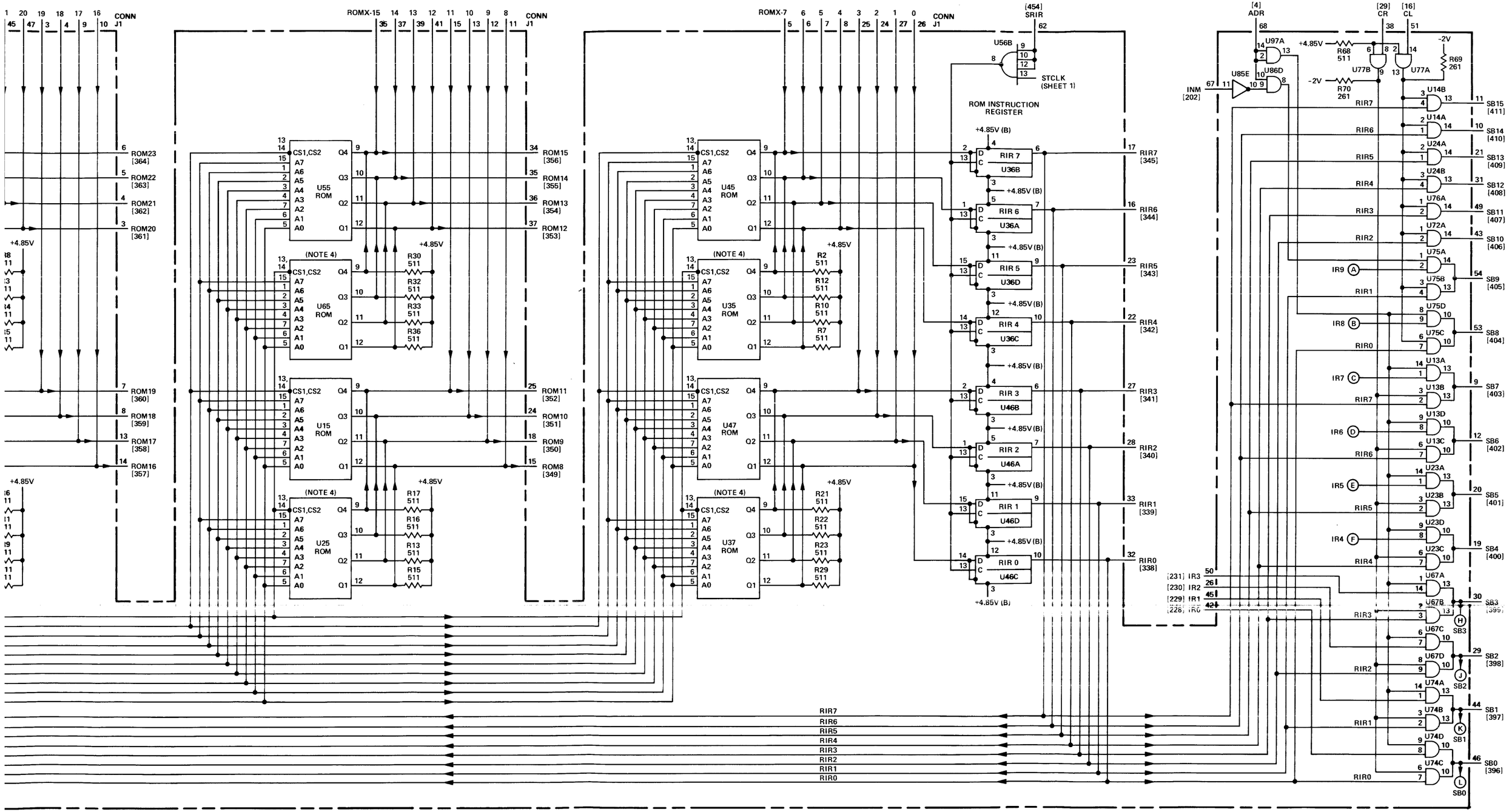


Figure 4-5. A2 ROM Control Card, Parts Location and Schematic Diagrams (Sheet 2 of 2)

Table 4-5. A3 Microinstruction Decoder 1 Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A3	02100-60004	1	MICRO INSTRUCTION DECODER 1 CARD	28480	02100-60004
A3C1	0180-0197	12	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C2	0160-2055	24	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C3	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C4	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C5	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C6	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C13	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C15	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C16	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C17	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C18	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C20	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C21	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C22	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C23	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C25	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C26	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C27	0160-2207	1	C:FXD MICA 300 PF 5%	28480	0160-2207
A3C28	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C29	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C30	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C31	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C32	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C33	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C34	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C35	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A3C36	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3C37	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A3E1 THRU A3E6	0360-0294	6	TERMINAL:SOLDER POINT	23480	0360-0294
A3R1	0757-0416	16	R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R2	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R3	0698-0082	2	R:FXD MET FLM 464 OHM 1% 1/8W	23480	0698-0082
A3R4	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R5	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R6	0757-0280	4	R:FXD MET FLM 1K OHM 1% 1/8W	23480	0757-0280
A3R7	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R8	0698-3444	2	R:FXD MET FLM 316 OHM 1% 1/8W	23480	0698-3444
A3R9	0757-0420	1	R:FXD MET FLM 750 OHM 1% 1/8W	23480	0757-0420
A3R10	0698-3446	4	R:FXD MET FLM 383 OHM 1% 1/8W	23480	0698-3446
A3R11	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R12	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R13	0698-3445	4	R:FXD MET FLM 348 OHM 1% 1/8W	23480	0698-3445
A3R14	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R15	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R16	0698-3132	4	R:FXD FLM 261 OHM 1% 1/8W	23480	0698-3132
A3R17	0698-3132		R:FXD FLM 261 OHM 1% 1/8W	23480	0698-3132
A3R18	0698-3132		R:FXD FLM 261 OHM 1% 1/8W	23480	0698-3132
A3R19	0698-3446		R:FXD MET FLM 383 OHM 1% 1/8W	23480	0698-3446
A3R20	0698-3132		R:FXD FLM 261 OHM 1% 1/8W	23480	0698-3132
A3R21	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R22	0698-3446		R:FXD MET FLM 383 OHM 1% 1/8W	23480	0698-3446
A3R23	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	23480	0698-3444
A3R24	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R25	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R26	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	23480	0757-0280
A3R27	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R29	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	23480	0698-0082
A3R30	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	23480	0757-0280
A3R31	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	23480	0757-0416
A3R32	0757-0427	4	R:FXD MET FLM 1.5K OHM 1% 1/8W	23480	0757-0427
A3R33	0757-0403	4	R:FXD MET FLM 121 OHM 1% 1/8W	23480	0757-0403
A3R34	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	23480	0757-0403
A3R35	0698-3446		R:FXD MET FLM 383 OHM 1% 1/8W	23480	0698-3446

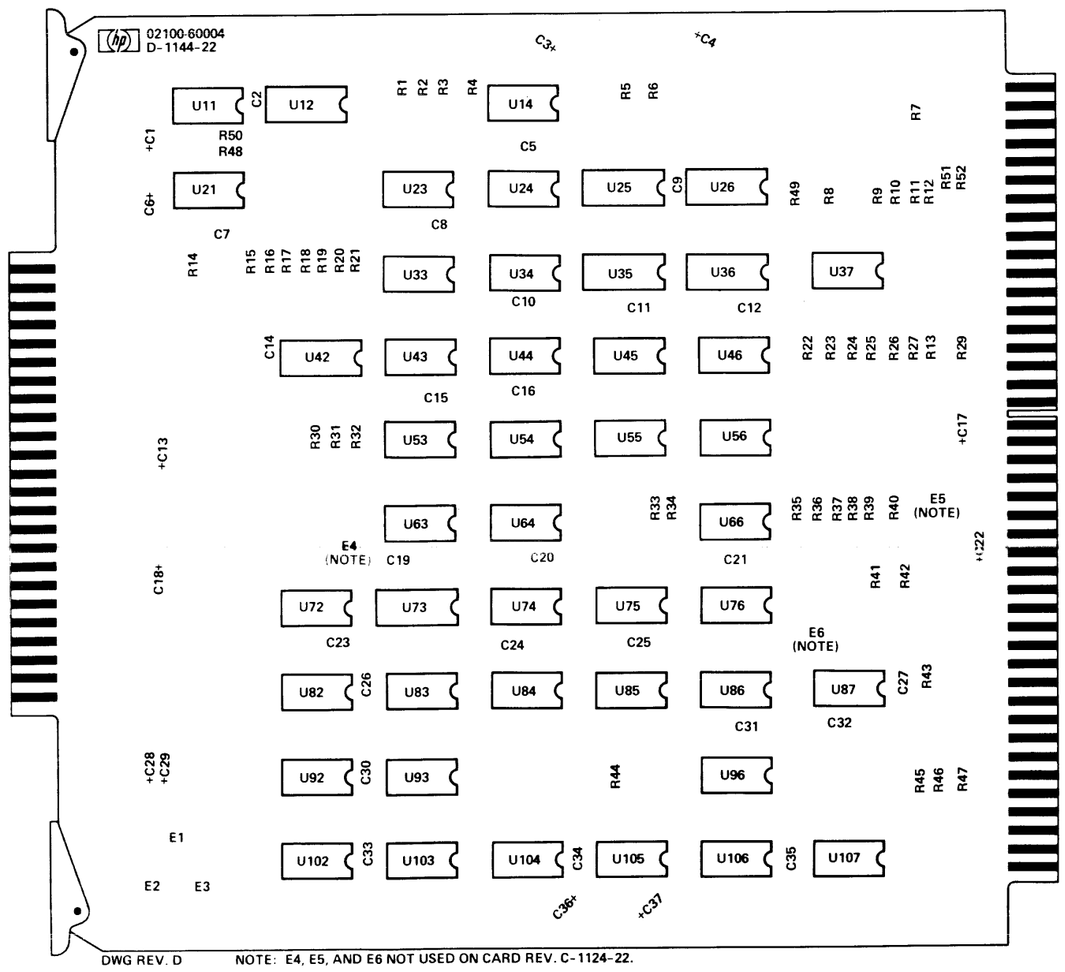
Table 4-5. A3 Microinstruction Decoder 1 Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A3R36	0698-3442	4	R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A3R37	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A3R38	0757-0401	2	R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A3R39	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A3R40	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A3R41	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A3R42	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A3R43	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A3R44	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A3R45	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A3R46	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A3R47	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A3R48	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A3R49	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A3R50	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A3R51	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A3R52	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A3U11(NOTE 1)	1820-0372	1	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A3U11(NOTE 2)	1820-0686	1	IC:TTL SCHOTTKY TRIPLE 3-INPT AND GATE	01295	SN74S11N
A3U12	1820-0485	3	IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A3U14	1820-0512	3	IC:TTL DUAL D F/F	01295	SN74H74N
A3U21	1820-0966	1	IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A3U23	1820-0953	1	IC:CTL TRIPLE 2-2-3 INPT AND GATE	14433	MIC 953
A3U24	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A3U25	1820-0482	2	IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A3U26	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A3U33	1820-0955	1	IC:CTL 8-INPT DUAL OUTPUT AND GATE	07263	U6A995579X
A3U34	1820-0965		IC:CTL QUAD 1-INPT AND GATE	07263	U6A996579X
A3U35	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A3U36	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A3U37	1820-0186	10	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U42	1820-0424	3	IC:TTL HS HEX INVERTER	04713	SN74H04N
A3U43	1820-0383	1	IC:TTL HS DUAL 4-INPT EXPANDER	01295	SN74H60N
A3U44	1820-0380	1	IC:TTL HS 4W 2-2-2-3 INPT AND/OR INV	01295	SN74H53N
A3U45	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U46	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U53	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A3U54	1820-0370	4	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A3U55(NOTE 3)	1820-0451	1	IC:TTL DUAL J-K F/F	04713	MC3062P
A3U56	1820-0141	4	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A3U63	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A3U64	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U66	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U72	1820-0205	2	IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A3U73	1820-0437	1	IC:TTL QUAD D F/F	04713	MC4015P
A3U74	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A3U75	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U76	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U82	1820-0205		IC:CTL QUAD 2-INPT OR GATE	28480	1820-0205
A3U83	1820-0608	2	IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A3U84	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A3U85	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U86	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U87	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A3U92	1820-0376	2	IC:TTL DUAL 4-INPT NAND POWER GATE	01295	SN74H40N
A3U93	1820-0608		IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A3U96	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A3U102(NOTE 1)	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A3U102(NOTE 2)	1820-0683	1	IC:TTL HS HEX INVERTER	04713	SN74S04N
A3U103	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A3U104	1820-0376		IC:TTL DUAL 4-INPT NAND POWER GATE	01295	SN74H40N
A3U105	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A3U106	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A3U107	1820-0371	1	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N

NOTES: 1. Used on card rev. 1124 only.
2. First used on card rev. 1144.
3. Part no. 1820-0695 used on some cards; the two parts are interchangeable.

REF. NO.	BACKPLANE LOCATION					
			* INDICATES SIGNAL SOURCE			
A3						
2	A3-52	A6-5*				
3	A3-66*	A4-21				
4	A2-68	A3-16*				
13	A3-43	A4-32	A6-7*			
16	A2-51	A3-13*				
20	A1-72*	A3-79				
22	A1-78*	A3-81	A7-56	A8-42	A9-76	A24-64
	A107-69					
26	A3-20*	A4-11				
27	A3-50	A4-56	A5-19*	A6-11		
29	A2-38	A3-15*				
34	A3-83	A4-58*				
35	A3-25	A24-76	A107-81*			
37	A2-64	A3-68*				
41	A3-61*	A6-15				
55	A1-80	A3-35*	A6-43			
57	A3-75	A7-9*				
202	A2-67	A3-3	A4-7*			
222	A3-76	A7-43	A8-46*	A9-45*	A10-15 THRU A23-15	
	A24-6					
226	A3-77	A8-78*	A9-32	A24-10	A10-20 THRU A23-20	
238	A2-83	A3-17	A6-59*			
239	A1-9	A2-80	A3-71	A4-24	A6-58*	A8-63
253	A3-36	A4-49*				
258	A3-29	A24-78	A107-77*			
276	A3-59	A4-60*				
295	A1-63	A3-27	A8-58*			
300	A3-41*	A7-13	A24-56			
302	A3-60	A4-28	A24-38*			
303	A3-72	A4-26	A24-41*			
304	A3-32	A24-36*				
332	A3-33*	A7-54				
333	A3-19*	A6-81				
334	A1-54*	A3-28*	A4-27	A9-31*	A24-77*	A107-72
337	A3-34*	A8-61	A9-42*			
347	A2-57	A3-12*				
349	A2-15*	A3-57				
350	A2-18*	A3-58				
351	A2-24*	A3-54				
352	A2-25*	A3-51				
358	A2-13*	A3-11				
359	A2-8*	A3-14				
360	A2-7*	A3-4				
361	A2-3*	A3-9				
365	A3-21*	A5-27				
366	A3-23*	A5-28				
367	A3-6*	A5-57				
368	A3-24*	A4-57*	A5-35,36	A24-23*		
370	A3-10*	A5-17				
371	A3-7*	A5-15				
372	A3-5*	A5-13				
373	A3-8*	A5-11				
377	A3-31	A6-27*				
395	A3-67*	A5-77				
413	A3-73	A7-44*	A8-35			
431	A1-53*	A3-22*	A8-60	A9-35*	A24-42*	A107-66
432	A3-30*	A4-59*	A9-41*	A107-74		
434	A3-74*	A5-82				
437	A3-78	A4-83*				
438	A3-46*	A8-62	A9-33*	A24-75*		
441	A2-77*	A3-84	A4-81	A6-6*		
442	A3-65	A4-6	A6-71*			
449	A3-38	A9-46*				
450	A3-70*	A5-75				
451	A3-62	A4-12	A6-72*			
454	A1-55	A2-62	A3-42	A4-52	A6-76*	
471	A3-69*	A5-81				
472	A3-63*	A5-79				
474	A1-36*	A2-59	A3-18			
476	A3-44*	A6-30				
477	A3-53*	A9-38*	A24-73	A107-73		

REF. NO.	BACKPLANE LOCATION				
			* INDICATES SIGNAL SOURCE		
A3 (CONT)					
478	A3-82*	A5-84			
479	A3-64*	A5-63			
480	A3-80*	A5-73			
483	A3-26	A7-58	A8-43*	A9-81	A24-66
489	A3-55*	A5-65			
490	A3-56*	A5-67			
491	A3-45*	A5-69			
492	A3-49*	A5-71			
498	A3-37	A7-11	A8-81*	A9-26	



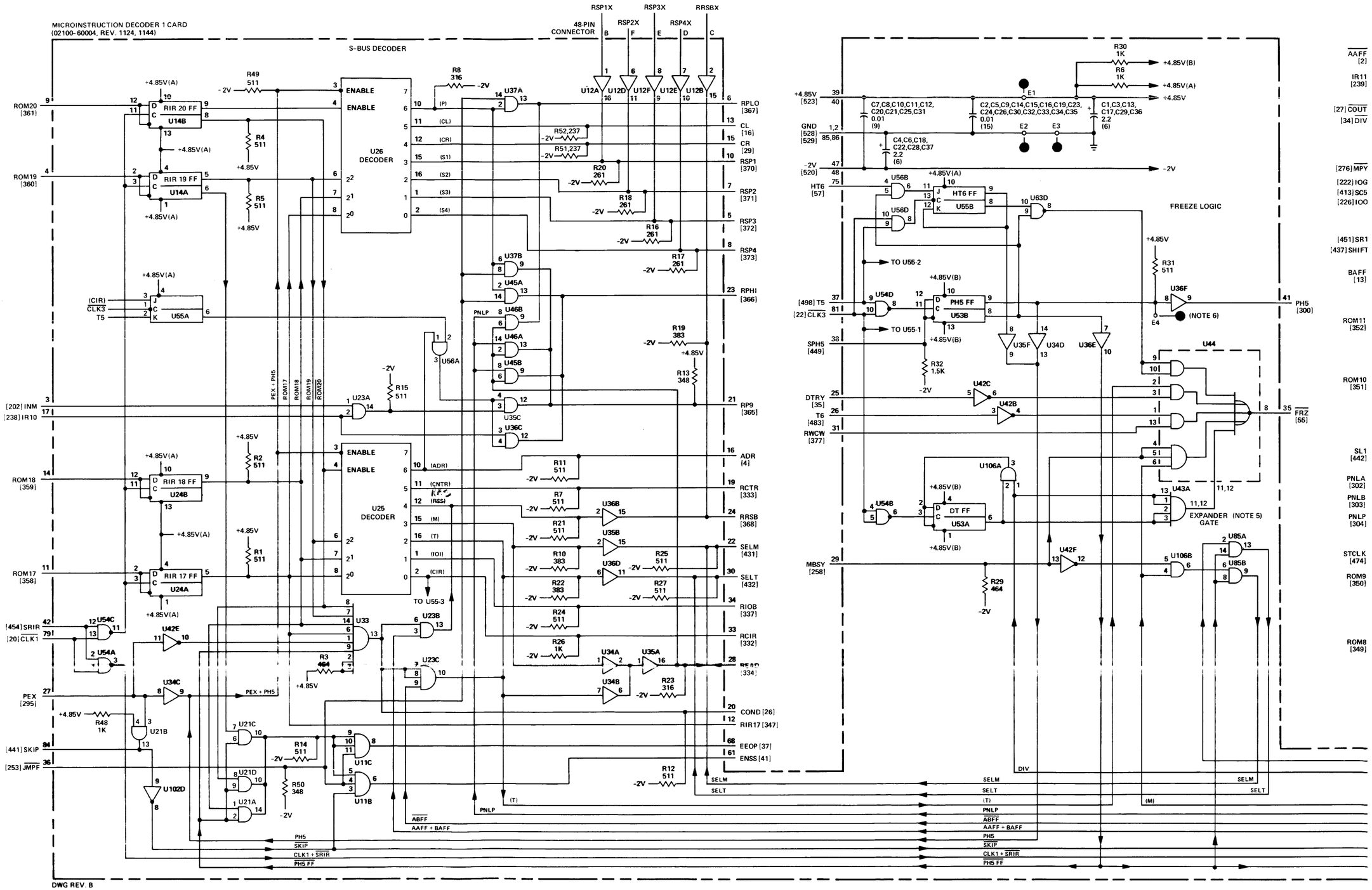
DWG REV. D NOTE: E4, E5, AND E6 NOT USED ON CARD REV. C-1124-22.

See table 4-5 for replaceable parts.

FF DEFINITIONS

DT = DIVIDE TIME
HT6 = HOLD I/O TIME 6
PH5 = PHASE 5
RIR 8 = ROM INSTRUCTION REGISTER BIT
RIR 9 = ROM INSTRUCTION REGISTER BIT
RIR 10 = ROM INSTRUCTION REGISTER BIT
RIR 11 = ROM INSTRUCTION REGISTER BIT
RIR 17 = ROM INSTRUCTION REGISTER BIT
RIR 18 = ROM INSTRUCTION REGISTER BIT
RIR 19 = ROM INSTRUCTION REGISTER BIT
RIR 20 = ROM INSTRUCTION REGISTER BIT

NOTES:
1. RESISTANCE VALUES ARE IN OHM CAPACITANCE VALUES ARE IN UF OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PI NECTOR UNLESS OTHERWISE INDI
3. NUMERALS WITHIN BRACKETS [WIRING LIST REFERENCE NUMBERS.
4. DECODED ROM MICROINSTRUCTIO MONICS APPEAR IN PARENTHESI
5. SIMPLIFIED EXPANDER GATE CONNE SHOWN. SEE LOGIC SYMBOLOGY S FOR DETAILED CONNECTIONS.
6. TEST POINT TERMINALS E4, E5, NOT USED ON CARD REV. 1124.



FF DEFINITIONS

DT = DIVIDE TIME
HT6 = HOLD I/O TIME 6
PH5 = PHASE 5
RIR 8 = ROM INSTRUCTION REGISTER BIT 8
RIR 9 = ROM INSTRUCTION REGISTER BIT 9
RIR 10 = ROM INSTRUCTION REGISTER BIT 10
RIR 11 = ROM INSTRUCTION REGISTER BIT 11
RIR 17 = ROM INSTRUCTION REGISTER BIT 17
RIR 18 = ROM INSTRUCTION REGISTER BIT 18
RIR 19 = ROM INSTRUCTION REGISTER BIT 19
RIR 20 = ROM INSTRUCTION REGISTER BIT 20

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. DECODED ROM MICROINSTRUCTION MNEMONICS APPEAR IN PARENTHESIS ( ).
5. SIMPLIFIED EXPANDER GATE CONNECTIONS SHOWN. SEE LOGIC SYMBOLOGY SECTION FOR DETAILED CONNECTIONS.
6. TEST POINT TERMINALS E4, E5, AND E6 NOT USED ON CARD REV. 1124.

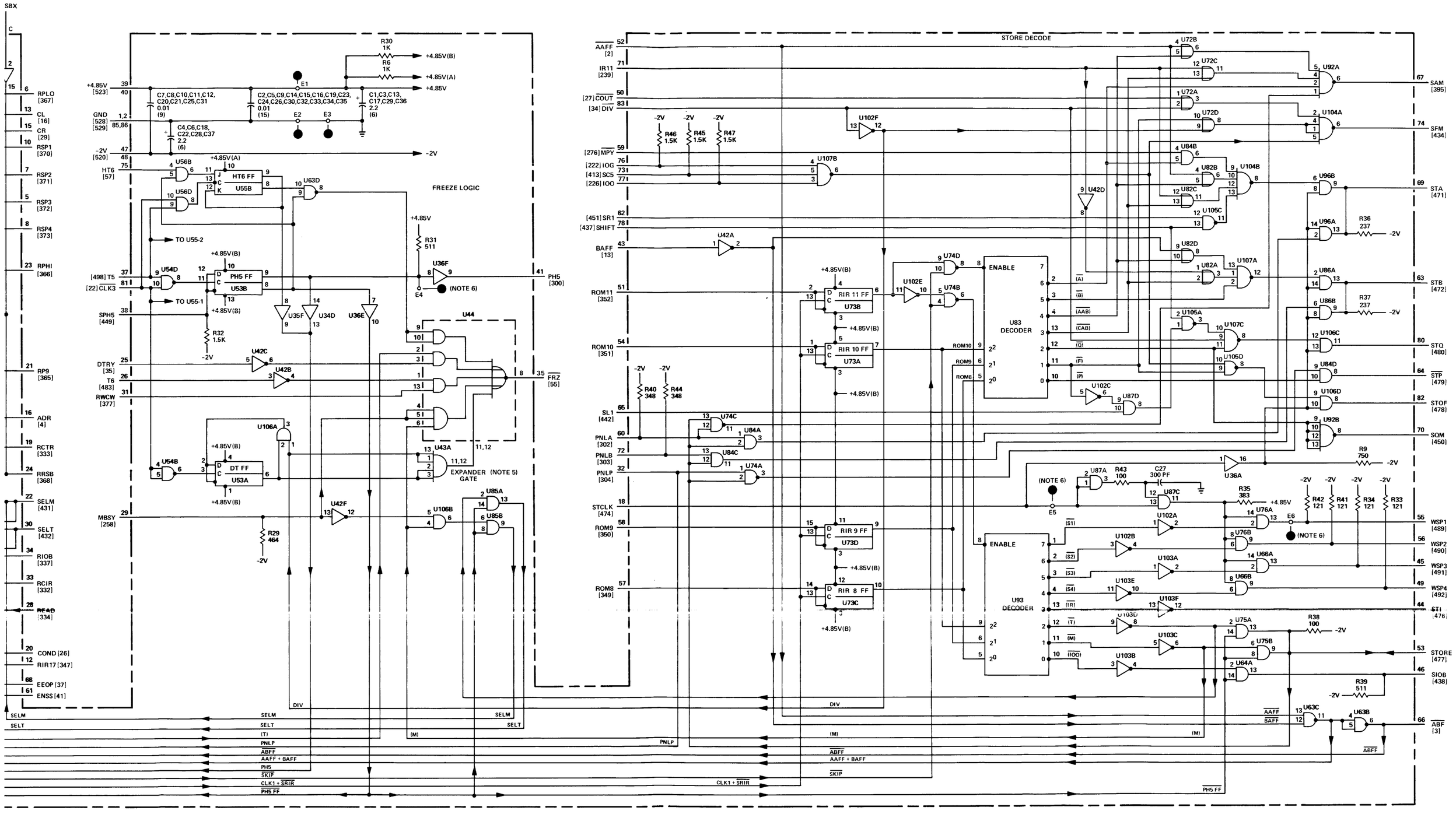


Figure 4-6. A3 Microinstruction Decoder 1 Card, Parts Location and Schematic Diagrams

Table 4-6. A4 Microinstruction Decoder 2 Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A4	02100-60022 OR 02100-60112	1	MICRO INSTRUCTION DECODER 2 CARD MICRO INSTRUCTION DECODER 2 CARD	28480 28480	02100-60022 02100-60112
A4C1	0180-0197	10	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C2	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C3	0160-2055	20	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C4	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C5	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C15	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C16	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C20	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C21	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C22	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C23	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C25	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C26	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C27	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C28	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A4C29	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4C30	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A4E1	0360-0294	3	TERMINAL:SOLDER POINT	28480	0360-0294
A4E2	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A4E3	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A4R1	0757-0427	9	R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4R2	0757-0280	5	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A4R3	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A4R4	0757-0416	6	R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A4R5	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A4R6(NOTE 1)	0698-3446	2	R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A4R6(NOTE 2)	0757-0274	1	R:FXD MET FLM 1.21K OHM 1% 1/8W	28480	0757-0274
A4R7	0698-3443	2	R:FXD MET FLM 287 OHM 1% 1/8W	28480	0698-3443
A4R8	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A4R9	0757-0284	2	R:FXD MET FLM 150 OHM 1% 1/8W	28480	0757-0284
A4R10	0757-0284		R:FXD MET FLM 150 OHM 1% 1/8W	28480	0757-0284
A4R11	0757-0399	1	R:FXD MET FLM 82.5 OHM 1% 1/8W	28480	0757-0399
A4R12	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A4R13	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A4R14	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4R15	0757-0420	1	R:FXD MET FLM 750 OHM 1% 1/8W	28480	0757-0420
A4R16	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A4R17	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A4R18(NOTE 3)	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A4R19(NOTE 4)	0698-3446		R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A4R20(NOTE 3)	0698-3443		R:FXD MET FLM 287 OHM 1% 1/8W	28480	0698-3443
A4R21	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A4R22	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4R23	0698-3445	1	R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A4R24	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4R25	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4R26	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4R27	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4R28	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4R29	0757-0427		R:FXD MET FLM 1.5K OHM 1% 1/8W	28480	0757-0427
A4U11	1820-0379	7	IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A4U12	1820-0424	4	IC:TTL HS HEX INVERTER	04713	SN74H04N
A4U13	1820-0605	1	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H01N
A4U14	1820-0512	5	IC:TTL DUAL D F/F	01295	SN74H74N
A4U15	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A4U16	1820-0966	2	IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	07263	U6A996679X
A4U21	1820-0186	6	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A4U23	1820-0370	6	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A4U24	1820-0187	1	IC:CTL DUAL 2-INPT NOR GATE	07263	U6A985249X

NOTES:
1. Used on 02100-60022 card rev. 1110 only
2. First used on card rev. 1140.
3. Not used on 02100-60022.
4. Not used on 02100-60112.

Table 4-6. A4 Microinstruction Decoder 2 Card, Replaceable Parts (Continued)

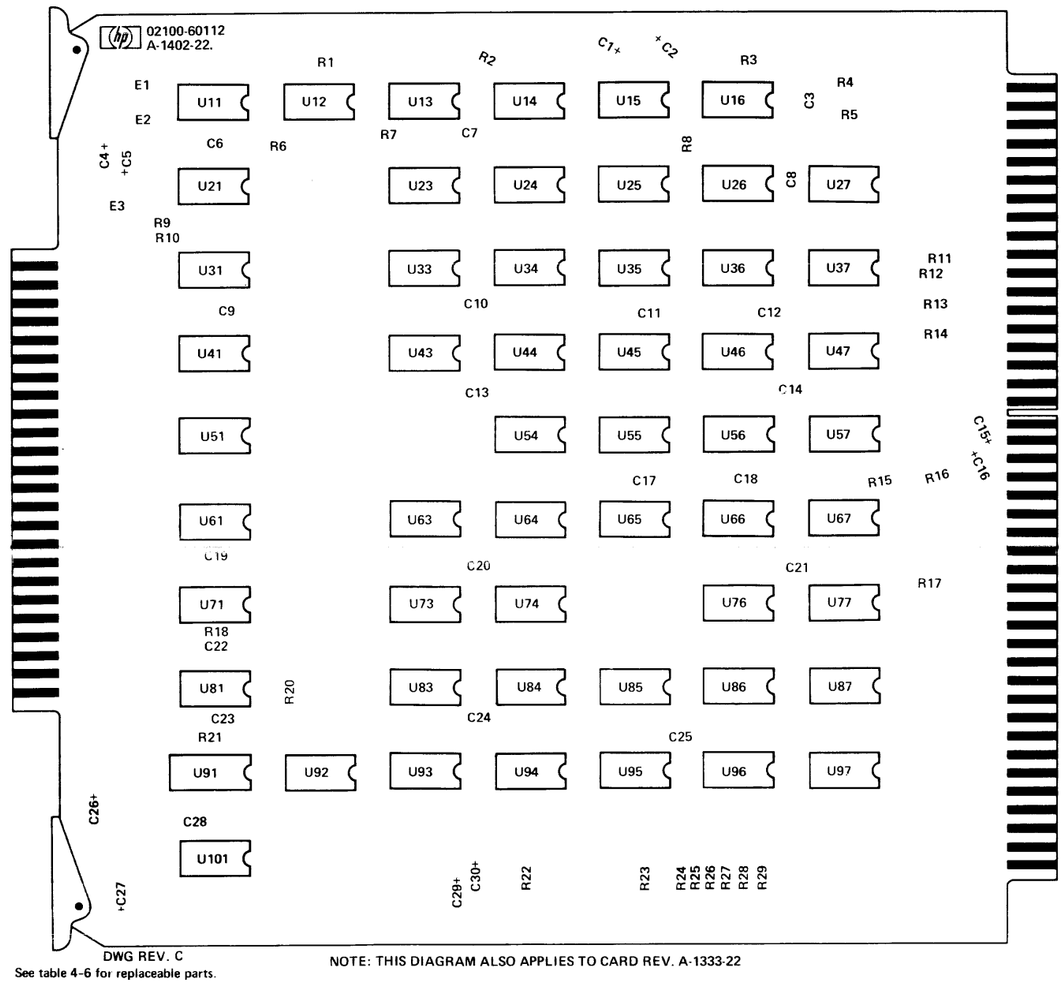
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A4U25	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A4U26	1820-0953	1	IC:CTL TRIPLE 2-2-3 INPT AND GATE	07263	U6A995379X
A4U27	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A4U31	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A4U33	1820-0375	2	IC:TTL HS 8-INPT NAND GATE	01295	SN74H30N
A4U34	1820-0695	1	IC:TTL SHS DUAL J-K F/F W/PRESET	01295	SN74S113N
A4U35	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A4U36	1820-0954	1	IC:CTL DUAL 4-INPT AND GATE	07263	U6A995479X
A4U37	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A4U41	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A4U43	1820-0372	1	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A4U44	1820-0375		IC:TTL HS 8-INPT NAND GATE	01295	SN74H30N
A4U45	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A4U46	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A4U47	1820-0377	1	IC:TTL HS DUAL 2W 2-INPT AND/OR/INV GATE	01295	SN74H50N
A4U51(NOTE 5)	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A4U54	1820-0141	4	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A4U55	1820-0971	1	IC:CTL DUAL 2W 2-INPT AND/OR GATE	07263	U6A997179X
A4U56	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	07263	U6A996679X
A4U57	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A4U61	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A4U63	1820-0371	2	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A4U64	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A4U65	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A4U66	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A4U67	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A4U71	1820-0380	1	IC:TTL HS 4W 2-2-2-3 INPT AND/OR/INV GATE	01295	SN74H53N
A4U73	1820-0608	3	IC:TTL 1 OF 8 DECODER W/ENABLE	04713	MC4006P
A4U74	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A4U76	1820-0384	1	IC:TTL HS TRIPLE 3-INPT EXPANDER	01295	SN74H61N
A4U77	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A4U81	1820-0964	1	IC:CTL TRIPLE 3-3-1 INPT AND GATE	07263	U6A996479X
A4U83	1820-0608		IC:TTL 1 OF 8 DECODER W/ENABLE	04713	MC4006P
A4U84(NOTE 5)	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A4U85	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A4U86	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A4U87	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A4U91(NOTE 6)	1820-0437		IC:TTL QUAD D F/F	04713	MC4015P
A4U91(NOTE 7)	1820-0839	1	IC:TTL QUAD D F/F	01295	SN74175N
A4U92(NOTE 6)	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A4U92(NOTE 7)	1820-0074	1	IC:CTL 4W 2-INPT AND/OR/INV GATE	01295	SN7454N
A4U93	1820-0608		IC:TTL 1 OF 8 DECODER W/ENABLE	04713	MC4006P
A4U94	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A4U95	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A4U96	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A4U97	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A4U101	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N

NOTES:
5. Not used on 02100-60022.
6. Used on 02100-60022 only.
7. Used on 02100-60112 only.

REF. NO.	BACKPLANE LOCATION					* INDICATES SIGNAL SOURCE
A4						
3	A3-66*	A4-21				
5	A4-13	A5-58*	A6-79			
6	A4-38	A5-22*				
7	A4-35	A5-21*	A6-77			
8	A4-41*	A5-7	A6-3*			
9	A4-9*	A5-23	A6-17*			
10	A4-36	A5-45*				
11	A4-84*	A6-18				
12	A4-33	A6-25*				
13	A3-43	A4-32	A6-7*			
14	A4-14*	A5-41	A6-84*			
15	A1-60	A4-62*				
18	A4-76	A7-5	A8-51*	A9-24	A10-7 THRU A23-7	
21	A1-84*	A4-69	A6-31	A8-70		
25	A1-76*	A4-61				
26	A3-20*	A4-11				
27	A3-50	A4-56	A5-19*	A6-11		
28	A1-52*	A4-19	A24-43			
34	A3-83	A4-58*				
39	A4-51*	A6-83				
42	A1-46	A2-65*	A4-55			
44	A4-10	A6-82*	A24-22			
47	A1-67	A4-64	A24-21*			
48	A4-23*	A6-80				
51	A4-66*	A5-50				
52	A4-3*	A5-46				
53	A4-4*	A5-56				
54	A4-5*	A5-55				
202	A2-67	A3-3	A4-7*			
237	A2-61	A4-54	A6-63*	A8-65		
239	A1-9	A2-80	A3-71	A4-24	A6-58*	A8-63
252	A1-73	A4-46*				
253	A3-36	A4-49*				
254	A2-69	A4-18*				
257	A4-8*	A5-24	A6-20*			
259	A4-20*	A5-12				
276	A3-59	A4-60*				
292	A4-68*	A6-8	A24-51			
293	A1-81	A4-65*				
302	A3-60	A4-28	A24-38*			
303	A3-72	A4-26	A24-41*			
327	A4-42*	A5-83				
328	A4-74	A5-9*				
329	A4-22	A5-5				
330	A4-15*	A5-64				
331	A4-25*	A5-62				
334	A1-54*	A3-28*	A4-27	A9-31*	A24-77*	A107-72
335	A1-8* A107-82	A2-70	A4-30	A6-9	A7-20	A8-75
336	A4-67*	A6-68				
346	A2-58	A4-82*				
353	A2-37*	A4-78				
354	A2-36*	A4-77				
355	A2-35*	A4-80				
356	A2-34*	A4-79				
357	A2-14*	A4-43				
362	A2-4*	A4-37				
363	A2-5*	A4-34				
364	A2-6*	A4-29				
368	A3-24*	A4-57*	A5-35,36	A24-23*		
369	A1-71	A2-41	A4-17*			
411	A1-14 A9-84*	A2-11 A107-52	A4-75	A5-4*	A6-41	A8-33*
412	A4-71	A7-49*	A8-74	A24-8		
432	A3-30*	A4-59*	A9-41*	A107-74		
433	A4-70	A7-17	A8-52*	A10-5 THRU A23-5		
435	A4-72	A7-24	A8-59*	A10-25 THRU A23-25		
437	A3-78	A4-83*				
440	A1-17	A4-16*	A7-21*	A10-12* THRU A23-12*		
441	A2-77	A3-84	A4-81	A6-6*		
442	A3-65	A4-6	A6-71*			

REF. NO.	BACKPLANE LOCATION				
A4(CONT)					
443	A4-50	A6-50*			
451	A3-62	A4-12	A6-72*		
454	A1-55	A2-62	A3-42	A4-52	A6-76*
475	A4-73	A7-6	A8-49*	A10-9 THRU A23-9	
484	A4-45*	A5-53			
485	A4-44*	A5-54			
499	A4-63	A24-35*			
500	A1-59*	A4-31			
501	A1-57*	A4-53			

* INDICATES SIGNAL SOURCE



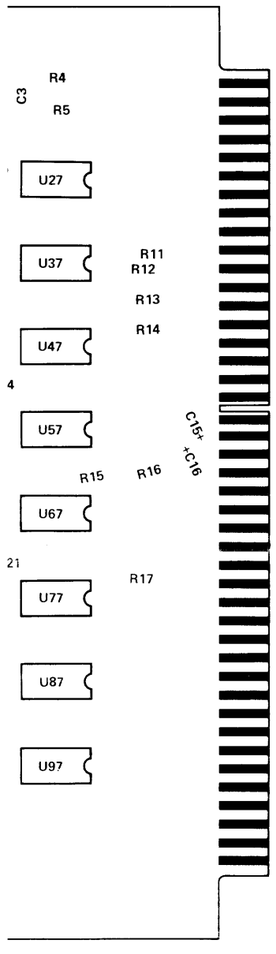
NOTES:
1. RESISTANCE V IN UF UNLESS
2. ALL PIN NUME WISE INDICATE
3. NUMERALS WI NUMBERS.
4. DECODED RON THESIS ( ).

DWG REV. C

NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1333-22

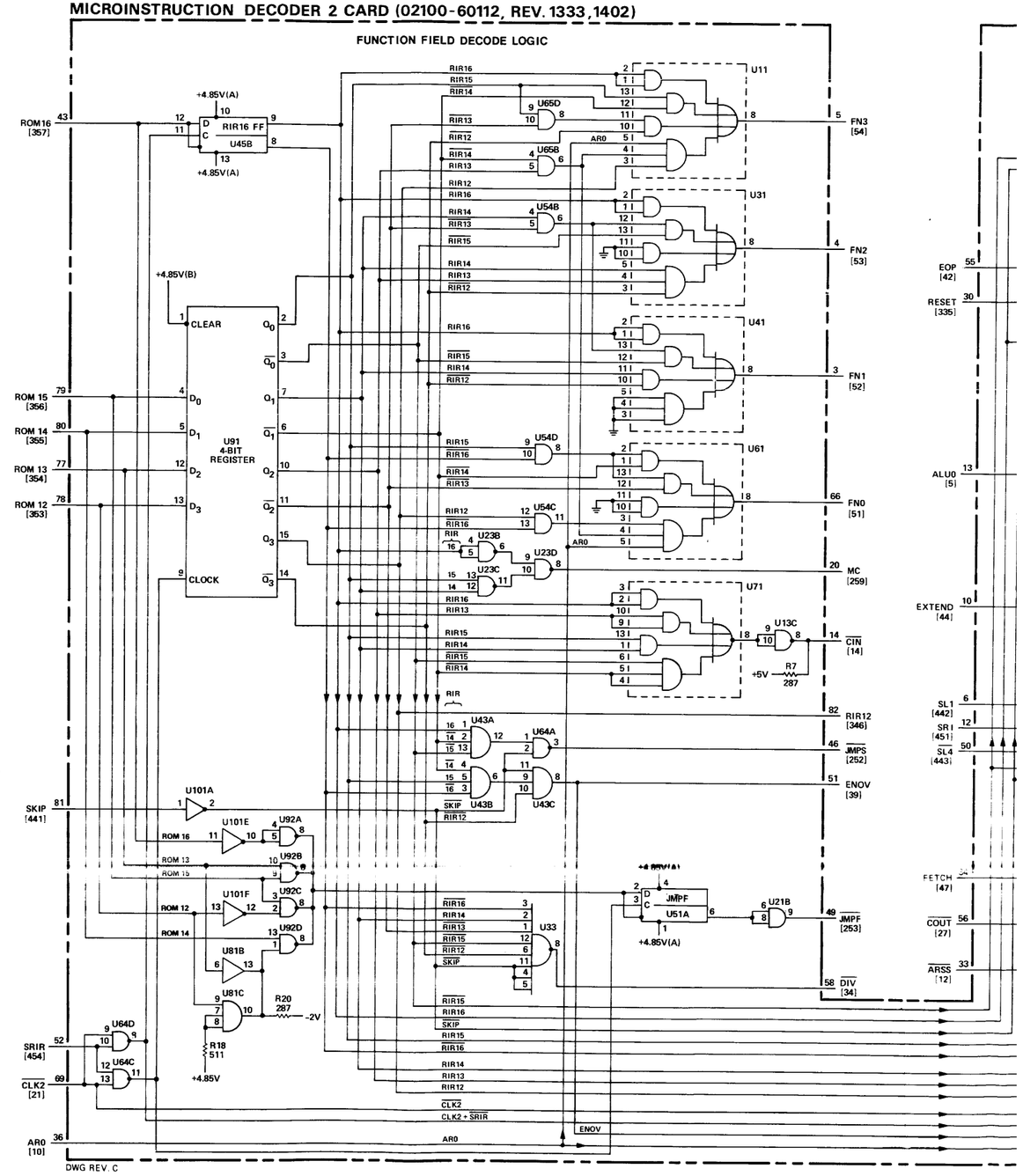
See table 4-6 for replaceable parts.

SOURCE



MICROINSTRUCTION DECODER 2 CARD (02100-60112, REV. 1333, 1402)

FUNCTION FIELD DECODE LOGIC



FF DEFINITIONS

A/B CLR	=	A AND B CLEAR
A/B SEL	=	A OR B SELECT
FLAG	=	FLAG
INM	=	INDEX MODE
JMPF	=	JUMP (FUNCTION FIELD DECODED)
$\overline{JSB}$	=	"NOT" JUMP TO SUBROUTINE (FUNCTION FIELD DECODE)
$\overline{OVF}$	=	"NOT" OVERFLOW
RIR 12	=	ROM INSTRUCTION REGISTER BIT 12
RIR 13	=	ROM INSTRUCTION REGISTER BIT 13
RIR 14	=	ROM INSTRUCTION REGISTER BIT 14
RIR 15	=	ROM INSTRUCTION REGISTER BIT 15
RIR 16	=	ROM INSTRUCTION REGISTER BIT 16
RIR 21	=	ROM INSTRUCTION REGISTER BIT 21
RIR 22	=	ROM INSTRUCTION REGISTER BIT 22
RIR 23	=	ROM INSTRUCTION REGISTER BIT 23

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. DECODED ROM MICROINSTRUCTION MNEMONICS APPEAR IN PARENTHESIS ( ).

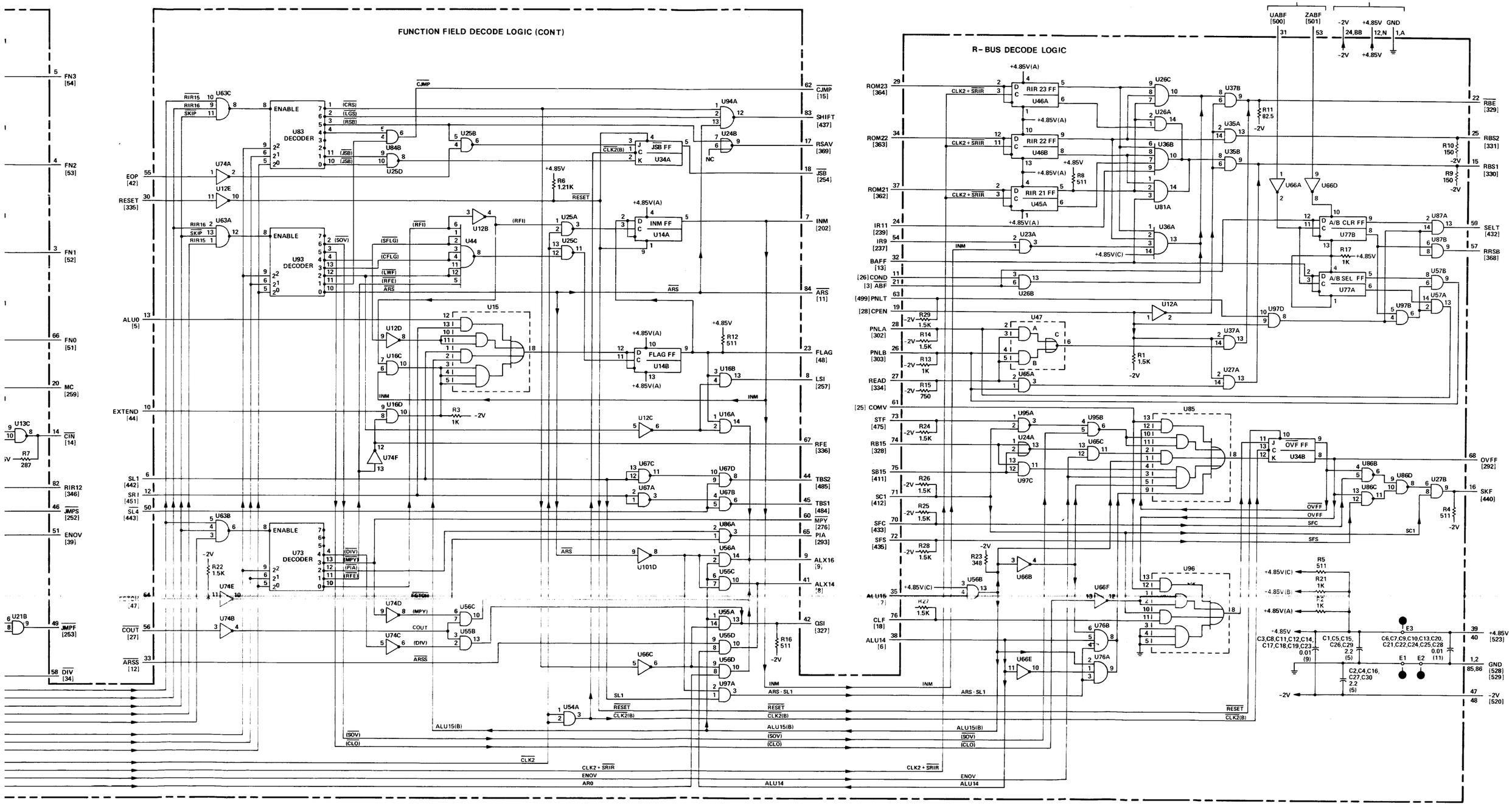
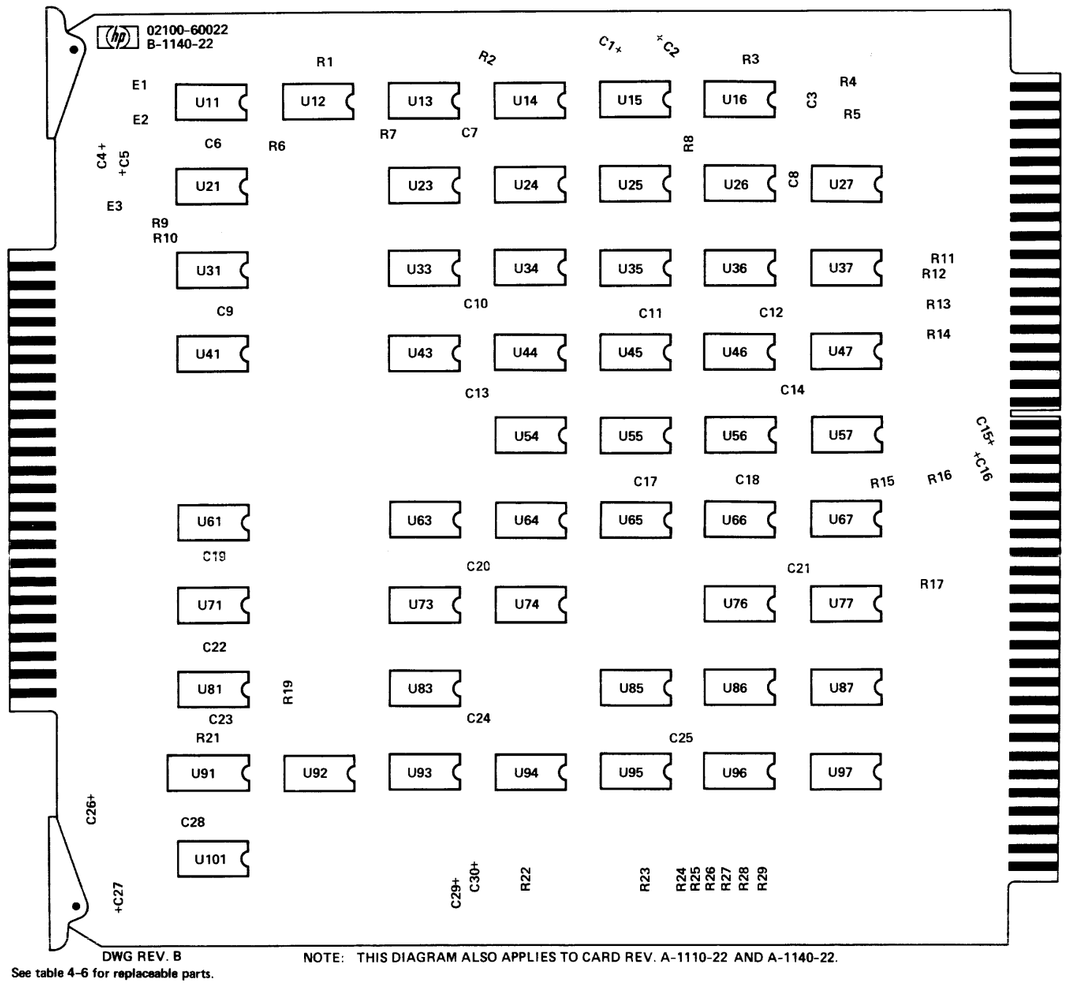


Figure 4-7. A4 Microinstruction Decoder 2 Card (02100-60112), Parts Location and Schematic Diagrams



DWG REV. B

NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1110-22 AND A-1140-22.

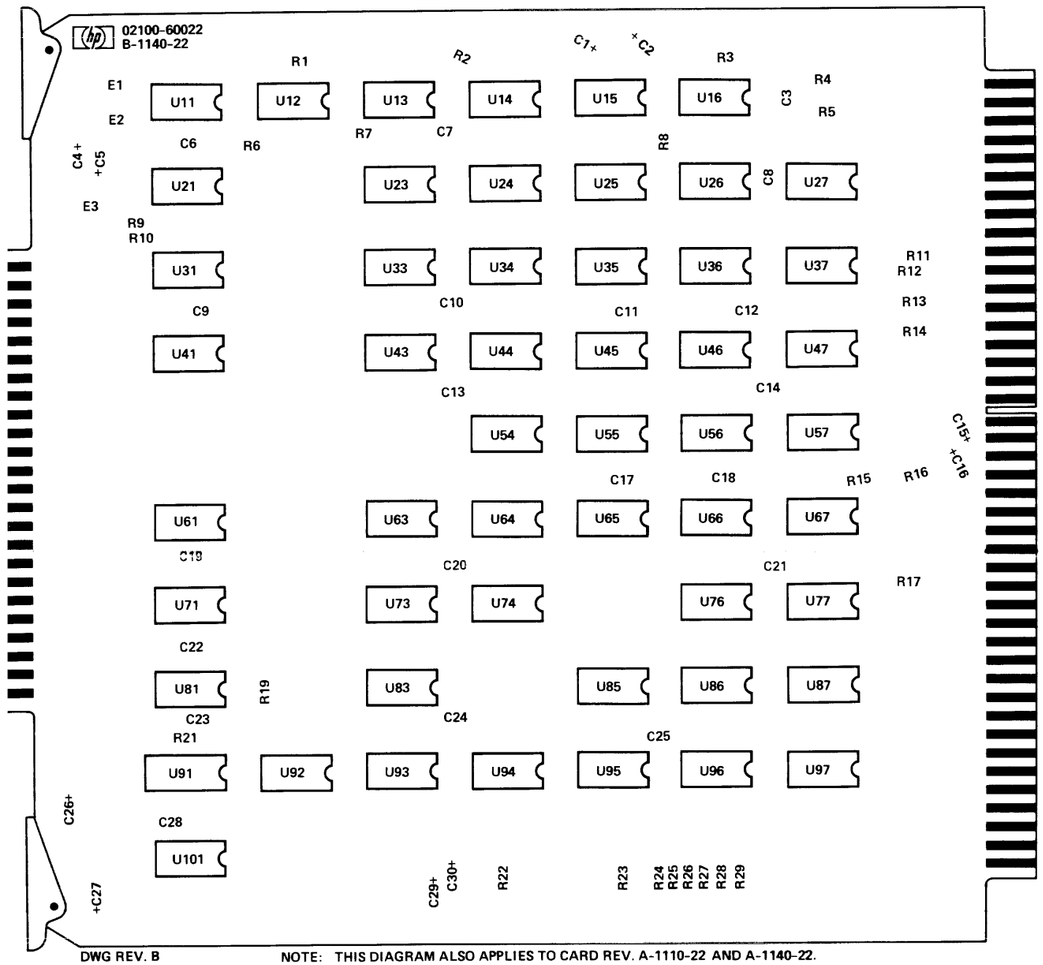
See table 4-6 for replaceable parts.

FF

A/B CLR = A AND B
A/B SEL = A OR B S
FLAG = FLAG
INM = INDEX M
JSB = JUMP TO
$\overline{OVF}$ = "NOT" O
RIR 12 = ROM INS
RIR 13 = ROM INS
RIR 14 = ROM INS
RIR 15 = ROM INS
RIR 16 = ROM INS
RIR 21 = ROM INS
RIR 22 = ROM INS
RIR 23 = ROM INS

NOTES:

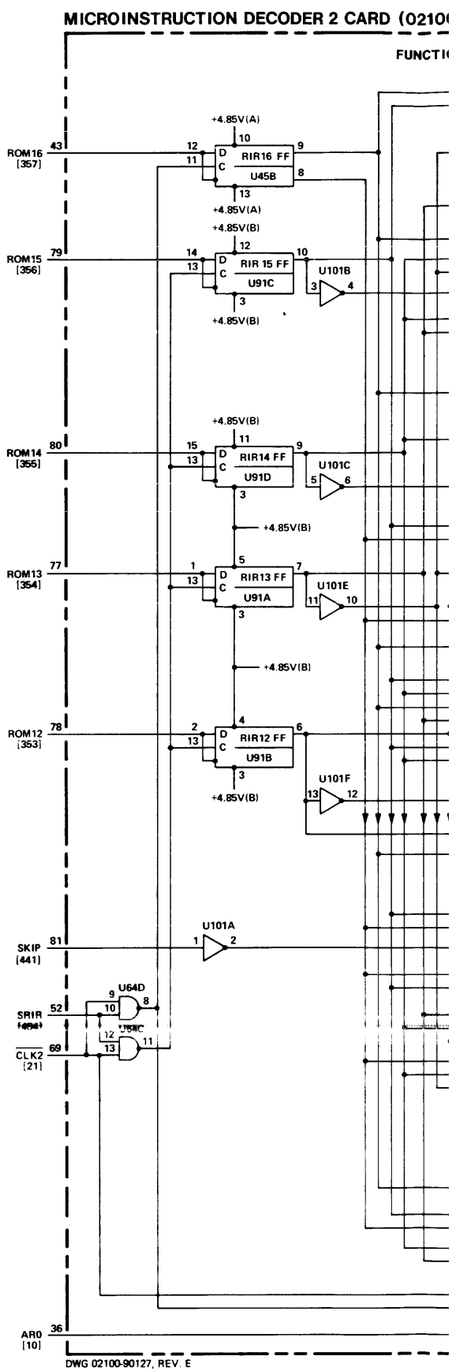
1. RESISTANCE VALUES ARE I
IN UF UNLESS OTHERWISE SI
2. ALL PIN NUMBERS REFER
WISE INDICATED.
3. NUMERALS WITHIN BRACKE
NUMBERS.
4. DECODED ROM MICROINSTR
THESIS ( ).
5. R6 IS 383 OHMS ON CARD RE



DWG REV. B

NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1110-22 AND A-1140-22.

: table 4-6 for replaceable parts.



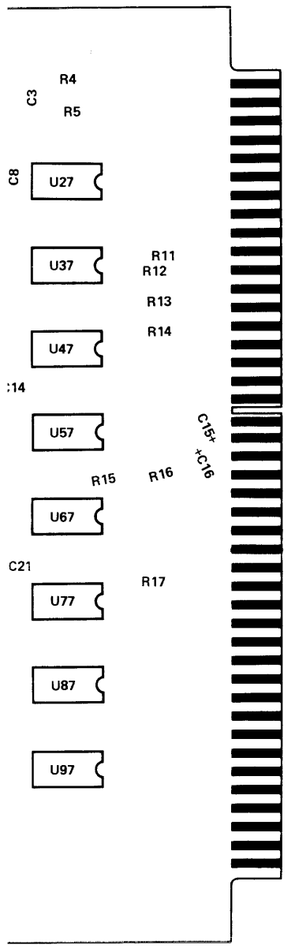
DWG 02100-90127, REV. E

FF DEFINITIONS

A/B CLR	= A AND B CLEAR
A/B SEL	= A OR B SELECT
FLAG	= FLAG
INM	= INDEX MODE
JSB	= JUMP TO SUBROUTINE
$\overline{OVF}$	= "NOT" OVERFLOW
RIR 12	= ROM INSTRUCTION REGISTER BIT 12
RIR 13	= ROM INSTRUCTION REGISTER BIT 13
RIR 14	= ROM INSTRUCTION REGISTER BIT 14
RIR 15	= ROM INSTRUCTION REGISTER BIT 15
RIR 16	= ROM INSTRUCTION REGISTER BIT 16
RIR 21	= ROM INSTRUCTION REGISTER BIT 21
RIR 22	= ROM INSTRUCTION REGISTER BIT 22
RIR 23	= ROM INSTRUCTION REGISTER BIT 23

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. DECODED ROM MICROINSTRUCTION MNEMONICS APPEAR IN PARENTHESIS ( ).
5. R6 IS 383 OHMS ON CARD REV. 1110.



1140-22.

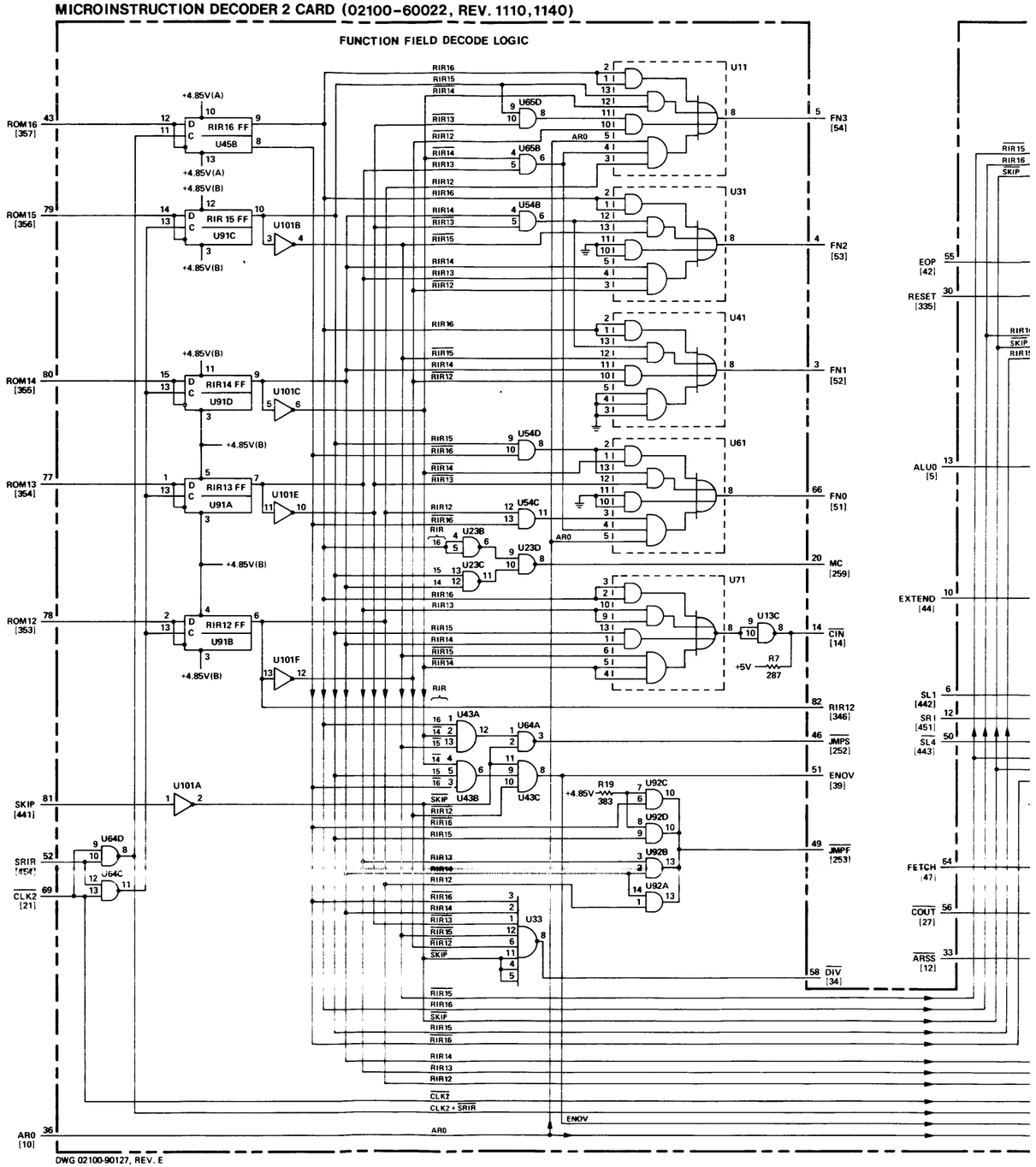
FF DEFINITIONS

A/B CLR	= A AND B CLEAR
A/B SEL	= A OR B SELECT
FLAG	= FLAG
INM	= INDEX MODE
JSB	= JUMP TO SUBROUTINE
$\overline{OVF}$	= "NOT" OVERFLOW
RIR 12	= ROM INSTRUCTION REGISTER BIT 12
RIR 13	= ROM INSTRUCTION REGISTER BIT 13
RIR 14	= ROM INSTRUCTION REGISTER BIT 14
RIR 15	= ROM INSTRUCTION REGISTER BIT 15
RIR 16	= ROM INSTRUCTION REGISTER BIT 16
RIR 21	= ROM INSTRUCTION REGISTER BIT 21
RIR 22	= ROM INSTRUCTION REGISTER BIT 22
RIR 23	= ROM INSTRUCTION REGISTER BIT 23

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. DECODED ROM MICROINSTRUCTION MNEMONICS APPEAR IN PARENTHESIS ( ).
5. R6 IS 383 OHMS ON CARD REV. 1110.

MICROINSTRUCTION DECODER 2 CARD (02100-60022, REV. 1110,1140)



DWG 02100-90127, REV. E

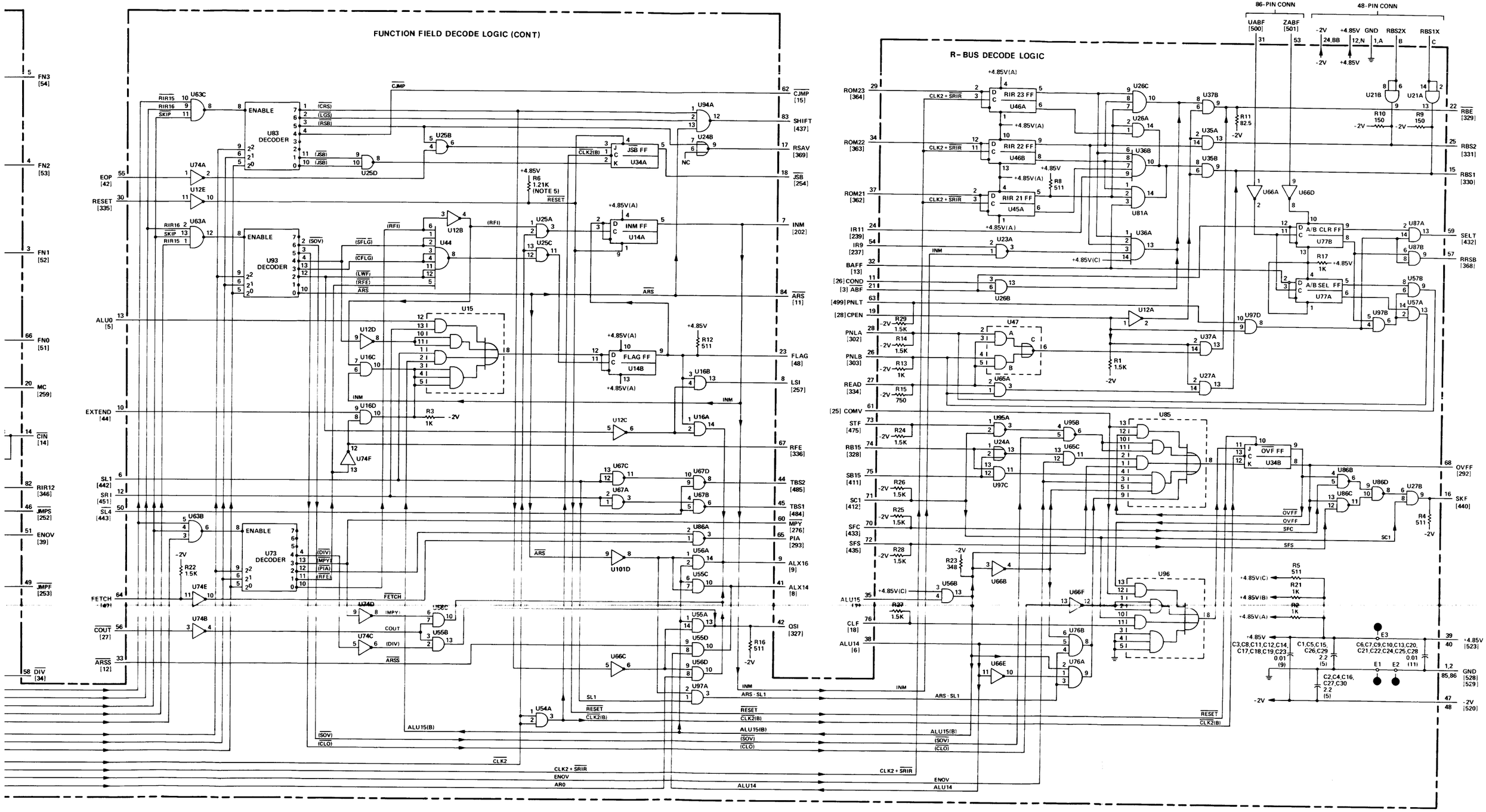


Figure 4-7A. A4 Microinstruction Decoder 2 Card (02100-60022), Parts Location and Schematic Diagrams

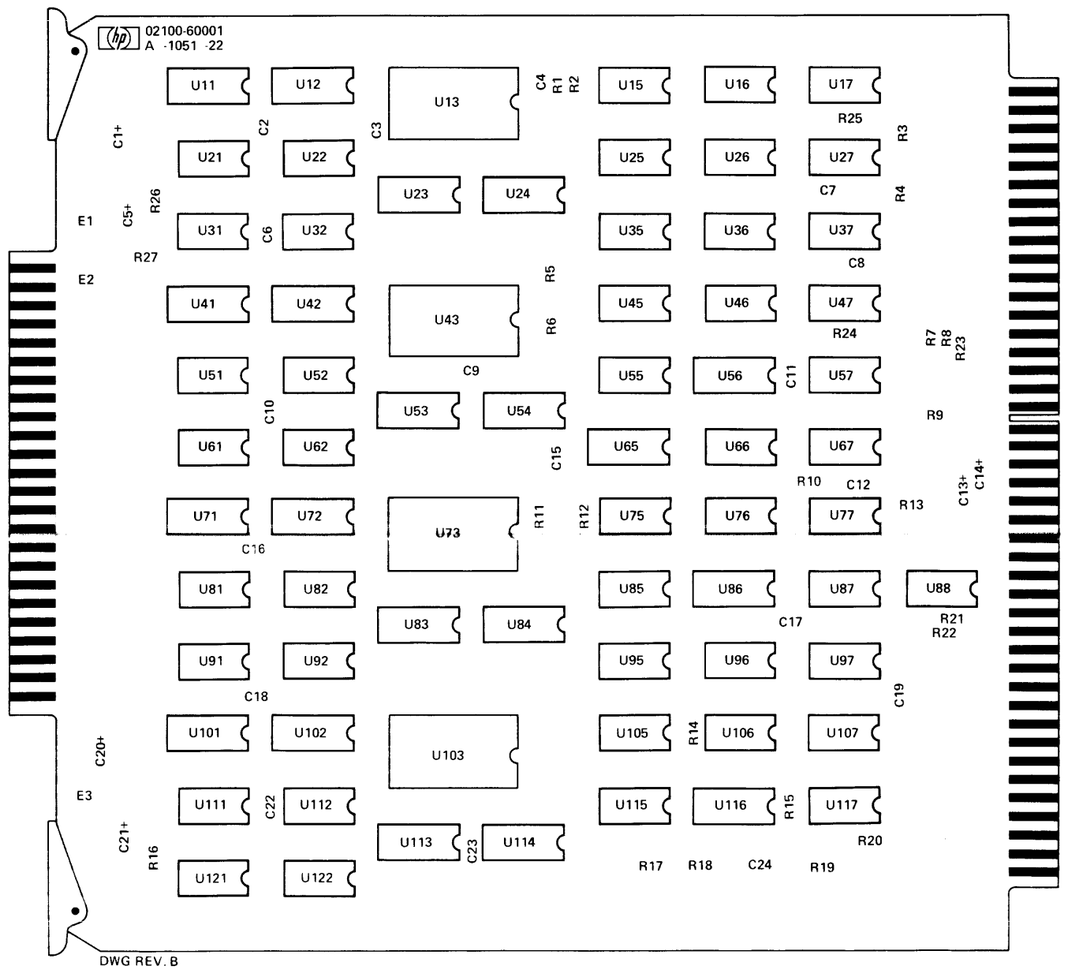
Table 4-7. A5 Arithmetic/Logic Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A5	02100-60001	1	ARITHMETIC LOGIC CARD	28480	02100-60001
A5C1	0180-0197	6	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A5C2	0160-2055	18	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C3	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C4	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C5	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A5C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C13	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A5C14	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A5C15	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C16	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C20	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A5C21	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A5C22	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C23	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A5E1	0360-0294	3	TERMINAL:SOLDER POINT	28480	0360-0294
A5E2	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A5E3	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A5R1	0698-7229	17	R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R2	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R3	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R4	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R5	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R6	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R7	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R8	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R9	0698-3443	1	R:FXD MET FLM 287 OHM 1% 1/8W	28480	0698-3443
A5R10	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R11	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R12	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R13	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R14	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R15	0698-7236	2	R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A5R16	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A5R17	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R18	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R19	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R20	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A5R21	0698-7219	3	R:FXD FLM 196 OHM 2% 1/8W	28480	0698-7219
A5R22	0698-7219		R:FXD FLM 196 OHM 2% 1/8W	28480	0698-7219
A5R23	0698-7219		R:FXD FLM 196 OHM 2% 1/8W	28480	0698-7219
A5R24	0698-7214	2	R:FXD FLM 121 OHM 2% 1/8W	28480	0698-7214
A5R25	0698-7214		R:FXD FLM 121 OHM 2% 1/8W	28480	0698-7214
A5R26	0698-7221	2	R:FXD FLM 237 OHM 2% 1/8W	28480	0698-7221
A5R27	0698-7221		R:FXD FLM 237 OHM 2% 1/8W	28480	0698-7221
A5U11	1820-0620	8	IC:TTL DUAL 4-INPT MULTIPLEXER	01295	SN74153N
A5U12	1820-0620		IC:TTL DUAL 4-INPT MULTIPLEXER	01295	SN74153N
A5U13	1820-0606	4	IC:TTL ARITH. LOGIC UNIT/FUNCTION GEN.	01295	SN74181N
A5U15	1820-0612	8	IC:CTL 8-BIT RAM (4 X 2)	07263	U6A903059X
A5U16	1820-0971	8	IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A5U17	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A5U21	1820-0607	16	IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U22	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U23	1820-0610	8	IC:TTL DUAL 4-INPT MULTIPLEXER	07263	U6B930959X
A5U24	1820-0610		IC:TTL DUAL 4-INPT MULTIPLEXER	07263	U6B930959X
A5U25	1820-0612		IC:CTL 8-BIT RAM (4 X 2)	07263	U6A903059X
A5U26	1820-0231	4	IC:TTL 4-BIT SYNC BINARY COUNTER	07263	U6B931659X
A5U27	1820-0186	10	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U31	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U32	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U35	1820-0955	2	IC:CTL 8-INPT DUAL OUTPUT AND GATE	07263	U6A995579X
A5U36	1820-0954	1	IC:CTL DUAL 4-INPT AND GATE	07263	U6A995479X
A5U37	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U41	1820-0620		IC:TTL DUAL 4-INPT MULTIPLEXER	01295	SN74153N
A5U42	1820-0620		IC:TTL DUAL 4-INPT MULTIPLEXER	01295	SN74153N

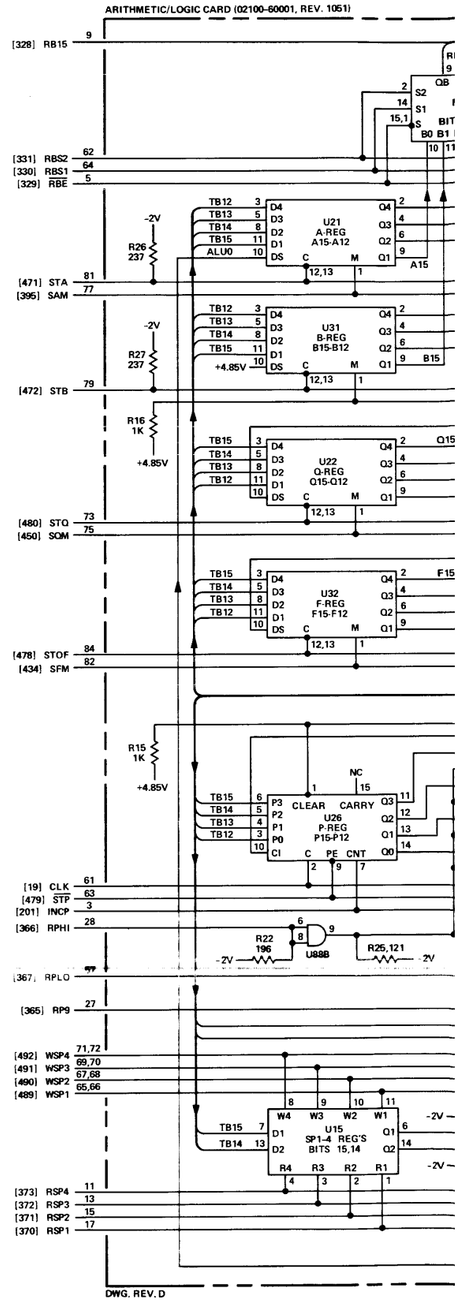
Table 4-7. A5 Arithmetic/Logic Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A5U43	1820-0606		IC:TTL ARITH. LOGIC UNIT/FUNCTION GEN.	01295	SN74181N
A5U45	1820-0612		IC:CTL 8-BIT RAM (4 X 2)	07263	U6A903059X
A5U46	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A5U47	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A5U51	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U52	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U53	1820-0610		IC:TTL DUAL 4-INPT MULTIPLEXER	07263	U6B930959X
A5U54	1820-0610		IC:TTL DUAL 4-INPT MULTIPLEXER	07263	U6B930959X
A5U55	1820-0612		IC:CTL 8-BIT RAM (4 X 2)	07263	U6A903059X
A5U56	1820-0231		IC:TTL 4-BIT SYNC BINARY COUNTER	07263	U6B931659X
A5U57	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U61	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U62	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U65	1820-0611	1	IC:TTL LOOK-AHEAD CARRY GENERATOR	01295	SN74182N
A5U66	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U67	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U71	1820-0620		IC:TTL DUAL 4-INPT MULTIPLEXER	01295	SN74153N
A5U72	1820-0620		IC:TTL DUAL 4-INPT MULTIPLEXER	01295	SN74153N
A5U73	1820-0606		IC:TTL ARITH. LOGIC UNIT/FUNCTION GEN.	01295	SN74181N
A5U75	1820-0612		IC:CTL 8-BIT RAM (4 X 2)	07263	U6B930959X
A5U76	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A5U77	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A5U81	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U82	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U83	1820-0610		IC:TTL DUAL 4-INPT MULTIPLEXER	07263	U6B930959X
A5U84	1820-0610		IC:TTL DUAL 4-INPT MULTIPLEXER	07263	U6B930959X
A5U85	1820-0612		IC:CTL 8-BIT RAM (4 X 2)	07263	U6A903059X
A5U86	1820-0231		IC:TTL 4-BIT SYNC BINARY COUNTER	07263	U6B931659X
A5U87	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U88	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U91	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U92	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U95	1820-0955		IC:CTL 8-INPT DUAL OUTPUT AND GATE	07263	U6A995579X
A5U96	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U97	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U101	1820-0620		IC:TTL DUAL 4-INPT MULTIPLEXER	01295	SN74153N
A5U102	1820-0620		IC:TTL DUAL 4-INPT MULTIPLEXER	01295	SN74153N
A5U103	1820-0606		IC:TTL ARITH. LOGIC UNIT/FUNCTION GEN.	01295	SN74181N
A5U105	1820-0612		IC:CTL 8-BIT RAM (4 X 2)	07263	U6A903059X
A5U106	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A5U107	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A5U111	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U112	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U113	1820-0610		IC:TTL DUAL 4-INPT MULTIPLEXER	07263	U6B930959X
A5U114	1820-0610		IC:TTL DUAL 4-INPT MULTIPLEXER	07263	U6B930959X
A5U115	1820-0612		IC:CTL 8-BIT RAM (4 X 2)	07263	U6A903059X
A5U116	1820-0231		IC:TTL 4-BIT SYNC BINARY COUNTER	07263	U6B931659X
A5U117	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A5U121	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P
A5U122	1820-0607		IC:TTL 4-BIT RT/LT SHIFT REGISTER	04713	MC4012P

REF. NO.	BACKPLANE LOCATION					* INDICATES SIGNAL SOURCE
A5						
1	A5-26*	A6-78				
5	A4-13	A5-58*	A6-79			
6	A4-38	A5-22*				
7	A4-35	A5-21*	A6-77			
8	A4-41*	A5-7	A6-3*			
9	A4-9*	A5-23	A6-17*			
10	A4-36	A5-45*				
14	A4-14*	A5-41	A6-84*			
19	A1-51*	A5-61				
27	A3-50	A4-56	A5-19*	A6-11		
51	A4-66*	A5-50				
52	A4-3*	A5-46				
53	A4-4*	A5-56				
54	A4-5*	A5-55				
201	A1-43*	A5-3				
257	A4-8*	A5-24	A6-20*			
259	A4-20*	A5-12				
327	A4-42*	A5-83				
328	A4-74	A5-9*				
329	A4-22*	A5-5				
330	A4-15*	A5-64				
331	A4-25*	A5-62				
365	A3-21*	A5-27				
366	A3-23*	A5-28				
367	A3-6*	A5-57				
368	A3-24*	A4-57*	A5-35,36	A24-23*		
370	A3-10*	A5-17				
371	A3-7*	A5-15				
372	A3-5*	A5-13				
373	A3-8*	A5-11				
395	A3-67*	A5-77				
396	A2-46*	A5-78*	A6-32	A7-62*	A8-3*	A9-16*
	A107-16					
397	A2-44*	A5-80*	A6-60	A7-61*	A8-4*	A9-14*
	A107-18					
398	A2-29*	A5-76*	A6-61	A7-60*	A8-5*	A9-18*
	A107-12					
399	A2-30*	A5-59*	A6-33	A7-59*	A8-6*	A9-13*
	A107-14					
400	A2-19*	A5-52*	A6-65	A7-64*	A8-7*	A9-12*
	A107-29					
401	A2-20*	A5-51*	A6-64	A7-57*	A8-8*	A9-10*
	A107-38					
402	A2-12*	A5-49*	A6-67	A8-9*	A9-20*	A107-20
403	A2-9*	A5-43*	A6-66	A8-24*	A9-11*	A107-22
404	A2-53*	A5-31*	A6-52	A8-14*	A9-5*	A107-44
405	A2-54*	A5-32*	A6-51	A8-18*	A9-3*	A107-46
406	A2-43*	A5-29*	A6-54	A8-19*	A9-9*	A107-34
407	A2-49*	A5-30*	A6-53	A8-20*	A9-7*	A107-36
408	A2-31*	A5-10*	A6-38	A8-21*	A9-8*	A107-51
409	A2-21*	A5-8*	A6-37	A8-22*	A9-4*	A107-42
410	A2-10*	A5-6*	A6-42	A8-23*	A9-6*	A107-50
411	A1-14	A2-11*	A4-75	A5-4*	A6-41	A8-33*
	A9-84*	A107-52				
434	A3-74*	A5-82				
450	A3-70*	A5-75				
471	A3-69*	A5-81				
472	A3-63*	A5-79				
478	A3-82*	A5-84				
479	A3-64*	A5-63				
480	A3-80*	A5-73				
484	A4-45*	A5-53				
485	A4-44*	A5-54				
486	A5-25*	A6-19				
489	A3-55*	A5-65				
490	A3-56*	A5-67				
491	A3-45*	A5-69				
492	A3-49*	A5-71				



See table 4-7 for replaceable parts.



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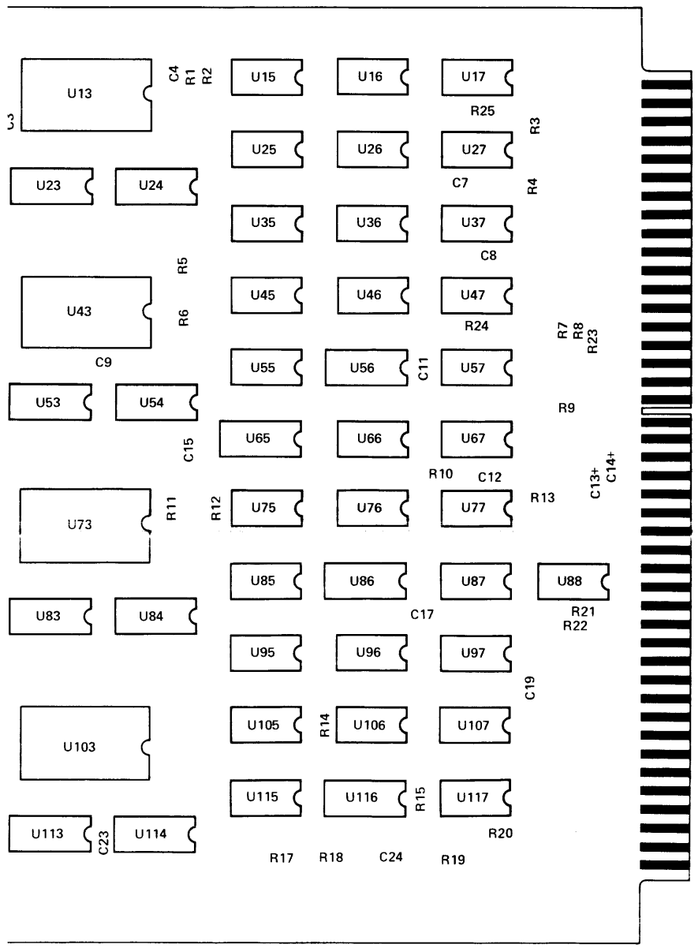
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.



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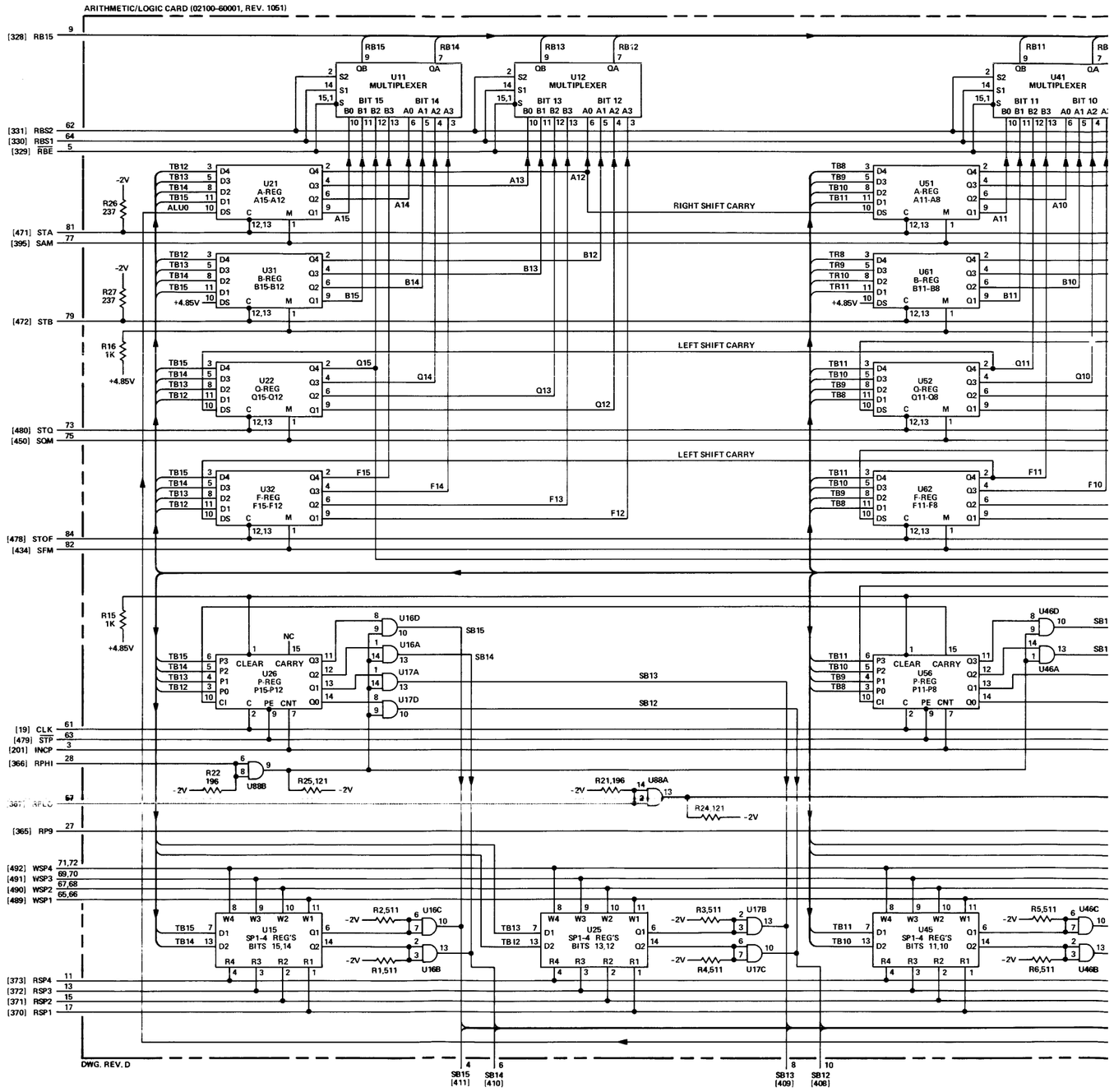
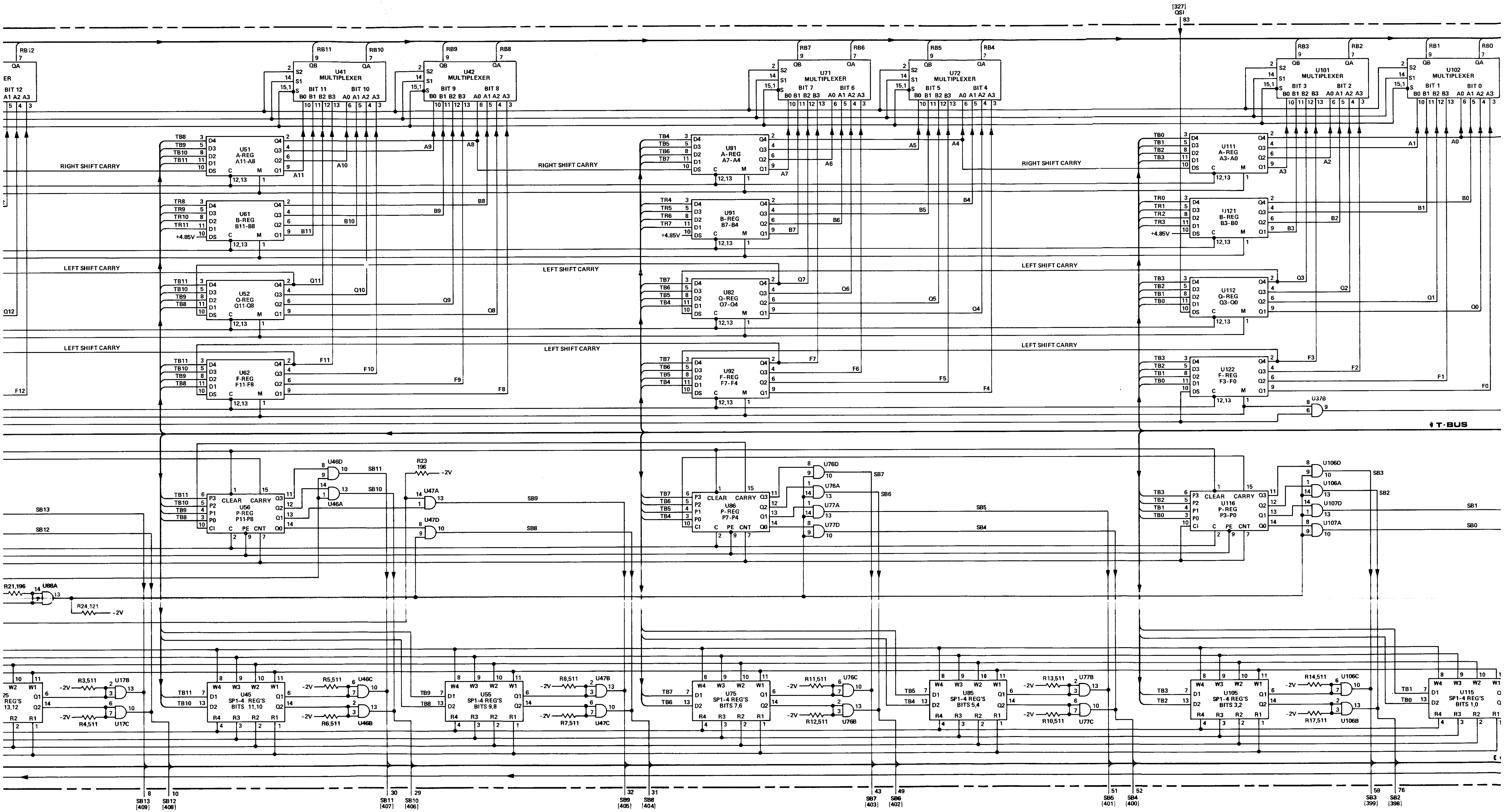




[327] QSI 83
U41 MULTIPLEXER BIT 11 BIT 10
U42 MULTIPLEXER BIT 9 BIT 8
U71 MULTIPLEXER BIT 7 BIT 6
U72 MULTIPLEXER BIT 5 BIT 4
U101 MULTIPLEXER BIT 3 BIT 2
U102 MULTIPLEXER BIT 1 BIT 0
RIGHT SHIFT CARRY
LEFT SHIFT CARRY
U51 A-REG A11-A8
U61 B-REG B11-B8
U52 Q-REG Q11-Q8
U62 F-REG F11-F8
U81 A-REG A7-A4
U91 B-REG B7-B4
U82 Q-REG Q7-Q4
U92 F-REG F7-F4
U111 A-REG A3-A0
U121 B-REG B3-B0
U112 Q-REG Q3-Q0
U122 F-REG F3-F0
+4.85V
T-BUS
U56 P-REG P11-P8
U86 P-REG P7-P4
U116 P-REG P3-P0
CLEAR CARRY
U45 SP1-4 REG'S BITS 11,10
U55 SP1-4 REG'S BITS 9,8
U75 SP1-4 REG'S BITS 7,6
U85 SP1-4 REG'S BITS 5,4
U105 SP1-4 REG'S BITS 3,2
U115 SP1-4 REG'S BITS 1,0
R21,196 U88A R24,121 -2V
R23 196 -2V
SB13 [409]
SB12 [408]
SB11 [407]
SB10 [406]
SB9 [405]
SB8 [404]
SB7 [403]
SB6 [402]
SB5 [401]
SB4 [400]
SB3 [399]
SB2 [398]

Figure 4-8. A5 Arithmetic/Logic Card, Parts Location and Schematic Diagrams

Table 4-8. A6 Instruction Register Decoder Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A6	02100-60003	1	INSTRUCTION REGISTER DECODER CARD	28480	02100-60003
A6C1	0160-2055	22	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C2	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C3	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C4	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C5	0180-0197	6	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A6C6	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A6C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C12	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A6C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C15	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C16	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A6C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C20	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C21	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A6C22	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A6C23	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C25	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C26	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C27	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C28	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A6C29(NOTE 4)	0140-0194	1	C: FXD MICA 110 PF 5%	72136	RDM15F111J3C
A6R1(NOTE 1)	0757-0280	8	R: FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A6R2	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A6R3	0698-3443	1	R:FXD MET FLM 287 OHM 1% 1/8W	28480	0698-3443
A6R4	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A6R5	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A6R6	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A6R7	0757-0416	2	R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A6R8	0698-3442	2	R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A6R9	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A6R10	0698-3446	1	R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A6R11	0698-3445	2	R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A6R12	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A6R13	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A6R14	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A6R15	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A6R16	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A6R17(NOTE 2)	0698-0082	1	R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A6U11	1820-0512	1	IC:TTL DUAL D F/F	01295	SN74H74N
A6U12	1820-0141	7	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A6U13(NOTE 1)	1820-0451	1	IC:TTL DUAL J-K F/F	04713	MC3062P
A6U13(NOTE 3)	1820-0695	1	IC:TTL SHS DUAL J-K F/F W/PRESET	01295	SN74S113N
A6U14	1820-0971	10	IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U15	1820-0370	6	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A6U16	1820-0424	7	IC:TTL HS HEX INVERTER	04713	SN74H04N
A6U17	1820-0608	6	IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A6U21	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A6U22	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A6U23	1820-0373	1	IC:TTL HS DUAL 4-INPT NAND GATE	01295	SN74H20N
A6U24	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U25	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U26	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A6U27	1820-0608		IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A6U31	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U32	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U33	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A6U34	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A6U35	1820-0608		IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A6U36	1820-0608		IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A6U37	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A6U41	1820-0966	2	IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A6U42	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U43	1820-0609	2	IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A6U44	1820-0239	2	IC:TTL QUAD 2-INPT NOR GATE	28480	1820-0239
A6U45	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A6U46	1820-0374	2	IC:TTL HS DUAL 4-INPT AND GATE	01295	SN74H21N
A6U47	1820-0205	1	IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205

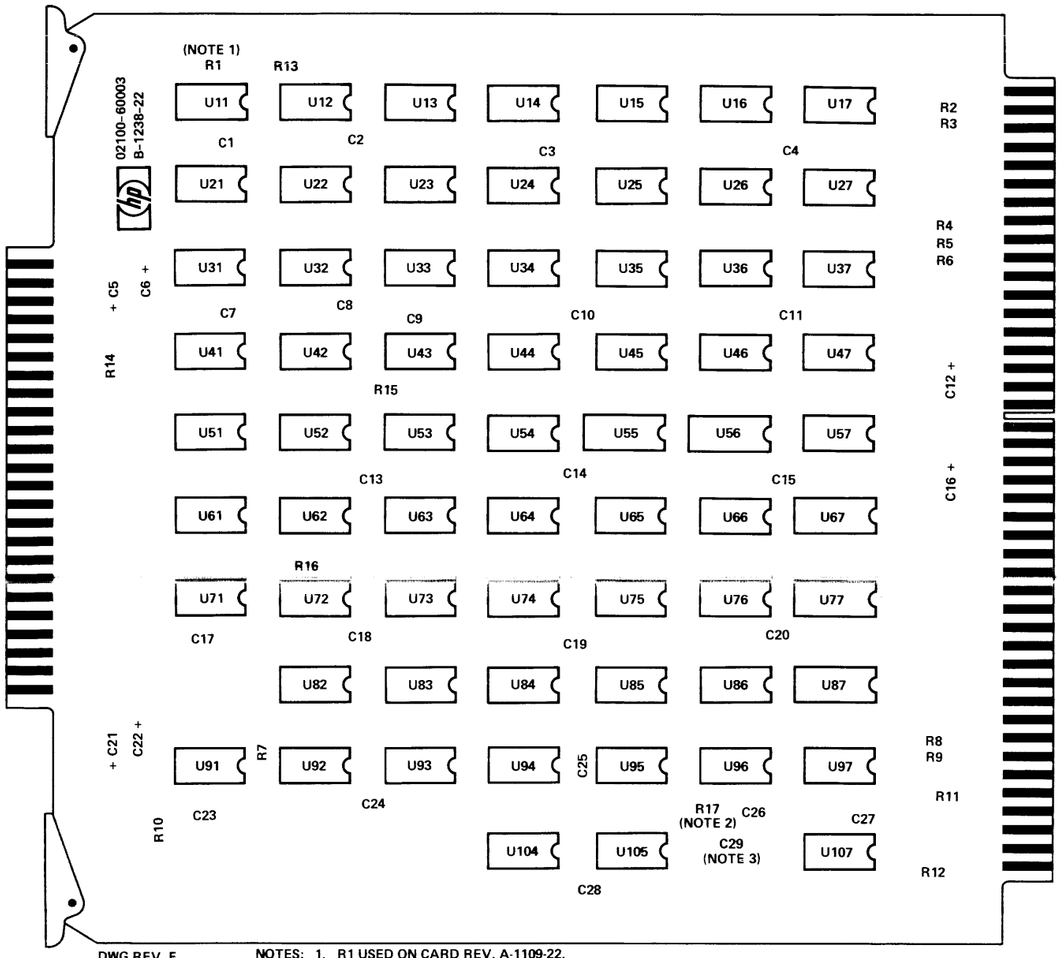
NOTES:
1. Used on card rev. 1109 only.
2. First used on card rev. 1202.
3. First used on card rev. 1140.
4. First used on card rev. 1238.

Table 4-8. A6 Instruction Register Decoder Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A6U51	1820-0966		IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A6U52	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U53	1820-0239		IC:TTL QUAD 2-INPT NOR GATE	28480	1820-0239
A6U54	1820-0608		IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A6U55	1820-0231	1	IC:TTL 4-BIT SYNC BINARY COUNTER	07263	U6B931659X
A6U56	1820-0301	4	IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A6U57	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A6U61	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A6U62	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U63	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U64	1820-0374		IC:TTL HS DUAL 4-INPT AND GATE	01295	SN74H21N
A6U65	1820-0186	5	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A6U66	1820-0372	2	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A6U67	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A6U71	1820-0372		IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A6U72	1820-0609		IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A6U73	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A6U74	1820-0608		IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A6U75	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A6U76	1820-0378	2	IC:TTL HS 2-WIDE 2-INPT	01295	SN74H51N
A6U77	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A6U82	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A6U83	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A6U84	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A6U85	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A6U86	1820-0378		IC:TTL HS 2-WIDE 2-INPT	01295	SN74H51N
A6U87	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A6U91	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A6U92	1820-0187	1	IC:CTL DUAL 2-INPT NOR GATE	07263	U6A985249X
A6U93	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A6U94	1820-0953	1	IC:CTL TRIPLE 2-2-3 INPT AND GATE	14433	MIC 953
A6U95	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A6U96	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A6U97	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A6U104	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A6U105	1820-0605	1	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H01N
A6U107	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X

* INDICATES SIGNAL SOURCE

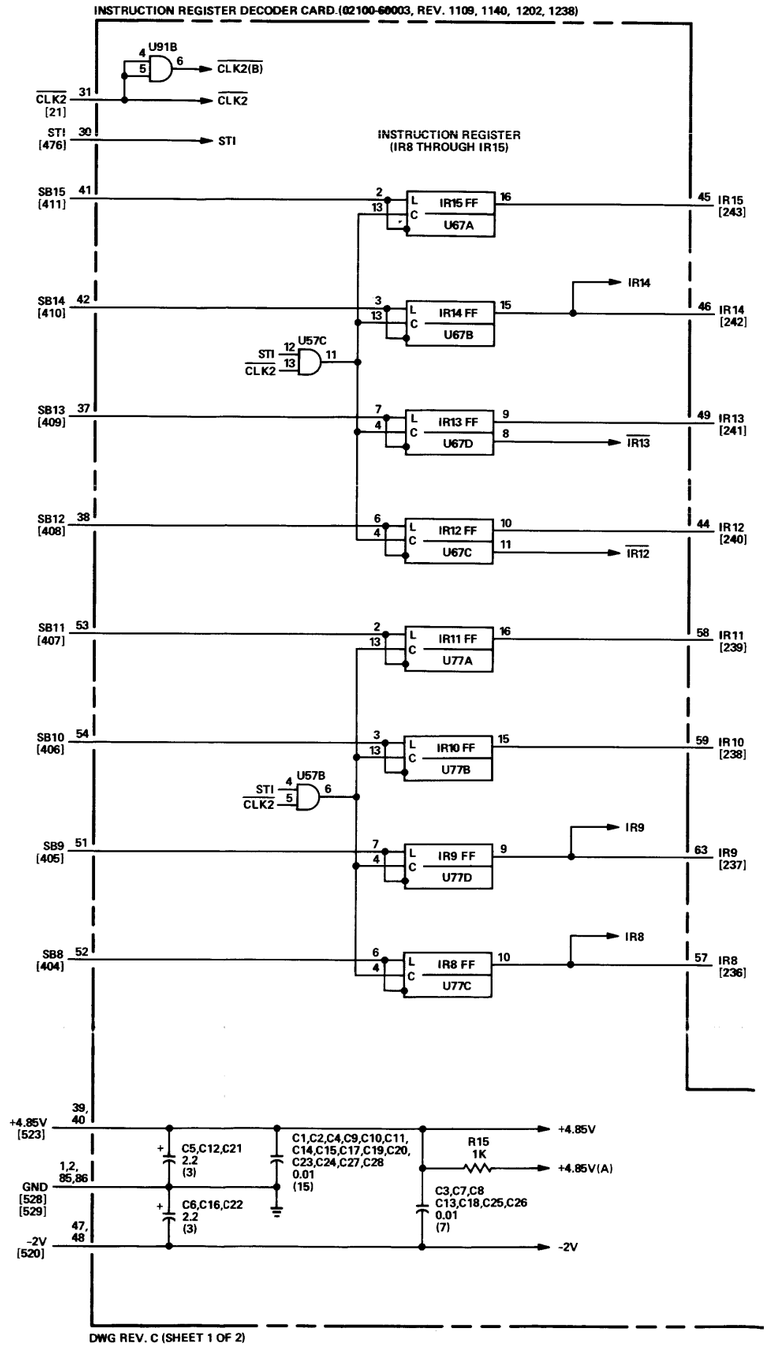
REF. NO.	BACKPLANE LOCATION					
A6						
21	A1-84*	A4-69	A6-31	A8-70		
228	A2-42	A6-35*	A7-68			
229	A2-45	A6-36*	A7-63			
230	A2-26	A6-56*	A7-67			
231	A2-50	A6-34*	A7-30			
232	A2-72	A6-62*	A7-26			
233	A2-66	A6-70*	A7-29			
234	A2-84	A6-69*	A8-41			
235	A2-75	A6-75*	A8-38			
236	A2-76	A6-57*	A8-45			
237	A2-61	A4-54	A6-63*	A8-65		
238	A2-83	A3-17	A6-59*			
239	A1-9	A2-80	A3-71	A4-24	A6-58*	A8-63
240	A1-3	A2-79	A6-44*			
241	A1-7	A2-78	A6-49*			
242	A1-5	A2-81	A6-46*			
243	A1-12	A2-82	A6-45*			
333	A3-19*	A6-81				
396	A2-46*	A5-78*	A6-32	A7-62*	A8-3*	A9-16*
397	A107-16 A2-44*	A5-80*	A6-60	A7-61*	A8-4*	A9-14*
398	A107-18 A2-29*	A5-76*	A6-61	A7-60*	A8-5*	A9-18*
399	A107-12 A2-30*	A5-59*	A6-33	A7-59*	A8-6*	A9-13*
400	A107-14 A2-19*	A5-52*	A6-65	A7-64*	A8-7*	A9-12*
401	A107-29 A2-20*	A5-51*	A6-64	A7-57*	A8-8*	A9-10*
402	A107-38 A2-12*	A5-49*	A6-67	A8-9*	A9-20*	A107-20
403	A2-9*	A5-43*	A6-66	A8-24*	A9-11*	A107-22
404	A2-53*	A5-31*	A6-52	A8-14*	A9-5*	A107-44
405	A2-54*	A5-32*	A6-51	A8-18*	A9-3*	A107-46
406	A2-43*	A5-29*	A6-54	A8-19*	A9-9*	A107-34
407	A2-49*	A5-30*	A6-53	A8-20*	A9-7*	A107-36
408	A2-31*	A5-10*	A6-38	A8-21*	A9-8*	A107-51
409	A2-21*	A5-8*	A6-37	A8-22*	A9-4*	A107-42
410	A2-10*	A5-6*	A6-42	A8-23*	A9-6*	A107-50
411	A1-14 A9-84*	A2-11* A107-52	A4-75	A5-4*	A6-41	A8-33*
476	A3-44*	A6-30				



DWG REV. F

NOTES:
1. R1 USED ON CARD REV. A-1109-22.
2. R17 NOT USED ON CARD REV. A-1109-22 AND B-1140-22.
3. C29 NOT USED ON CARD REV. A-1109-22, B-1140-22, AND B-1202-22.

See table 4-8 for replaceable parts.



FF DEFINITIONS

RCR = REPEAT COUNT ROLLOVER

NOTES:
1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. DECODED ROM MICROINSTRUCTIONS MNEMONICS AND DECODED BASIC INSTRUCTION MNEMONICS APPEAR IN PARENTHESIS ( ). *INDICATES A OR B.
5. R1 USED ON CARD REV. 1109 ONLY.
6. R17 NOT USED ON CARD REV. 1140 AND 1109.
7. C29 FIRST USED ON CARD REV. 1238.

DWG REV. C (SHEET 1 OF 2)

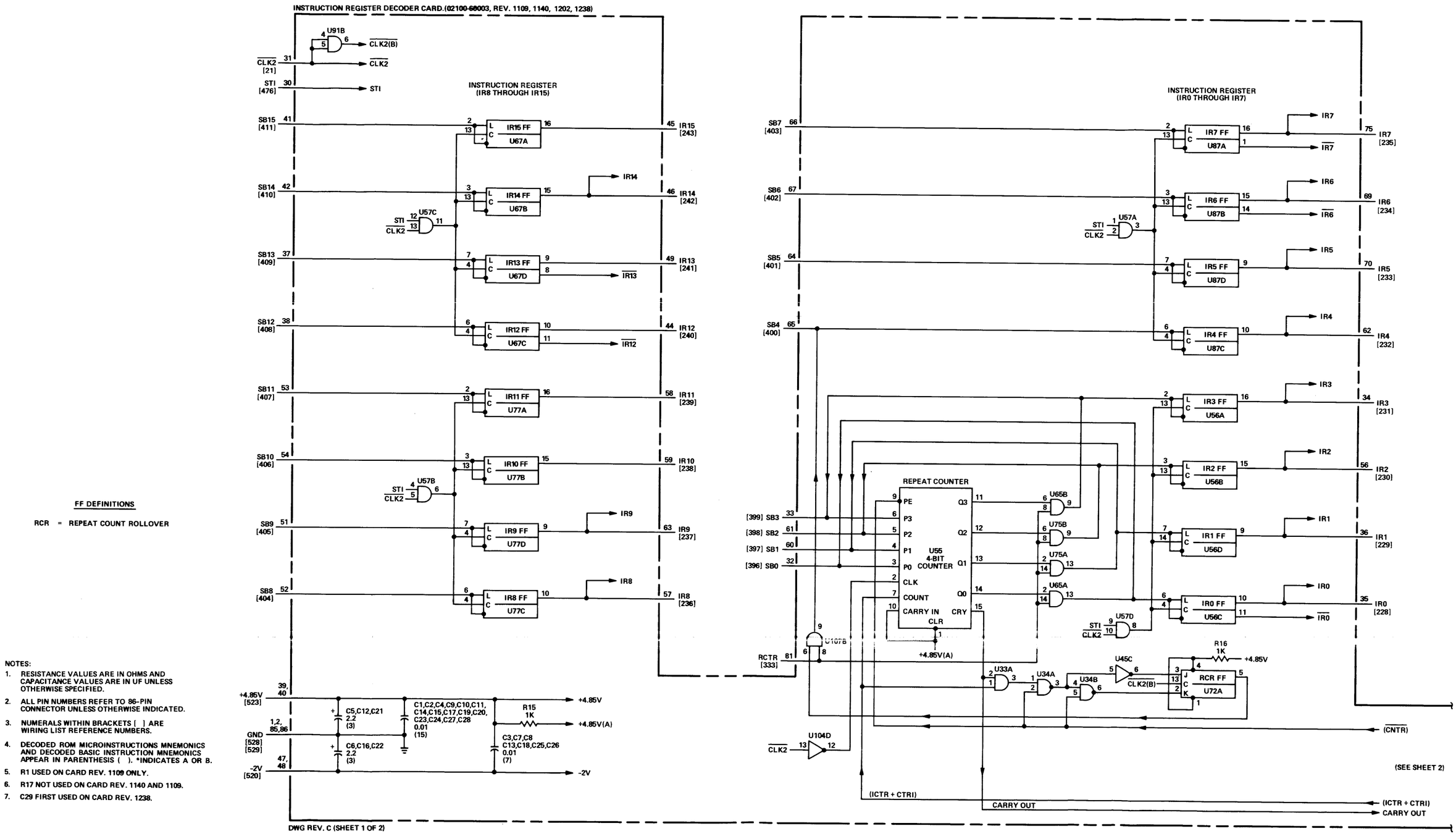
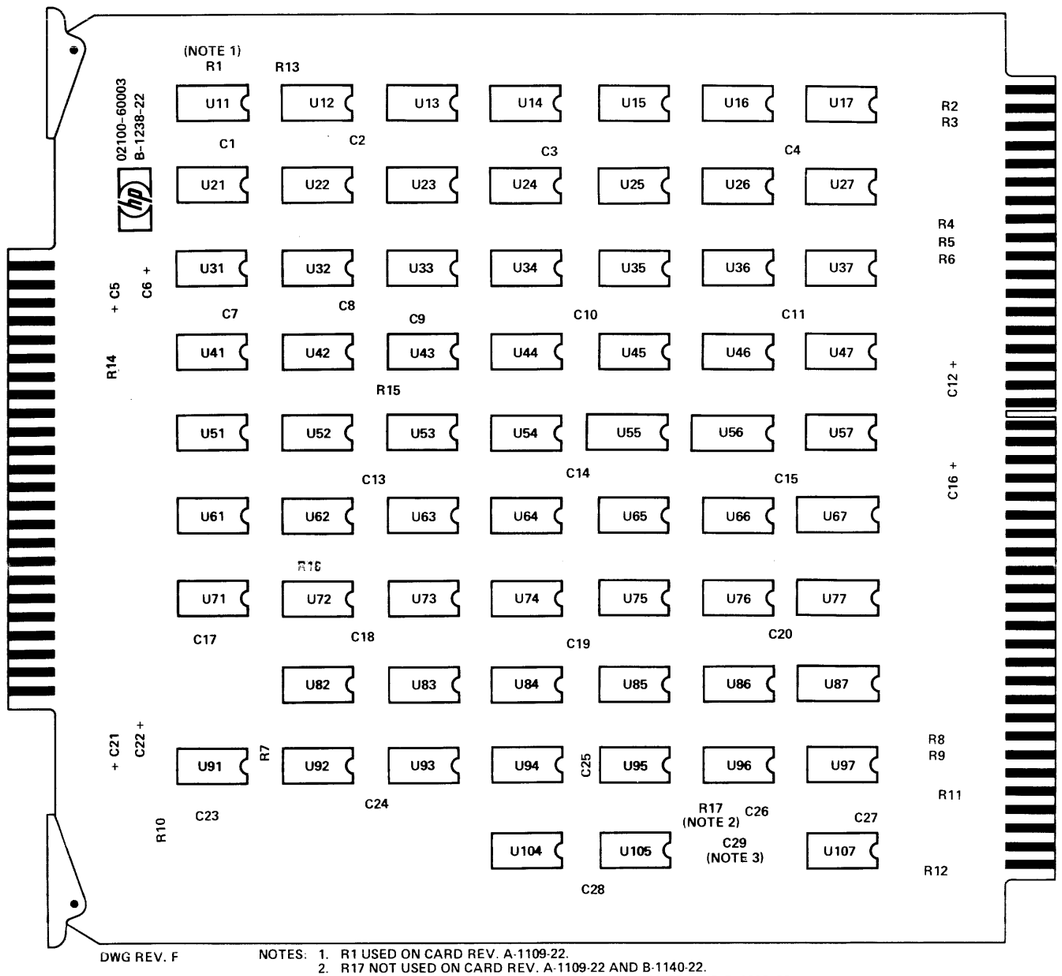


Figure 4-9. A6 Instruction Register Decoder Card, Parts Location and Schematic Diagrams (Sheet 1 of 2)

(Information continues on next page)

REF. NO.	BACKPLANE LOCATION					
			* INDICATES SIGNAL SOURCE			
A6						
1	A5-26*	A6-78				
2	A3-52	A6-5*				
5	A4-13	A5-58*	A6-79			
7	A4-35	A5-21*	A6-77			
8	A4-41*	A5-7	A6-3*			
9	A4-9*	A5-23	A6-17*			
11	A4-84*	A6-18				
12	A4-33	A6-25*				
13	A3-43	A4-32	A6-7*			
14	A4-14*	A5-41	A6-84*			
23	A1-70*	A6-55				
27	A3-50	A4-56	A5-19*	A6-11		
32	A6-73*	A9-36*	A24-55*	A107-76		
39	A4-51*	A6-83				
41	A3-61*	A6-15				
44	A4-10	A6-82*	A24-22			
48	A4-23*	A6-80				
55	A1-80	A3-35*	A6-43			
223	A1-83	A6-21*	A7-38			
257	A4-8*	A5-24	A6-20*			
274	A6-13	A8-80*				
275	A6-4*	A8-36				
292	A4-68*	A6-8	A24-51			
335	A1-8*	A2-70	A4-30	A6-9	A7-20	A8-75
	A107-82					
336	A4-67*	A6-68				
338	A2-32*	A6-16				
339	A2-33*	A6-14				
340	A2-28*	A6-10				
341	A2-27*	A6-12				
342	A2-22*	A6-22				
343	A2-23*	A6-23				
344	A2-16*	A6-24				
345	A2-17*	A6-26				
376	A6-74*	A9-34*	A24-57*	A107-75		
377	A3-31	A6-27*				
430	A1-44	A6-28*				
441	A2-77*	A3-84	A4-81	A6-6*		
442	A3-65	A4-6	A6-71*			
443	A4-50	A6-50*				
451	A3-62	A4-12	A6-72*			
454	A1-55	A2-62	A3-42	A4-52	A6-76*	
486	A5-25*	A6-19				
502	A1-13*	A6-29				



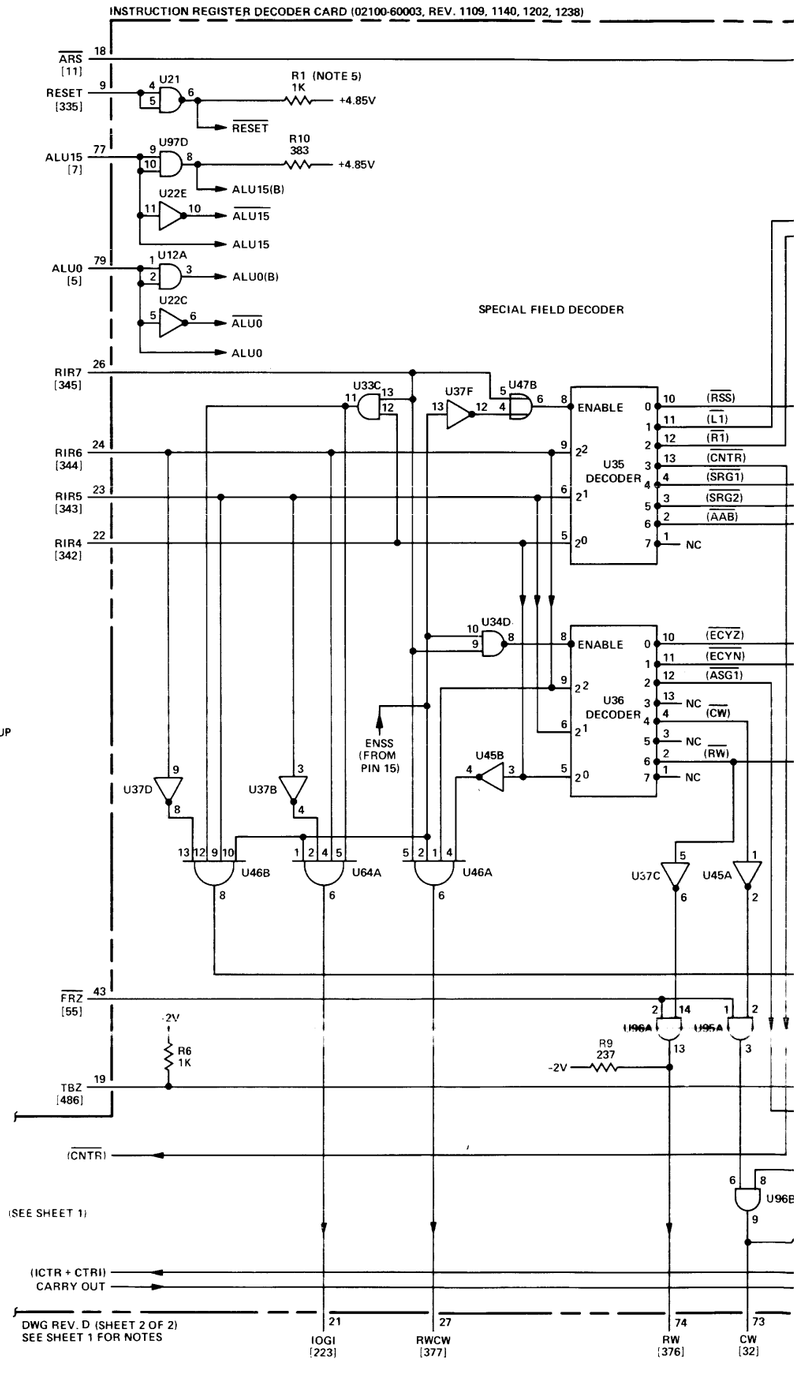
DWG REV. F

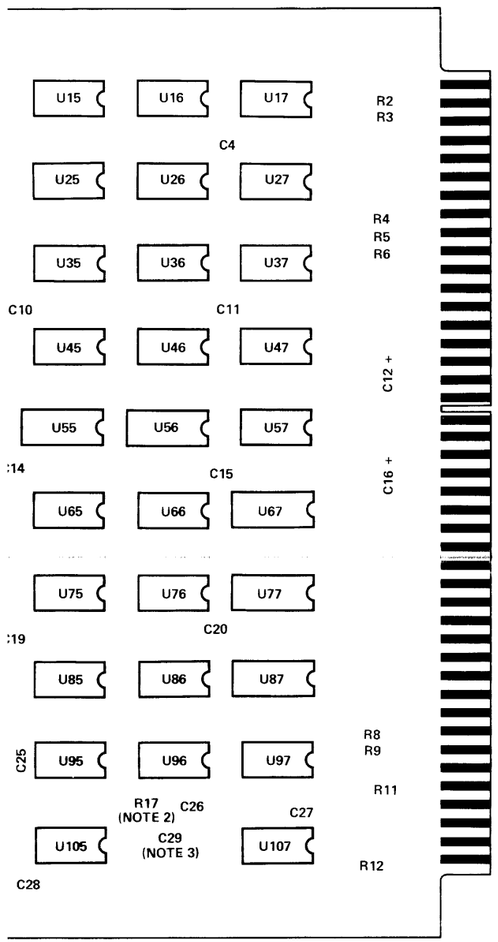
NOTES:
1. R1 USED ON CARD REV. A-1109-22.
2. R17 NOT USED ON CARD REV. A-1109-22 AND B-1140-22.
3. C29 NOT USED ON CARD REV. A-1109-22, B-1140-22, AND B-1202-22.

See table 4-8 for replaceable parts.

FF DEFINITIONS

A ADDR = A ADDRESSABLE
B ADDR = B ADDRESSABLE
SRG = SHIFT-ROTATE GROUP





FF DEFINITIONS

A ADDR = A ADDRESSABLE
B ADDR = B ADDRESSABLE
SRG = SHIFT-ROTATE GROUP

INSTRUCTION REGISTER DECODER CARD (02100-60003, REV. 1109, 1140, 1202, 1238)

SPECIAL FIELD DECODER

ARS [11]
RESET [335]
ALU15 [7]
ALU0 [5]
RIR7 [345]
RIR6 [344]
RIR5 [343]
RIR4 [342]
FRZ [55]
TBZ [486]
(CNTR)
(SEE SHEET 1)
(ICTR + CTRI)
CARRY OUT
DWG REV. D (SHEET 2 OF 2)
SEE SHEET 1 FOR NOTES
IOGI [223]
RWCW [377]
RW [376]
CW [32]
ENSS (FROM PIN 15)
R1 (NOTE 5) 1K +4.85V
R10 383 +4.85V
R6 1K -2V
R9 237 -2V
R8 237 -2V
+4.85V(A)
CLK2(B)
SRG FF U43B
U21
U97D
U22E
U12A
U22C
U33C
U37F
U47B
U35 DECODER
U34D
U36 DECODER
U37D
U37B
U45B
U46B
U64A
U46A
U37C
U45A
U96A
U96B
U37A
U37E
U45D
U45E
U15A
U104A
U104B
U104F
U86A
U86B
U86C
U86D
U86E
U86F
U76A
U76B
U76C
U76D
U76E
U76F
U74 DECODER
U83A
U83B
U83C
U83D
U84A
U84B
U84C
U64B
U85F
U85C
U85B
U66C
U66B
U94A
U61A
U53B
U61C
U61B
U91A
U61D
U71A
U71B
U22B
U32D
U32B
U32A
U32C
U54 DECODER
U53A
(L1)
(R1)
(RSS)
ASG2
ASG1
(RW)
(CW)
(ECYZ)
(ECYN)
(ASG1)
(SRG1)
(SRG2)
(AAB)
(EL*)
(ER*)
(*LR)
(R*R)
(R*L)
(*RS)
(*LS)
(*LF)
(SL*)
(SS*)
NC

09-22 AND B-1140-22.
09-22, B-1140-22, AND B-1202-22.

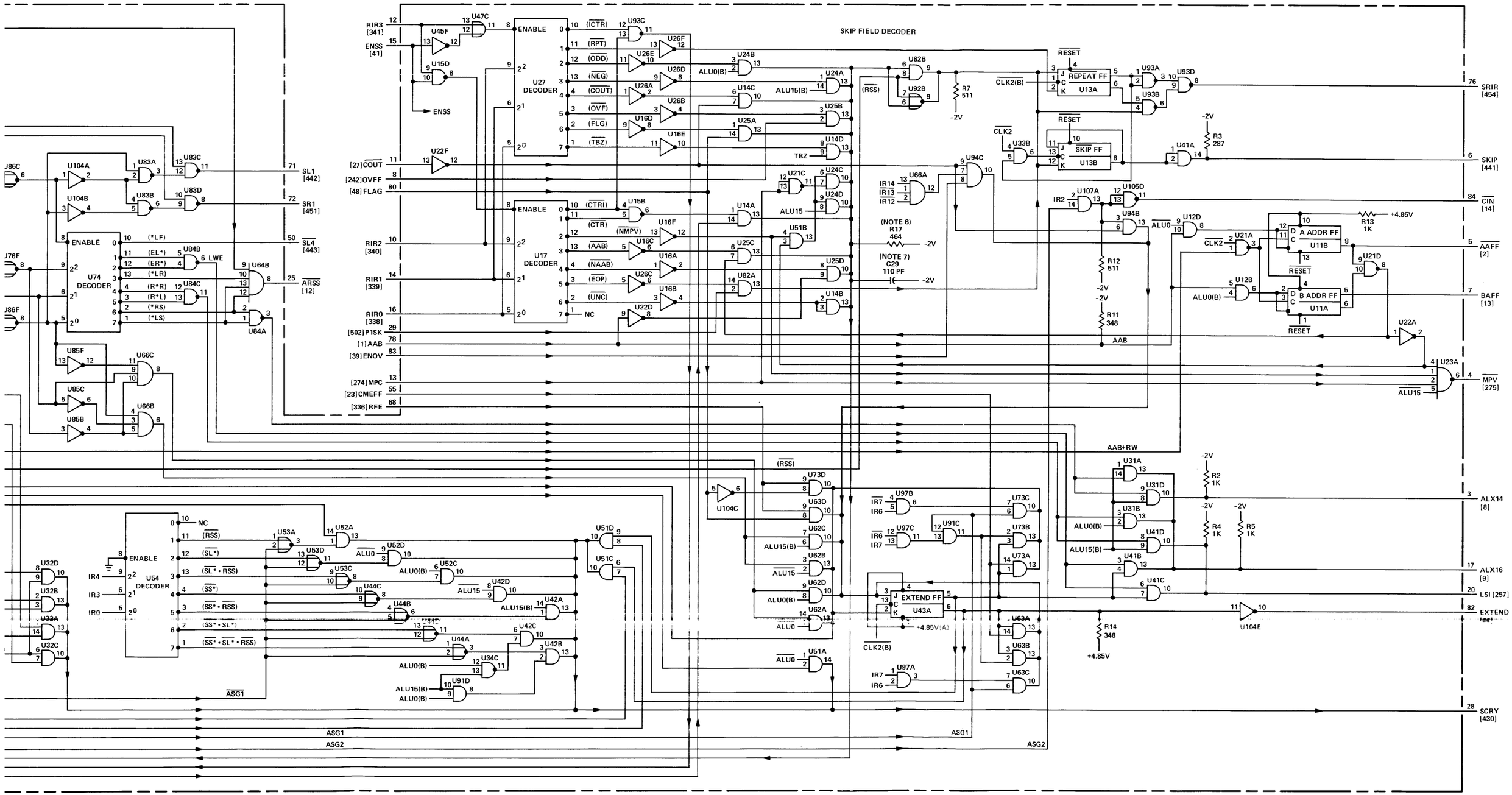


Figure 4-9. A6 Instruction Register Decoder Card, Parts Location and Schematic Diagrams (Sheet 2 of 2)

Table 4-9. A7 I/O Control Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A7	02100-60024	1	I/O CONTROL CARD	28480	02100-60024
A7C1	0180-0197	10	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C2	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C3	0160-2055	23	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C4	0180-2126	1	C:FXD ELECT 1.5 UF 5% 35VDCW	28480	0180-2126
A7C5	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C9	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C10	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C15	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C16	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C20	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C21	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C22	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C23	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C25	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C26	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C27	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C28	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C29	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C30	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C31	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C32	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A7C33	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7C34 (NOTE 1)	0160-2055		C: FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A7CR1	1902-3043	1	DIODE: BREAKDOWN 3.32V 2%	04713	SZ10939-45
A7Q1	1854-0215	5	TSTR:SI NPN	80131	2N3904
A7Q2	1854-0215		TSTR:SI NPN	80131	2N3904
A7Q3	1854-0215		TSTR:SI NPN	80131	2N3904
A7Q4	1854-0215		TSTR:SI NPN	80131	2N3904
A7Q5	1854-0215		TSTR:SI NPN	80131	2N3904
A7R1	0683-3915	1	R:FXD COMP 390 OHM 5% 1/4W	01121	CB 3915
A7R2	0683-1825	1	R:FXD COMP 1800 OHM 5% 1/4W	01121	CB 1825
A7R3	0698-7253	1	R:FXD MET FLM 5.11K OHM 2% 1/8W	28480	0698-7253
A7R5	0683-1025	2	R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
A7R6	0698-7229	18	R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R7	0683-1525	1	R:FXD COMP 1500 OHM 5% 1/4W	01121	CB 1525
A7R8	0683-1025		R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
A7R9	0683-4715	5	R:FXD COMP 470 OHM 5% 1/4W	01121	CB 4715
A7R10	0698-7236	23	R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R11	0698-7228	18	R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R12	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R13	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R14	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R15	0698-7240	8	R:FXD MET FLM 1.47K OHM 2% 1/8W	28480	0698-7240
A7R16	0698-7240		R:FXD MET FLM 1.47K OHM 2% 1/8W	28480	0698-7240
A7R17	0698-7240		R:FXD MET FLM 1.47K OHM 2% 1/8W	28480	0698-7240
A7R18	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R19	0698-3394	1	R:FXD MET FLM 31.6 OHM 1% 1/2W	28480	0698-3394
A7R20	0683-4715		R:FXD COMP 470 OHM 5% 1/4W	01121	CB 4715
A7R21	0683-1005	1	R:FXD COMP 10 OHM 5% 1/4W	01121	CB 1005
A7R22	0683-4715		R:FXD COMP 470 OHM 5% 1/4W	01121	CB 4715
A7R23	0683-1015	4	R:FXD COMP 100 OHM 5% 1/4W	01121	CB 1015
A7R24	0683-1015		R:FXD COMP 100 OHM 5% 1/4W	01121	CB 1015
A7R25	0683-4715		R:FXD COMP 470 OHM 5% 1/4W	01121	CB 4715
A7R26	0683-1015		R:FXD COMP 100 OHM 5% 1/4W	01121	CB 1015
A7R27	0683-4715		R:FXD COMP 470 OHM 5% 1/4W	01121	CB 4715
A7R28	0683-1015		R:FXD COMP 100 OHM 5% 1/4W	01121	CB 1015
A7R30	0698-7231	1	R:FXD FLM 619 OHM 2% 1/8W	28480	0698-7231
A7R31	0698-7240		R:FXD MET FLM 1.47K OHM 2% 1/8W	28480	0698-7240
A7R32	0698-7240		R:FXD MET FLM 1.47K OHM 2% 1/8W	28480	0698-7240
A7R34	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R35	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R36	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R37	0698-7240		R:FXD MET FLM 1.47K OHM 2% 1/8W	28480	0698-7240
A7R38	0698-7217	1	R:FXD FLM 162 OHM 2% 1/8W	28480	0698-7217

NOTE: 1. C34 first used on card ref. 1215.

Table 4-9. A7 I/O Control Card, Replaceable Parts (Continued)

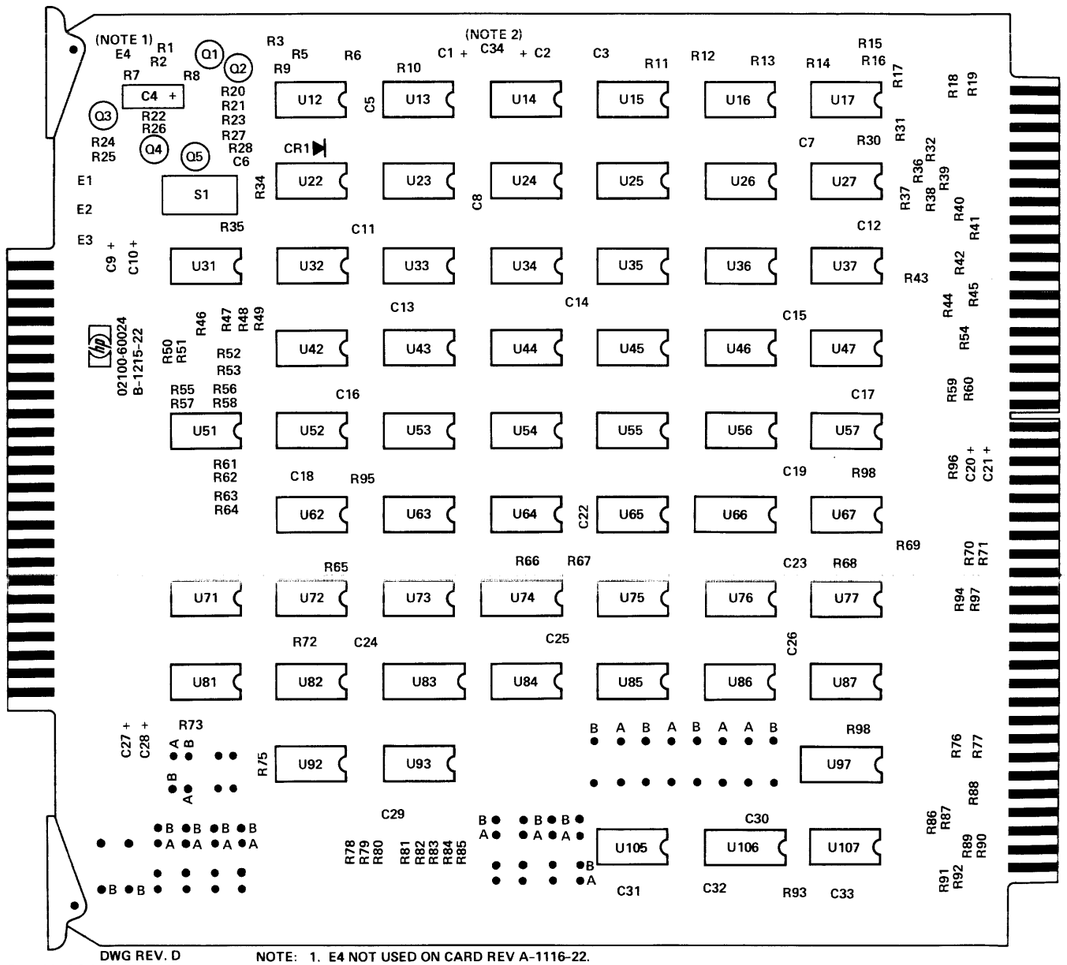
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A7R39	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R40	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R41	0698-7223	2	R:FXD FLM 287 OHM 2% 1/8W	28480	0698-7223
A7R42	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R43	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R44	0698-7223		R:FXD FLM 287 OHM 2% 1/8W	28480	0698-7223
A7R45	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R46	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R47	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R48	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R49	0698-7224	3	R:FXD FLM 316 OHM 2% 1/8W	28480	0698-7224
A7R50	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R51	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R52	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R53	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R54	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R55	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R56	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R57	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R58	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R59	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R60	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R61	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R62	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R63	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R64	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R65	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R66	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R67	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R68	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R69	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R70	0698-7233	1	R:FXD FLM 750 OHM 2% 1/8W	28480	0698-7233
A7R71	0698-7225	1	R:FXD FLM 348 OHM 2% 1/8W	28480	0698-7225
A7R72	0698-7224		R:FXD FLM 316 OHM 2% 1/8W	28480	0698-7224
A7R73	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R74	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R75	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R76	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R77	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R78	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R79	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R80	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R81	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R82	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R83	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R84	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R85	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R86	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R87	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R88	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R89	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R90	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7R91	0698-7224		R:FXD FLM 316 OHM 2% 1/8W	28480	0698-7224
A7R92	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A7R93	0698-7230	1	R:FXD FLM 562 OHM 2% 1/8W	28480	0698-7230
A7R94	0698-7226	1	R:FXD FLM 383 OHM 2% 1/8W	28480	0698-7226
A7R95	0698-7228		R:FXD FLM 464 OHM 2% 1/8W	28480	0698-7228
A7R96	0698-7240		R:FXD MET FLM 1.47K OHM 2% 1/8W	28480	0698-7240
A7R97	0698-7240		R:FXD MET FLM 1.47K OHM 2% 1/8W	28480	0698-7240
A7R98	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A7S1	3101-1213	1	SWITCH:TOGGLE DPST-DB SUB-MINIATURE	81640	T8001
A7U12	1820-0141	8	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A7U13	1820-0186	7	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A7U14	1820-0605	2	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H01N
A7U15	1820-0370	9	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U16	1820-0613	7	IC:HS HEX INVERTER W/OPEN COLL.	01295	SN74H05N
A7U17	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A7U22	1820-0512	3	IC:TTL DUAL D F/F	01295	SN74H74N
A7U23	1820-0372	2	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A7U24	1820-0371	3	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A7U25	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U26	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A7U27	1820-0424	5	IC:TTL HS HEX INVERTER	04713	SN74H04N
A7U31	1820-0187	1	IC:CTL DUAL 2-INPT NOR GATE	07263	U6A985249X
A7U32	1820-0605		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H01N

Table 4-9. A7 I/O Control Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A7U33	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A7U34	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U35	1820-0373	2	IC:TTL HS DUAL 4-INPT NAND GATE	01295	SN74H20N
A7U36	1820-0379	2	IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A7U37	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A7U42	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U43	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A7U44	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U45	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U46	1820-0379		IC:TTL HS 4W 2-2-2-3 INPT AND/OR GATE	01295	SN74H52N
A7U47	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A7U51	1820-0613		IC:HS HEX INVERTER W/OPEN COLL.	01295	SN74H05N
A7U52	1820-0613		IC:HS HEX INVERTER W/OPEN COLL.	01295	SN74H05N
A7U53	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A7U54	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A7U55	1820-0373		IC:TTL HS DUAL 4-INPT NAND GATE	01295	SN74H20N
A7U56	1820-0372		IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A7U57(NOTE 1)	1820-0451	1	IC:TTL DUAL J-K F/F	04713	MC3062P
A7U62	1820-0613		IC:HS HEX INVERTER W/OPEN COLL.	01295	SN74H05N
A7U63	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A7U64	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U65	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U66	1820-0485	1	IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A7U67	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A7U71	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A7U72	1820-0613		IC:HS HEX INVERTER W/OPEN COLL.	01295	SN74H05N
A7U73	1820-0613		IC:HS HEX INVERTER W/OPEN COLL.	01295	SN74H05N
A7U74	1820-0301	2	IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A7U75	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A7U76	1820-0609	1	IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A7U77	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A7U81	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A7U82	1820-0613		IC:HS HEX INVERTER W/OPEN COLL.	01295	SN74H05N
A7U83	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A7U84	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A7U85	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A7U86	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A7U87	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A7U92	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A7U93	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A7U97	1820-0482	2	IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A7U105	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A7U106	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A7U107	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P

NOTES: 1. Part no. 1820-0695 used on some cards; the two parts are interchangeable.

REF. NO.	BACKPLANE LOCATION					* INDICATES SIGNAL SOURCE
A7						
17	A7-10	A8-66*	A9-44	A10-21 THRU A23-21		
18	A4-76	A7-5	A8-51*	A9-24	A10-7 THRU A23-7	
22	A1-78*	A3-81	A7-56	A8-42	A9-76	A24-64
	A107-69					
24	A1-77*	A7-25				
30	A7-19*	A9-82	A10-13 THRU A23-13			
38	A1-50	A7-4	A8-57*	A9-29	A10-46 THRU A23-46	
43	A7-42*	A24-12				
45	A7-31*	A9-28				
46	A7-28*	A9-30				
56	A1-65	A7-65*	A8-50*	A24-74		
57	A3-75	A7-9*				
198	A7-35*	A8-79	A24-24			
203	A1-22	A7-45*				
204	A7-66	A8-77*				
223	A1-83	A6-21*	A7-38			
224	A7-37*	A8-83				
305	A1-6	A7-8*	A24-67	A104-42	A107-70	
	A10-66 THRU A23-66					
306	A7-23*	A24-65	A10-17 THRU A23-17			
309	A7-41*	A8-37	A9-62			
310	A7-51	A8-73*				
323	A7-52	A16-3*				
324	A7-22	A24-7*				
326	A7-7	A25TB2-5*				
335	A1-8*	A2-70	A4-30	A6-9	A7-20	A8-75
	A107-82					
374	A1-69	A7-46*				
433	A4-70	A7-17	A8-52*	A10-5 THRU A23-5		
435	A4-72	A7-24	A8-59*	A10-25 THRU A23-25		
440	A1-17	A4-16*	A7-21*	A10-12* THRU A23-12*		
473	A7-3	A8-55*	A9-43	A10-22 THRU A23-22		
475	A4-73	A7-6	A8-49*	A10-9 THRU A23-9		
487	A7-32	A9-83*				
488	A7-27	A9-79*				
496	A7-50*	A23-8,23	A16-8 THRU A22-8			
497	A7-55*	A15-8,23	A10-8 THRU A14-8			
498	A3-37	A7-11	A8-81*	A9-26		



DWG REV. D

See table 4-9 for replaceable parts.

NOTE: 1. E4 NOT USED ON CARD REV A-1116-22.

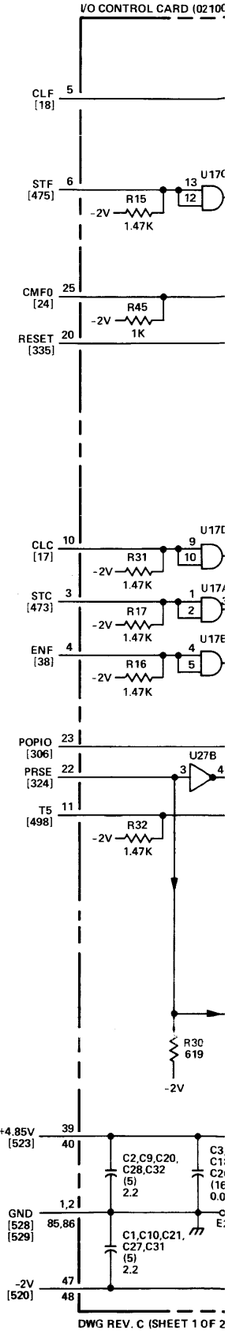
2. C34 NOT USED ON CARD REV A-1116-22 AND B-1144-22.

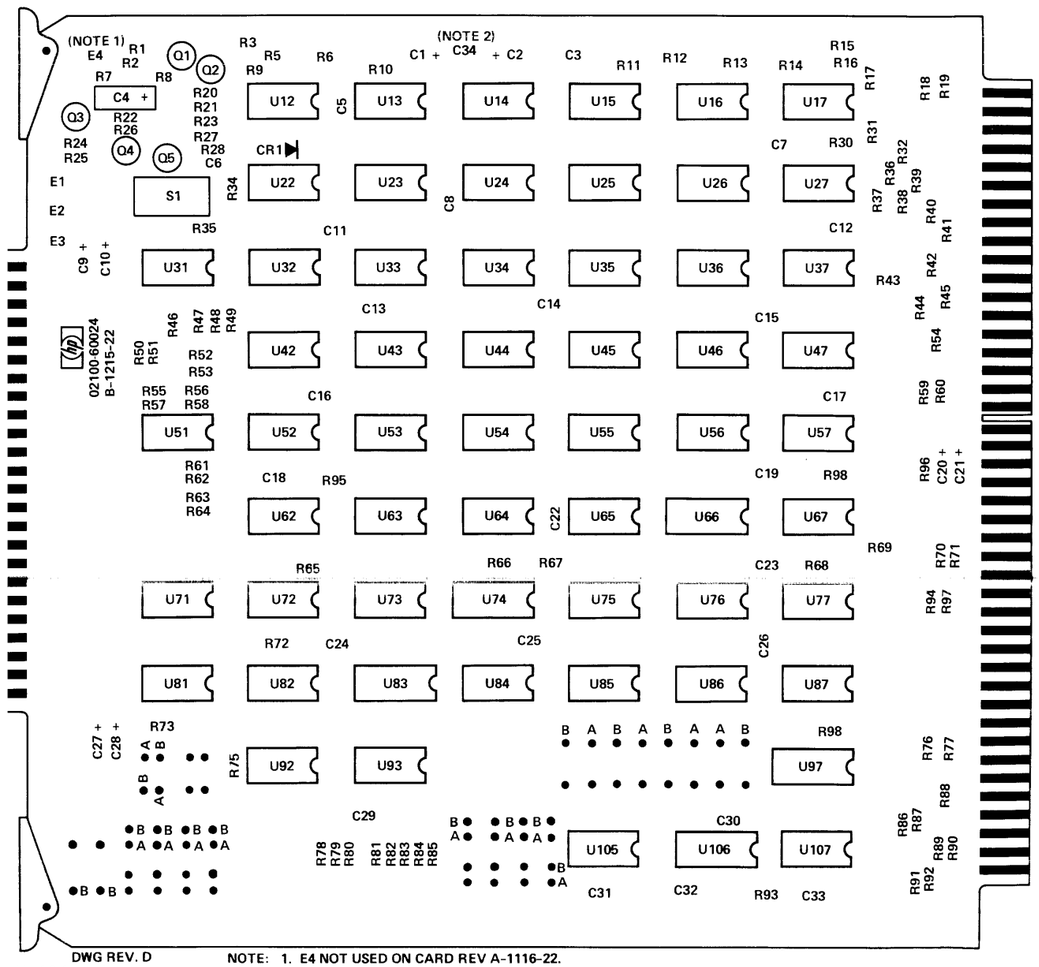
FF DEFINITIONS

DIR	=	DIRECTION
F6	=	FLAG 6
F7	=	FLAG 7
FB6	=	FLAG BUFFER 6
FB7	=	FLAG BUFFER 7
IEN5	=	INTERRUPT ENABLE 5
INC	=	INTERRUPT SYSTEM CONTROL
INT1	=	INTERRUPT 1
INT2	=	INTERRUPT 2
IOGM	=	INPUT/OUTPUT GROUP MODE
IRQ4	=	INTERRUPT REQUEST 4
IRQ6	=	INTERRUPT REQUEST 6
IRQ7	=	INTERRUPT REQUEST 7
RSP	=	RESTART PULSE

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. JUMPERS W1 THRU W16 ARE INSTALLED FOR OPTIONAL I/O EXTENSION OR MULTIPLEXED I/O CAPABILITY ONLY.
5. CARD REV. 1144 CONNECTED AS SHOWN BY DASHED LINE A; CARD REV. 1116 CONNECTED AS SHOWN BY DASHED LINE B.
6. E4 NOT USED ON CARD REV. 1116.
7. C34 FIRST USED ON CARD REV. 1215.





:able 4-9 for replaceable parts.

NOTE: 1. E4 NOT USED ON CARD REV A-1116-22.

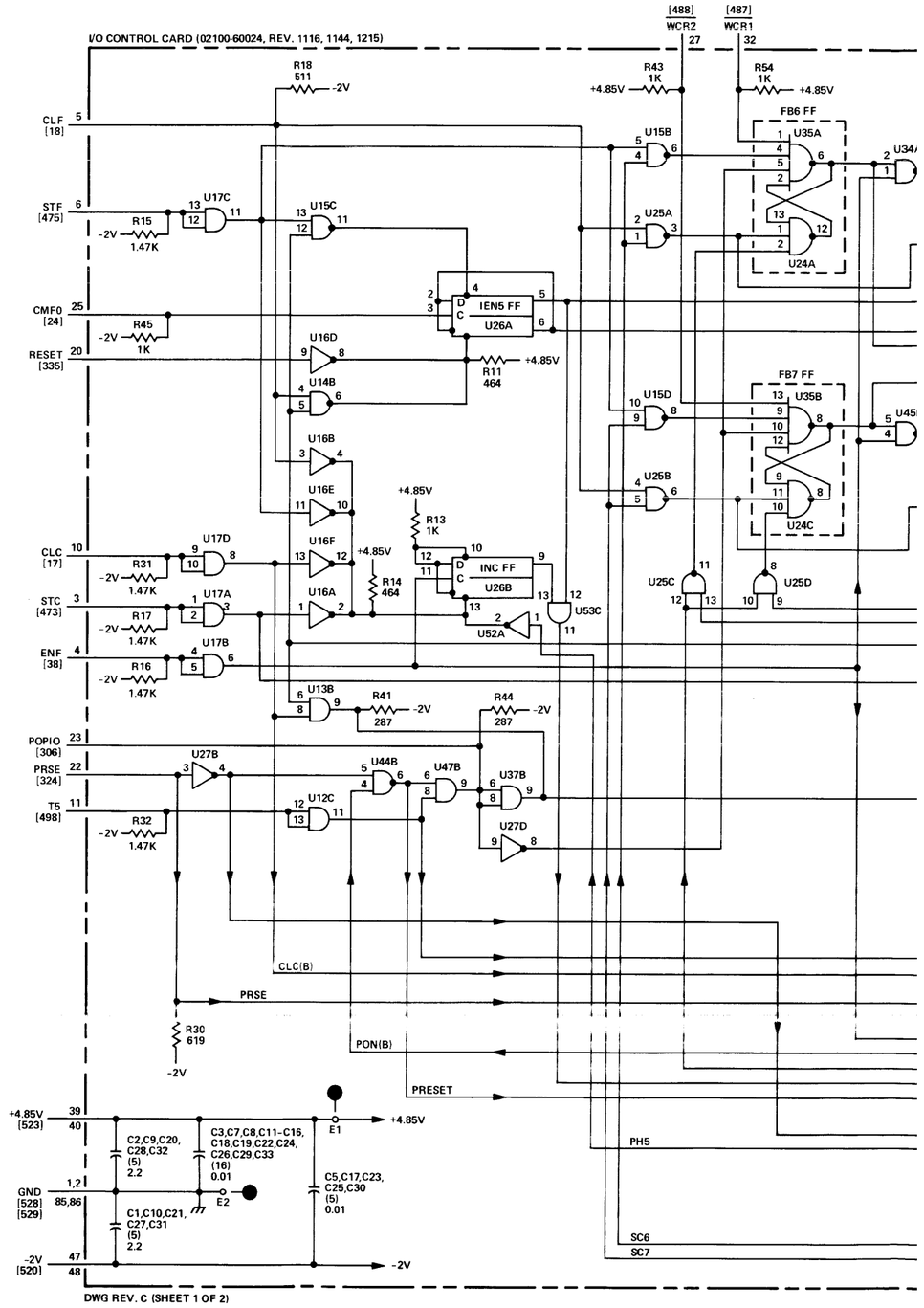
2. C34 NOT USED ON CARD REV A-1116-22 AND B-1144-22.

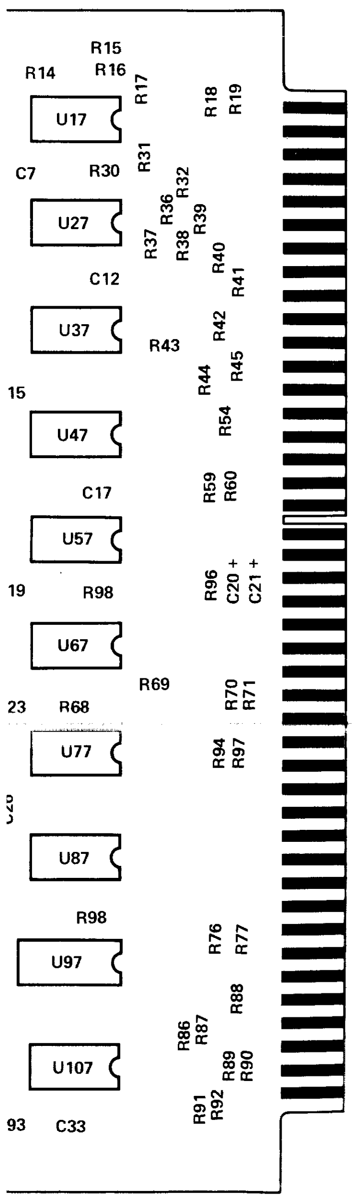
FF DEFINITIONS

DIR	=	DIRECTION
F6	=	FLAG 6
F7	=	FLAG 7
FB6	=	FLAG BUFFER 6
FB7	=	FLAG BUFFER 7
IEN5	=	INTERRUPT ENABLE 5
INC	=	INTERRUPT SYSTEM CONTROL
INT1	=	INTERRUPT 1
INT2	=	INTERRUPT 2
IOGM	=	INPUT/OUTPUT GROUP MODE
IRQ4	=	INTERRUPT REQUEST 4
IRQ6	=	INTERRUPT REQUEST 6
IRQ7	=	INTERRUPT REQUEST 7
RSP	=	RESTART PULSE

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. JUMPERS W1 THRU W16 ARE INSTALLED FOR OPTIONAL I/O EXTENSION OR MULTIPLEXED I/O CAPABILITY ONLY.
5. CARD REV. 1144 CONNECTED AS SHOWN BY DASHED LINE A; CARD REV. 1116 CONNECTED AS SHOWN BY DASHED LINE B.
6. E4 NOT USED ON CARD REV. 1116.
7. C34 FIRST USED ON CARD REV. 1215.



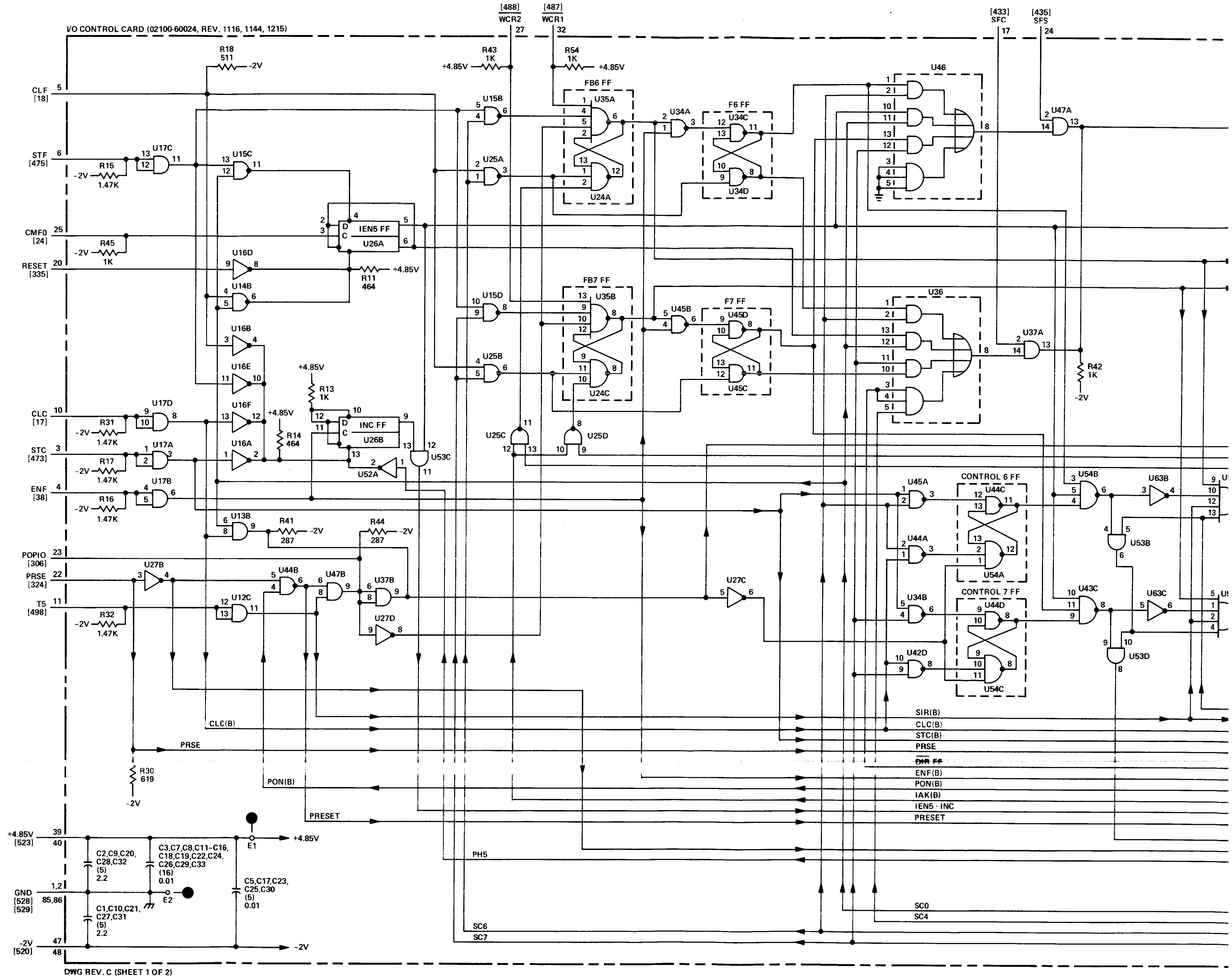


FF DEFINITIONS

DIR	=	DIRECTION
F6	=	FLAG 6
F7	=	FLAG 7
FB6	=	FLAG BUFFER 6
FB7	=	FLAG BUFFER 7
IEN5	=	INTERRUPT ENABLE 5
INC	=	INTERRUPT SYSTEM CONTROL
INT1	=	INTERRUPT 1
INT2	=	INTERRUPT 2
IOGM	=	INPUT/OUTPUT GROUP MODE
IRQ4	=	INTERRUPT REQUEST 4
IRQ6	=	INTERRUPT REQUEST 6
IRQ7	=	INTERRUPT REQUEST 7
RSP	=	RESTART PULSE

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. JUMPERS W1 THRU W16 ARE INSTALLED FOR OPTIONAL I/O EXTENSION OR MULTIPLEXED I/O CAPABILITY ONLY.
5. CARD REV. 1144 CONNECTED AS SHOWN BY DASHED LINE A; CARD REV. 1116 CONNECTED AS SHOWN BY DASHED LINE B.
6. E4 NOT USED ON CARD REV. 1116.
7. C34 FIRST USED ON CARD REV. 1215.



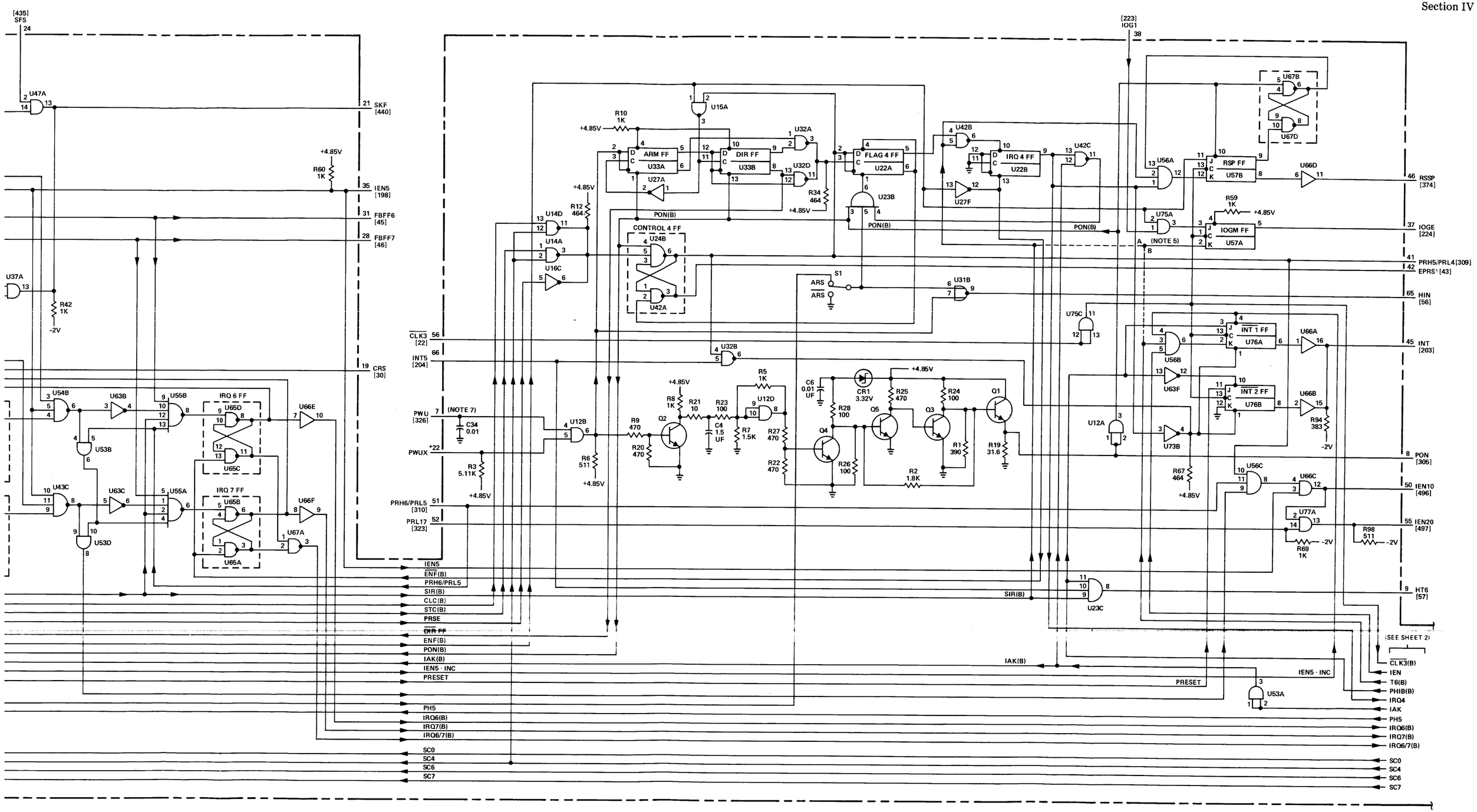
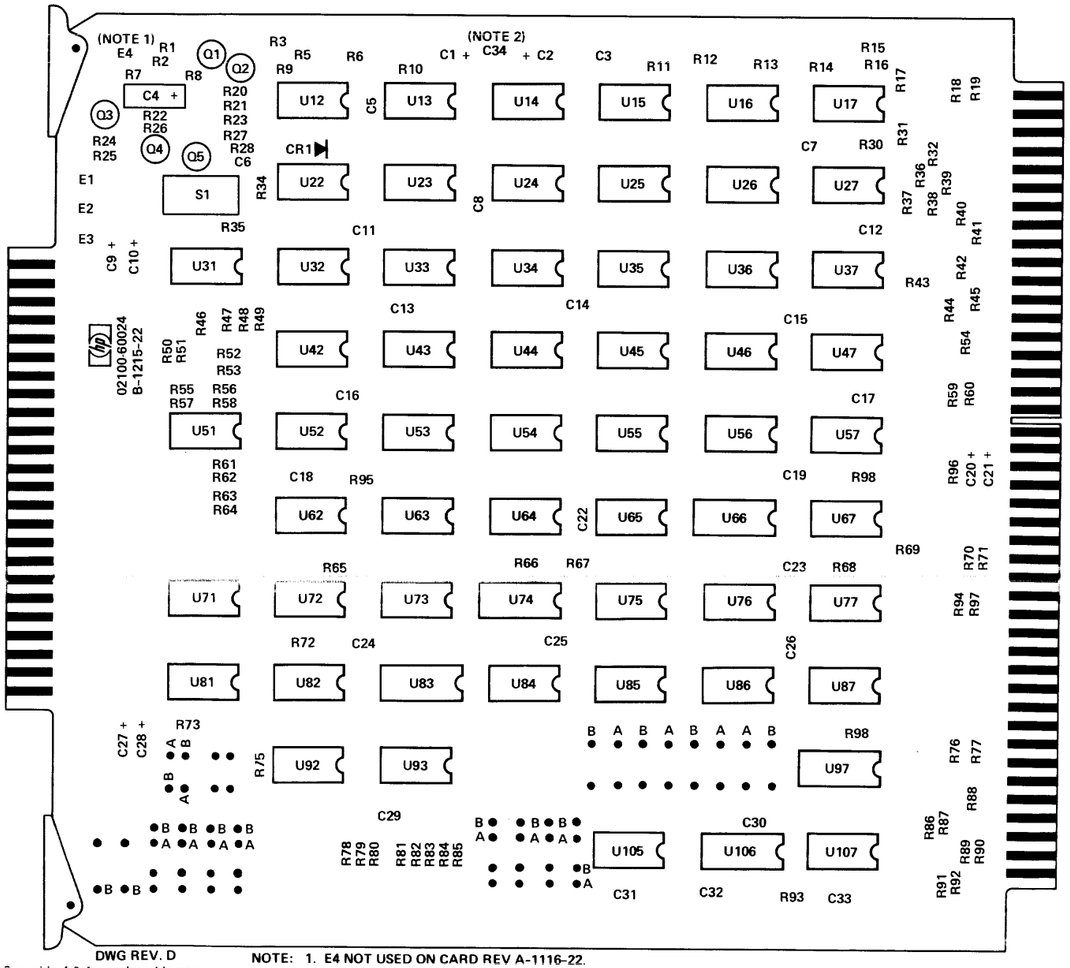


Figure 4-10. A7 I/O Control Card, Parts Location and Schematic Diagrams (Sheet 1 of 2)

(Information continues on next page)

REF. NO.	BACKPLANE LOCATION		* INDICATES SIGNAL SOURCE			
A7						
49	A7-71	A16-4*	A17-4* 49* THRU A23-4* 49*			
50	A7-34	A16-49*	A10-4*,49* THRU A15-4*,49*			
58	A7-14*	A8-84	A10-10 THRU A23-10			
222	A3-76	A7-43	A8-46*	A9-45*	A10-15 THRU A23-15	
	A24-6					
225	A7-53	A8-82*	A24-4	A24-80*	A10-24 THRU A23-24	
228	A2-42	A6-35*	A7-68			
229	A2-45	A6-36*	A7-63			
230	A2-26	A6-56*	A7-67			
231	A2-50	A6-34*	A7-30			
232	A2-72	A6-62*	A7-26			
233	A2-66	A6-70*	A7-29			
245	A7-79	A14-6*	A15-33*	A22-6*	A23-33*	
246	A7-82	A13-6*	A14-33*	A21-6*	A22-33*	
247	A7-78	A12-6*	A13-33*	A20-6*	A21-33*	
248	A7-80	A11-6*	A12-33*	A19-6*	A20-33*	
249	A7-83	A8-67*	A10-6*	A11-33*	A18-6*	A19-33*
250	A7-81	A10-33*	A17-6*	A18-33*		
251	A7-84	A16-6*	A17-33*			
297	A1-30*	A7-12	A8-71	A24-50		
300	A3-41*	A7-13	A24-56			
332	A3-33*	A7-54				
396	A2-46*	A5-78*	A6-32	A7-62*	A8-3*	A9-16*
	A107-16					
397	A2-44*	A5-80*	A6-60	A7-61*	A8-4*	A9-14*
	A107-18					
398	A2-29*	A5-76*	A6-61	A7-60*	A8-5*	A9-18*
	A107-12					
399	A2-30*	A5-59*	A6-33	A7-59*	A8-6*	A9-13*
	A107-14					
400	A2-19*	A5-52*	A6-65	A7-64*	A8-7*	A9-12*
	A107-29					
401	A2-20*	A5-51*	A6-64	A7-57*	A8-8*	A9-10*
	A107-38					
412	A4-71	A7-49*	A8-74	A24-8		
413	A3-73	A7-44*	A8-35			
414	A7-33*	A9-50				
415	A7-36*	A9-49				
418	A7-69*	A9-51*	A15-16	A16-34	A23-16	
419	A7-70*	A9-52*	A14-16	A15-34	A22-16	A23-34
420	A7-72*	A9-59*	A13-16	A14-34	A21-16	A22-34
421	A7-73*	A9-58*	A12-16	A13-34	A20-16	A21-34
422	A7-74*	A9-60*	A11-16	A12-34	A19-16	A20-34
423	A7-75*	A9-56*	A10-16	A11-34	A18-16	A19-34
424	A7-76*	A9-54*	A10-34	A17-16	A18-34	
425	A7-77*	A9-57*	A16-16	A17-34		
426	A7-16*	A9-55*				
427	A7-15*	A9-53*	A16-14	A17-14,37 THRU A23-14,37		
428	A7-18*	A9-61*	A16-37	A10-14,37 THRU A15-14,37		
483	A3-26	A7-58	A8-43*	A9-81	A24-66	



See table 4-9 for replaceable parts.

NOTE: 1. E4 NOT USED ON CARD REV A-1116-22.

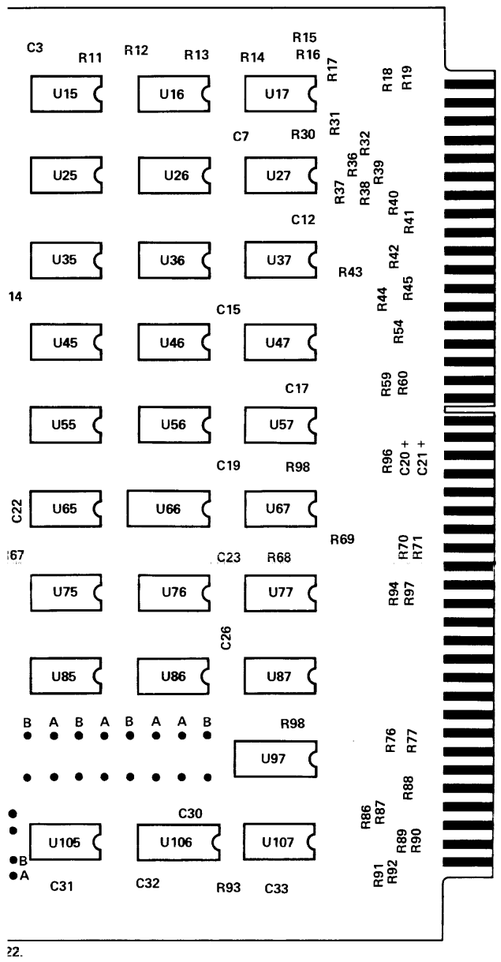
2. C34 NOT USED ON CARD REV A-1116-22 AND B-1144-22.

FF DEFINITIONS

C10 = CENTRAL INTERRUPT REGISTER BIT 0
C11 = CENTRAL INTERRUPT REGISTER BIT 1
C12 = CENTRAL INTERRUPT REGISTER BIT 2
C13 = CENTRAL INTERRUPT REGISTER BIT 3
C14 = CENTRAL INTERRUPT REGISTER BIT 4
C15 = CENTRAL INTERRUPT REGISTER BIT 5

(SEE SHEET 1)

DWG REV. C

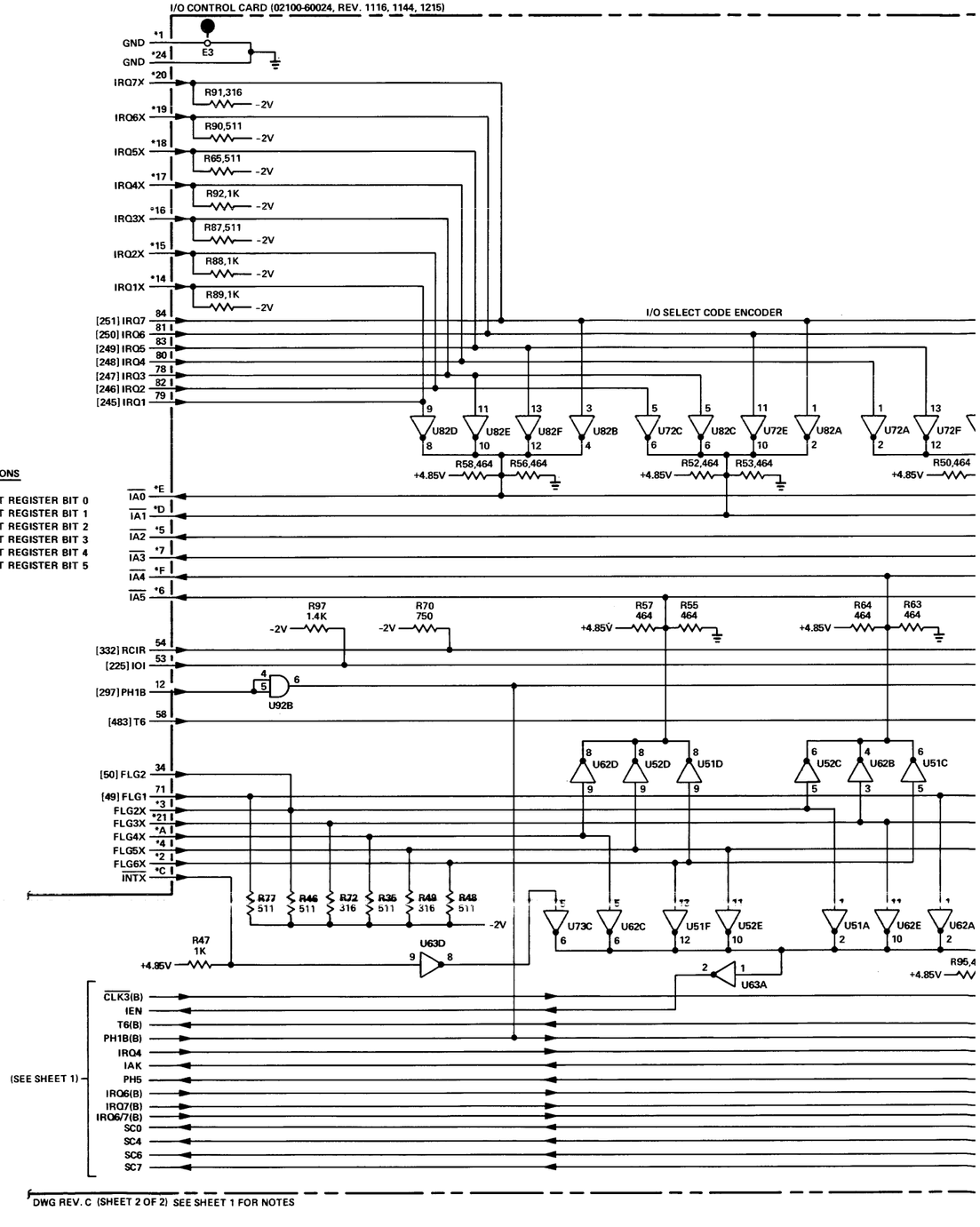


22.

-22 AND B-1144-22.

FF DEFINITIONS

C10 = CENTRAL INTERRUPT REGISTER BIT 0
C11 = CENTRAL INTERRUPT REGISTER BIT 1
C12 = CENTRAL INTERRUPT REGISTER BIT 2
C13 = CENTRAL INTERRUPT REGISTER BIT 3
C14 = CENTRAL INTERRUPT REGISTER BIT 4
C15 = CENTRAL INTERRUPT REGISTER BIT 5



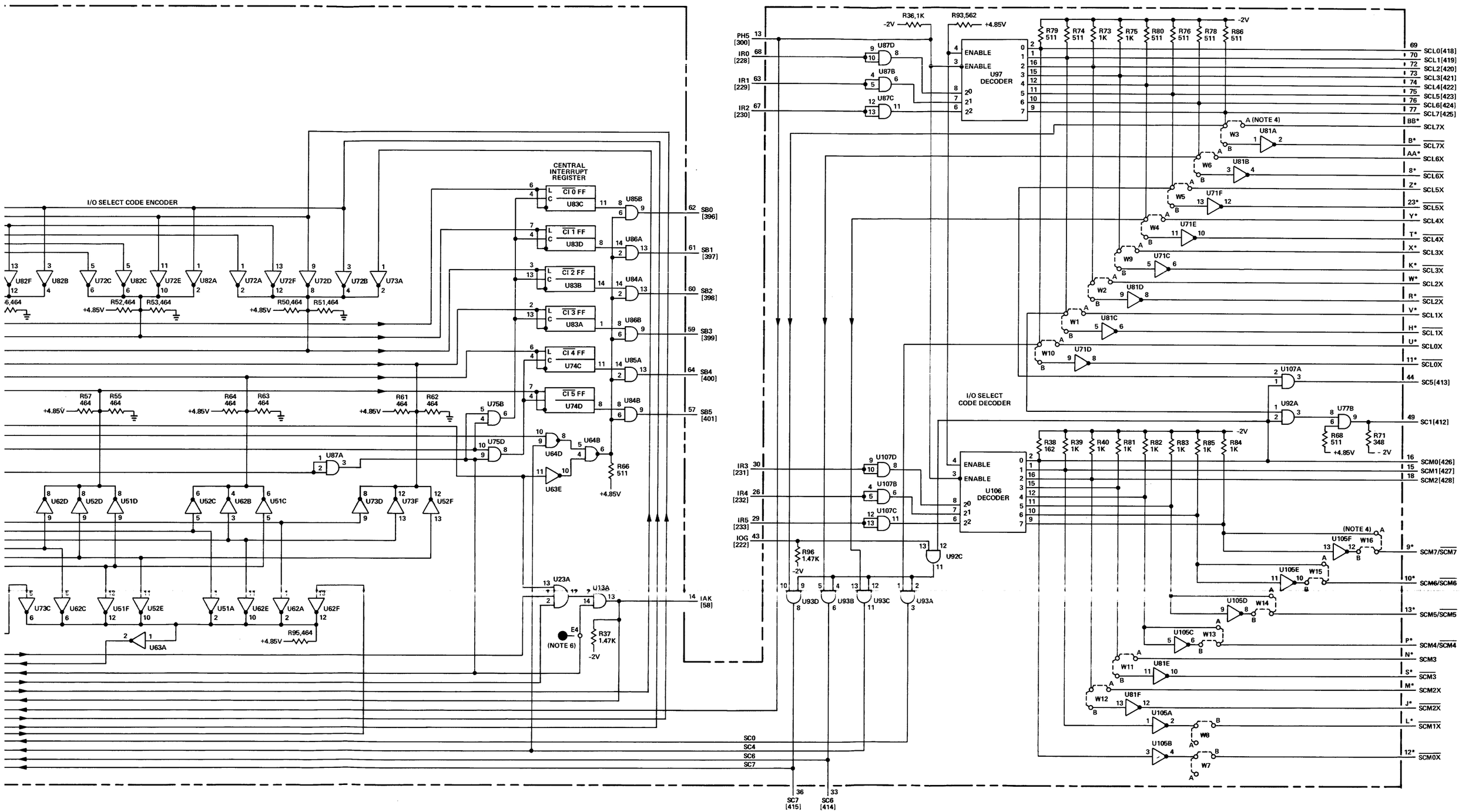


Figure 4-10. A7 I/O Control Card, Parts Location and Schematic Diagrams (Sheet 2 of 2)

Table 4-10. A8 I/O Buffer Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A8	02100-60007	1	I/O BUFFER CARD	28480	02100-60007
A8C1	0180-0197	9	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C2	0160-2055	49	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C3	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C4	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C5	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C15	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C16	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C20	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C21	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C22	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C23	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C25	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C26	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C27	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C28	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C29	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C30	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C31	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C32	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C33	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C34	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C35	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C36	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C37	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C38	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C39	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C40	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C41	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C42	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C43	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C44	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C45	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C46	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C47	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C48	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C49	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C50	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C51	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C52	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C53	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C54	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A8C55	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C56	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C57	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8C58	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A8E1	0360-0294	5	TERMINAL:SOLDER POINT	28480	0360-0294
A8E2	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A8E3	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A8E4	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A8E5	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A8R1	0698-3443	1	R:FXD MET FLM 287 OHM 1% 1/8W	28480	0698-3443
A8R2	0698-3442	23	R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R3	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R4	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R5	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R6	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R7	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R8	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R9	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R10	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R11	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442

Table 4-10. A8 I/O Buffer Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A8R12	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R13	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R14	0757-0280	9	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R15	0757-0416	10	R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R16	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R17	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R18	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R19	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R20	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R21	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R22	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R23	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R24	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R25	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R26	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R27	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R28	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R29	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R30	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R31	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R32	0698-3444	4	R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A8R33	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R34	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R35	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R36	0698-3446	1	R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A8R37	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R38	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R39	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R40	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A8R41	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R42	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R43	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A8R44	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A8R45	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A8R46	0698-3441	2	R:FXD MET FLM 215 OHM 1% 1/8W	28480	0698-3441
A8R47	0757-0418	1	R:FXD MET FLM 619 OHM 1% 1/8W	28480	0757-0418
A8R48	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8R49	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R50	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A8R51	0698-3441		R:FXD MET FLM 215 OHM 1% 1/8W	28480	0698-3441
A8R52(NOTE 2)	0757-0280	1	R: FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A8S1	3101-1213	2	SWITCH:TOGGLE DPST-DB SUB-MINIATURE	81640	T8001
A8S2	3101-1213		SWITCH:TOGGLE DPST-DB SUB-MINIATURE	81640	T8001
A8U11	1820-0186	34	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U12	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U13	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U14	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U15	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U16	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U17	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U21	1820-0301	4	IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A8U22	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U23	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U24	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A8U25	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U26	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U31	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U32	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U33	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U34	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U35	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U36	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U37	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U41	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A8U42	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U43	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U44	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A8U45	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U46	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U51	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U52	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U53	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U54	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U55	1820-0141	4	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A8U56	1820-0239	1	IC:TTL QUAD 2-INPT NOR GATE	28480	1820-0239
A8U57	1820-0437	1	IC:TTL QUAD D F/F	04713	MC4015P

Table 4-10. A8 I/O Buffer Card, Replaceable Parts (Continued)

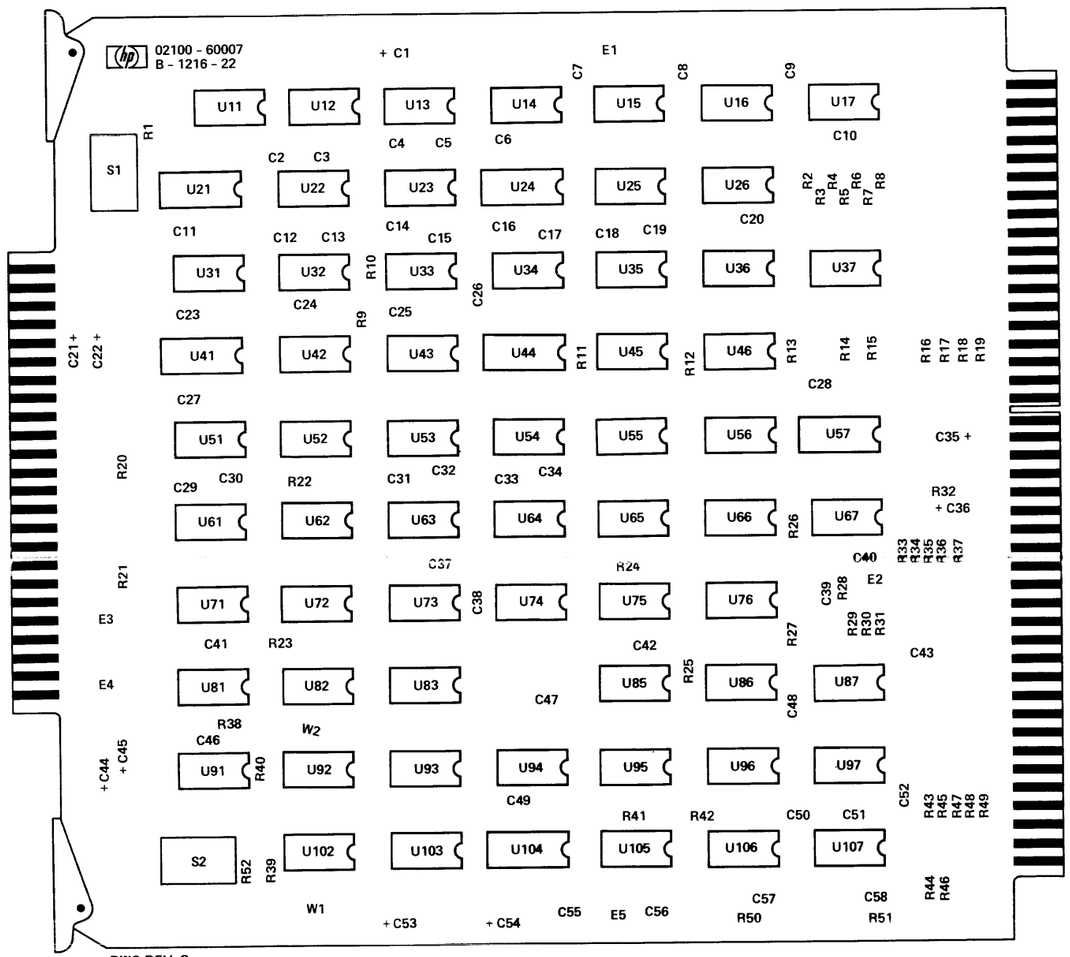
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A8U61	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A8U62	1820-0609	3	IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A8U63	1820-0140	2	IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A8U64	1820-0424	2	IC:TTL HS HEX INVERTER	04713	SN74H04N
A8U65	1820-0608	1	IC:TTL 1 OF DECODER W/ENABLE	04713	MC4006P
A8U66	1820-0376	1	IC:TTL HS DUAL 4-INPT NAND BUFFER	01295	SN74H40N
A8U67	1820-0512	1	IC:TTL DUAL D F/F	01295	SN74H74N
A8U71	1820-0609		IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A8U72	1820-0371	1	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A8U73	1820-0370	3	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A8U74	1820-0372	2	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A8U75(NOTE 1)	1820-0451	4	IC:TTL DUAL J-K F/F	04713	MC3062P
A8U76(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A8U81	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A8U82(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A8U83	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A8U85	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U86	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U87	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U91	1820-0140		IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A8U92	1820-0372		IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A8U93(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A8U94	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A8U95	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U96	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U97	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U102	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A8U103	1820-0609		IC:TTL DUAL J-K F/F W/COM. CLK & RESET	04713	MC3061P
A8U104	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A8U105	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8U106	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A8U107	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A8W1	8159-0005		JUMPER WIRE	28480	8159-0005
A8W2	8159-0005		JUMPER WIRE	28480	8159-0005

NOTES: 1. Part no. 1820-0695 used on some cards; the two parts are interchangeable.
2. A8R52, A8W1, and A8W2 first used on card rev. 1216.

REF. NO.	BACKPLANE LOCATION					
			* INDICATES SIGNAL SOURCE			
A8						
17	A7-10	A8-66*	A9-44	A10-21 THRU A23-21		
18	A4-76	A7-5	A8-51*	A9-24	A10-7 THRU A23-7	
21	A1-84*	A4-69	A6-31	A8-70		
22	A1-78*	A3-81	A7-56	A8-42	A9-76	A24-64
	A107-69					
31	A1-10	A8-64*				
38	A1-50	A7-4	A8-57*	A9-29	A10-46 THRU A23-46	
56	A1-65	A7-65*	A8-50*	A24-74		
58	A7-14*	A8-84	A10-10 THRU A23-10			
198	A7-35*	A8-79	A24-24			
199	A1-24	A8-68*				
204	A7-66	A8-77*				
205	A8-13*	A24-71	A10-26,35 THRU A23-26,35			
206	A8-12*	A24-70	A10-29,38 THRU A23-29,38			
207	A8-11*	A24-68	A10-30,41 THRU A23-30,41			
208	A8-17*	A24-72	A10-45,64 THRU A23-45,64			
209	A8-16*	A24-54	A10-42,77 THRU A23-42,77			
210	A8-15*	A24-53	A10-51,80 THRU A23-51,80			
211	A8-10*	A24-63	A10-53,81 THRU A23-53,81			
212	A8-32*	A24-61	A10-52,84 THRU A23-52,84			
213	A8-31*	A24-32	A10-27,54 THRU A23-27,54			
214	A8-29*	A24-34	A10-28,56 THRU A23-28,56			
215	A8-28*	A24-46	A10-31,58 THRU A23-31,58			
216	A8-27*	A24-44	A10-55,60 THRU A23-55,60			
217	A8-26*	A24-14	A10-57,78 THRU A23-57,78			
218	A8-25*	A24-16	A10-61,79 THRU A23-61,79			
219	A8-30*	A24-20	A10-65,82 THRU A23-65,82			
220	A8-34*	A24-18	A10-74,83 THRU A23-74,83			
222	A3-76	A7-43	A8-46*	A9-45*	A10-15 THRU A23-15	
	A24-6					
224	A7-37*	A8-83				
225	A7-53	A8-82*	A24-4	A24-80*	A10-24 THRU A23-24	
226	A3-77	A8-78*	A9-32	A24-10	A10-20 THRU A23-20	
234	A2-84	A6-69*	A8-41			
235	A2-75	A6-75*	A8-38			
236	A2-76	A6-57*	A8-45			
237	A2-61	A4-54	A6-63*	A8-65		
239	A1-9	A2-80	A3-71	A4-24	A6-58*	A8-63
249	A7-83	A8-67*	A10-6*	A11-33*	A18-6*	A19-33*
256	A8-76	A107-78*				
274	A6-13	A8-80*				
275	A6-4*	A8-36				
294	A8-69*	A24-52				
295	A1-63	A3-27	A8-58*			
296	A1-41*	A8-53	A24-49			
297	A1-30*	A7-12	A8-71	A24-50		
309	A7-41*	A8-37	A9-62			
310	A7-51	A8-73*				
335	A1-8*	A2-70	A4-30	A6-9	A7-20	A8-75
	A107-82					
337	A3-34*	A8-61	A9-42*			
396	A2-46*	A5-78*	A6-32	A7-62*	A8-3*	A9-16*
	A107-16					
397	A2-44*	A5-80*	A6-60	A7-61*	A8-4*	A9-14*
	A107-18					
398	A2-29*	A5-76*	A6-61	A7-60*	A8-5*	A9-18*
	A107-12					
399	A2-30*	A5-59*	A6-33	A7-59*	A8-6*	A9-13*
	A107-14					
400	A2-19*	A5-52*	A6-65	A7-64*	A8-7*	A9-12*
	A107-29					
401	A2-20*	A5-51*	A6-64	A7-57*	A8-8*	A9-10*
	A107-38					
402	A2-12*	A5-49*	A6-67	A8-9*	A9-20*	A107-20
403	A2-9*	A5-43*	A6-66	A8-24*	A9-11*	A107-22
404	A2-53*	A5-31*	A6-52	A8-14*	A9-5*	A107-44
405	A2-54*	A5-32*	A6-51	A8-18*	A9-3*	A107-46
406	A2-43*	A5-29*	A6-54	A8-19*	A9-9*	A107-34
407	A2-49*	A5-30*	A6-53	A8-20*	A9-7*	A107-36
408	A2-31*	A5-10*	A6-38	A8-21*	A9-8*	A107-51
409	A2-21*	A5-8*	A6-37	A8-22*	A9-4*	A107-42

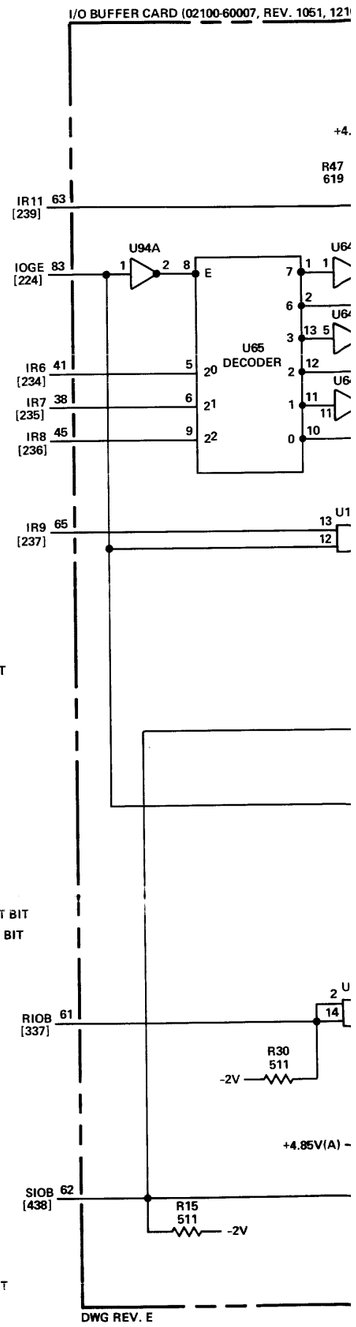
* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION					
A8(CONT)						
410	A2-10*	A5-6*	A6-42	A8-23*	A9-6*	A107-50
411	A1-14	A2-11*	A4-75	A5-4*	A6-41	A8-33*
	A9-84*	A107-52				
412	A4-71	A7-49*	A8-74	A24-8		
413	A3-73	A7-44*	A8-35			
431	A1-53*	A3-22*	A8-60	A9-35*	A24-42*	A107-66
433	A4-70	A7-17	A8-52*	A10-5 THRU A23-5		
435	A4-72	A7-24	A8-59*	A10-25 THRU A23-25		
438	A3-46*	A8-62	A9-33*	A24-75*		
439	A8-56*	A10-32 THRU A23-32				
447	A1-34*	A2-73	A8-72			
473	A7-3	A8-55*	A9-43	A10-22 THRU A23-22		
475	A4-73	A7-6	A8-49*	A10-9 THRU A23-9		
481	A8-54*	A9-37	A10-11 THRU A23-11			
482	A1-16	A8-44*	A9-80			
483	A3-26	A7-58	A8-43*	A9-81	A24-66	
498	A3-37	A7-11	A8-81*	A9-26		



SEE TABLE 4-10 FOR REPLACABLE PARTS.

NOTE: R52, W1, AND W2 NOT USED AND R39 IS LOCATED NEXT TO S2 ON CARD REV. A - 1051 - 22.



FF DEFINITIONS

MPC	=	MEMORY PROTECT CONTROL
MP IRQ	=	MEMORY PROTECT INTERRUPT REQUEST
MPF	=	MEMORY PROTECT FLAG
MPV	=	MEMORY PROTECT VIOLATION
PE	=	PARITY ERROR
PE INT	=	PARITY ERROR INTERRUPT
PE IRQ	=	PARITY ERROR INTERRUPT REQUEST
PE/MPT	=	PARITY ERROR/MEMORY PROTECT
PEX	=	PARITY ERROR X
PH3B	=	PHASE 3 BUFFERED
T2	=	I/O TIME PERIOD 2
T3	=	I/O TIME PERIOD 3
T3 T4	=	I/O TIME PERIOD 3 AND 4
T4	=	I/O TIME PERIOD 4
T5	=	I/O TIME PERIOD 5
T6	=	I/O TIME PERIOD 6
2^0	=	INDIRECT COUNTER LEAST SIGNIFICANT BIT
2^1	=	INDIRECT COUNTER MOST SIGNIFICANT BIT

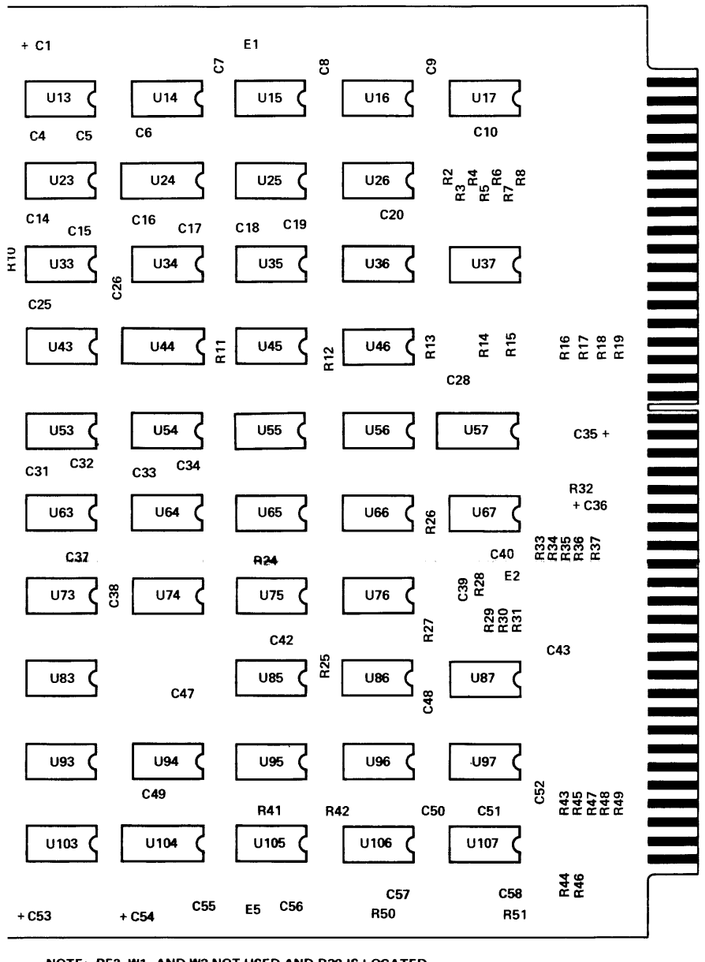
NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PINS NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. R52, W1 AND W2 FIRST USED ON CARD REVISION 1216. POSITION A FOR W1 AND W2 IS FOR NORMAL OPERATION WITH MEMORY PROTECT AND INDIRECT COUNTER. POSITION B FOR EACH DISABLES THE APPROPRIATE FUNCTION.

* INDICATES SIGNAL SOURCE

INE LOCATION

A6-42	A8-23*	A9-6*	A107-50
A4-75	A5-4*	A6-41	A8-33*
2			
A8-74	A24-8		
A8-35			
A8-60	A9-35*	A24-42*	A107-66
A8-52*	A10-5 THRU A23-5		
A8-59*	A10-25 THRU A23-25		
A9-33*	A24-75*		
THRU A23-32			
A8-72			
A9-43	A10-22 THRU A23-22		
A8-49*	A10-9 THRU A23-9		
A10-11 THRU A23-11			
A9-80			
A8-43*	A9-81	A24-66	
A8-81*	A9-26		



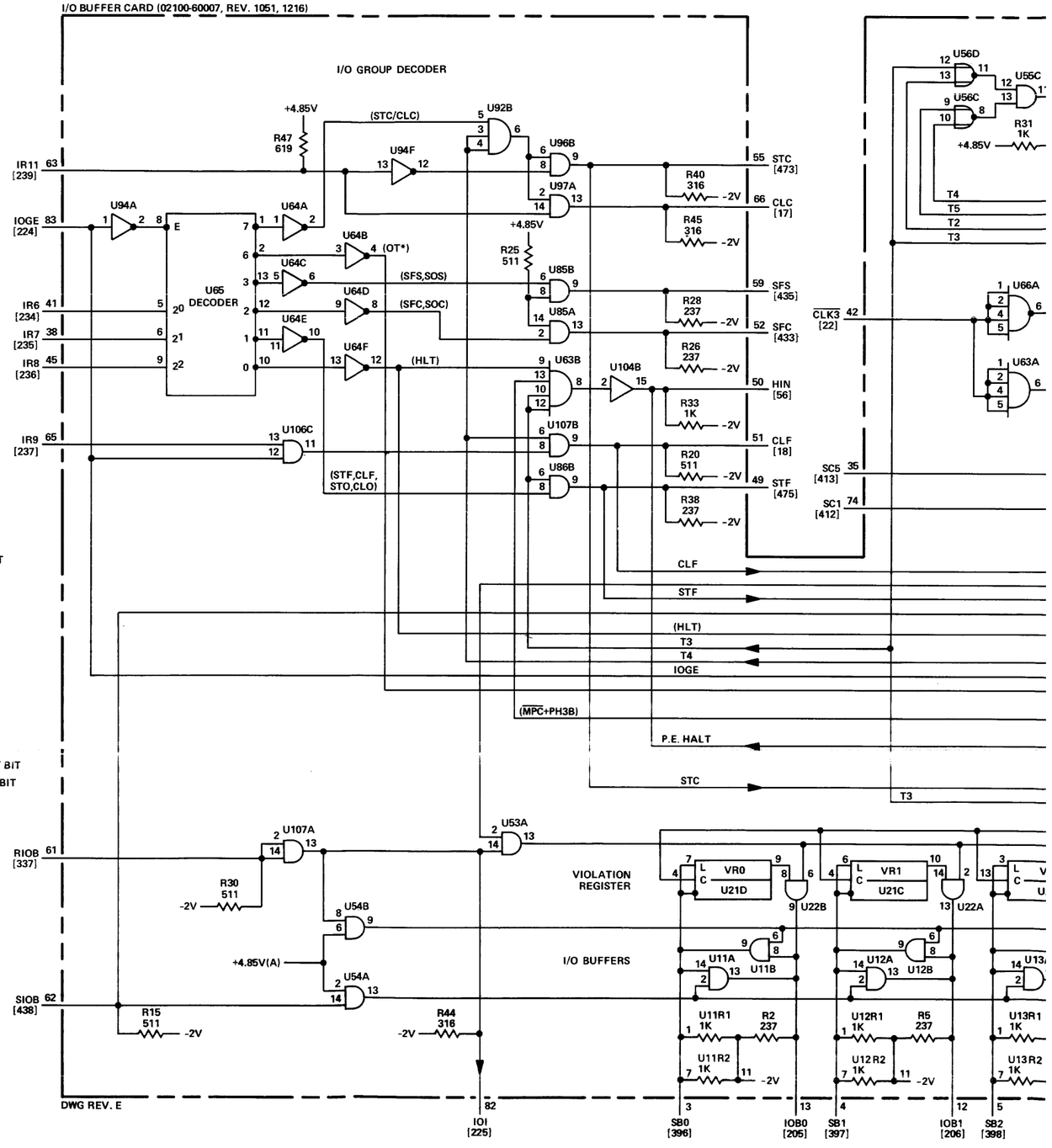
NOTE: R52, W1, AND W2 NOT USED AND R39 IS LOCATED NEXT TO S2 ON CARD REV. A - 1051 - 22.

FF DEFINITIONS

MPC	= MEMORY PROTECT CONTROL
MP IRQ	= MEMORY PROTECT INTERRUPT REQUEST
MPF	= MEMORY PROTECT FLAG
MPV	= MEMORY PROTECT VIOLATION
PE	= PARITY ERROR
PE INT	= PARITY ERROR INTERRUPT
PE IRQ	= PARITY ERROR INTERRUPT REQUEST
PE/MPT	= PARITY ERROR/MEMORY PROTECT
PEX	= PARITY ERROR X
PH3B	= PHASE 3 BUFFERED
T2	= I/O TIME PERIOD 2
T3	= I/O TIME PERIOD 3
T3 T4	= I/O TIME PERIOD 3 AND 4
T4	= I/O TIME PERIOD 4
T5	= I/O TIME PERIOD 5
T6	= I/O TIME PERIOD 6
2^0	= INDIRECT COUNTER LEAST SIGNIFICANT BIT
2^1	= INDIRECT COUNTER MOST SIGNIFICANT BIT

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PINS NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. R52, W1 AND W2 FIRST USED ON CARD REVISION 1216. POSITION A FOR W1 AND W2 IS FOR NORMAL OPERATION WITH MEMORY PROTECT AND INDIRECT COUNTER. POSITION B FOR EACH DISABLES THE APPROPRIATE FUNCTION.



I/O TIME PERIOD GENERATOR

I/O VIOLATION CIRCUITS

VIOLATION REGISTER

I/O BUFFERS

(HLT)

P.E. HALT

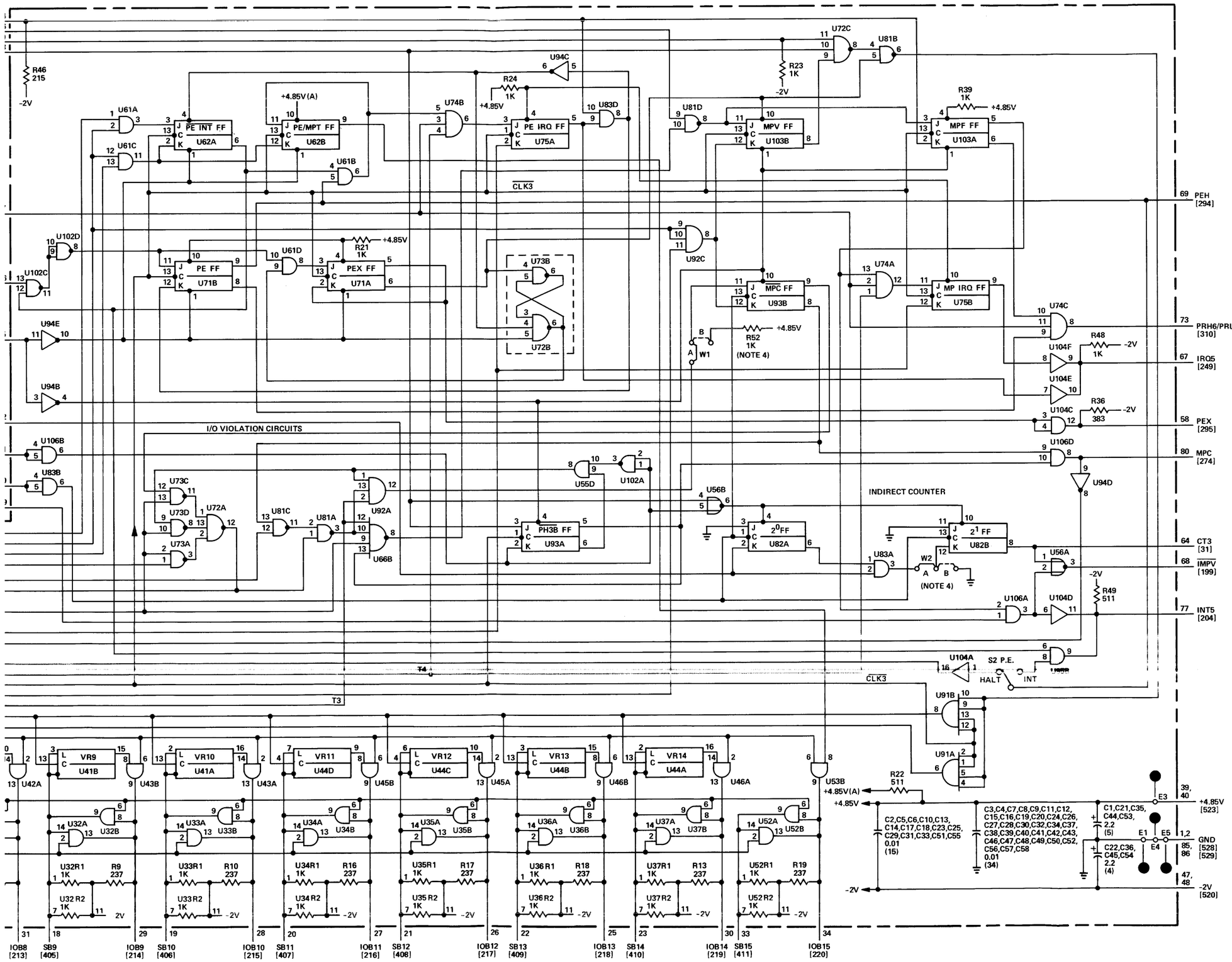


Figure 4-11. A8 I/O Buffer Card, Parts Location and Schematic Diagrams

Table 4-11. A9 Direct Memory Access Card (Accessory), Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A9	12895-60001	1	DIRECT MEMORY ACCESS CARD	28480	12895-60001
A9C1	0160-2055	21	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C2	0180-0197	10	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C3	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C4	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C5	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C8	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C15	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C16	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C19	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C20	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C21	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C22	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C23	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C25	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C26	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C27	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C28	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C29	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A9C30	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9C31	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A9R1	0757-0407	17	R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R2	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R3	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R4	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R5	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R6	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R7	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R8	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R9	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R10	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R11	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R12	0698-3439	1	R:FXD MET FLM 178 OHM 1% 1/8W	28480	0698-3439
A9R13	0757-0280	7	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A9R14	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R15	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R16	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A9R17	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R18	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R19	0757-1094	2	R:FXD MET FLM 1.47K OHM 1% 1/8W	28480	0757-1094
A9R20	0757-0416	9	R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R21	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R22	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A9R23	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R24	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R25	0757-0418	1	R:FXD MET FLM 619 OHM 1% 1/8W	28480	0757-0418
A9R26	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R27	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R28	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R29	0698-3446	1	R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A9R30	0757-1094		R:FXD MET FLM 1.47K OHM 1% 1/8W	28480	0757-1094
A9R31	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A9R32	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A9R33	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A9R34	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R35	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R36	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A9R37	0757-0407		R:FXD MET FLM 200 OHM 1% 1/8W	28480	0757-0407
A9R38	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A9R39	1810-0080	2	R:NETWORK 7 X 500 OHM 5% 0.15W EACH	28480	1810-0080
A9R40	1810-0080		R:NETWORK 7 X 500 OHM 5% 0.15W EACH	28480	1810-0080
A9R41	0698-3443	2	R:FXD MET FLM 287 OHM 1% 1/8W	28480	0698-3443
A9R42	0698-3443		R:FXD MET FLM 287 OHM 1% 1/8W	28480	0698-3443
A9U11	1820-0233	16	IC:TTL SYNUP-DN 4-BIT BINARY COUNTER	01295	SN74193N

Table 4-11. A9 Direct Memory Access Card (Accessory), Replaceable Parts (Continued)

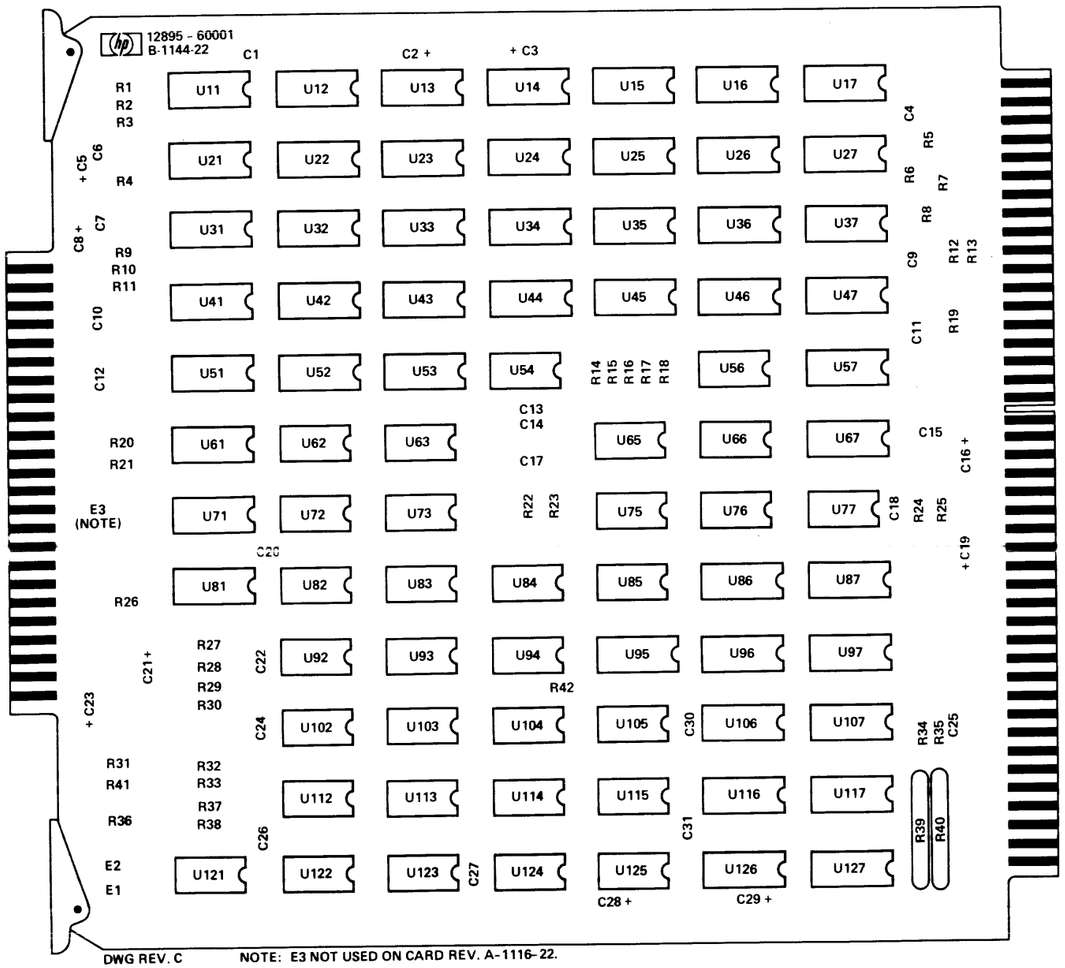
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A9U12	1820-0485	10	IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U13	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U14	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U15	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U16	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U17	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U21	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U22	1820-0616	8	IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A9U23	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U24	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A9U25	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U26	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A9U27	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U31	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U32	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U33	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U34	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U35	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U36	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U37	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U41	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U42	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A9U43	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U44	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A9U45	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U46	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A9U47	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A9U51	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A9U52	1820-0371	6	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A9U53	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A9U54	1820-0186	3	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A9U56	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A9U57	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U61	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U62	1820-0370	7	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A9U63	1820-0451	2	IC:TTL DUAL J-K F/F	04713	MC3062P
A9U65	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A9U66	1820-0141	2	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A9U67	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U71	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A9U72	1820-0605	2	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H01N
A9U73	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A9U75	1820-0205	1	IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A9U76	1820-0372	3	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A9U77	1820-0372		IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A9U81	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A9U82	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A9U83	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A9U84	1820-0140	1	IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A9U85	1820-0301	5	IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A9U86	1820-0482	4	IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A9U87	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A9U92	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A9U93	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A9U94	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A9U95	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A9U96	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A9U97	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A9U102	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A9U103	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A9U104	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A9U105	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A9U106	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A9U107	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A9U112	1820-0424	1	IC:TTL HS HEX INVERTER	04713	SN74H04N
A9U113	1820-0512	2	IC:TTL DUAL D F/F	01295	SN74H74N
A9U114	1820-0372		IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A9U115	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A9U116	1820-0615	4	IC:TTL 8-INPT MULTIPLEXER W/COM.ENABLE	04713	FAIR 9312
A9U117	1820-0615		IC:TTL 8-INPT MULTIPLEXER W/COM.ENABLE	04713	FAIR 9312
A9U121	1820-0613	1	IC:HS HEX INVERTER W/OPEN COLL.	01295	SN74H05N
A9U122	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A9U123	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A9U124	1820-0512		IC:TTL DUAL D F/F	01295	SN74H74N
A9U125	1820-0605		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H01N

Table 4-11. A9 Direct Memory Access Card (Accessory), Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A9U126	1820-0615		IC:TTL 8-INPT MULTIPLEXER W/COM.ENABLE	04713	FAIR 9312
A9U127	1820-0615		IC:TTL 8-INPT MULTIPLEXER W/COM.ENABLE	04713	FAIR 9312

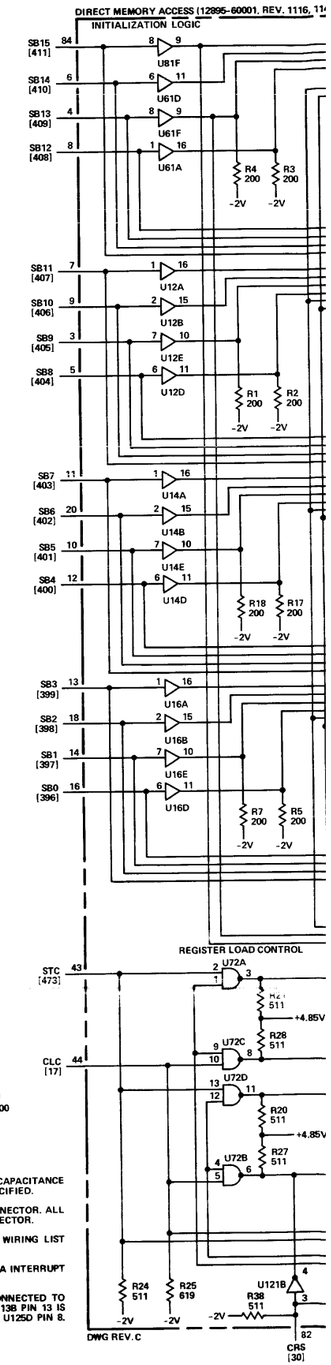
REF. NO.	BACKPLANE LOCATION					
	* INDICATES SIGNAL SOURCE					
A9						
17	A7-10	A8-66*	A9-44	A10-21 THRU A23-21		
18	A4-76	A7-5	A8-51*	A9-24	A10-7 THRU A23-7	
22	A1-78*	A3-81	A7-56	A8-42	A9-76	A24-64
	A107-69					
30	A7-19*	A9-82	A10-13 THRU A23-13			
32	A6-73*	A9-36*	A24-55*	A107-76		
36	A9-15*	A10-62 THRU A23-62				
38	A1-50	A7-4	A8-57*	A9-29	A10-46 THRU A23-46	
45	A7-31*	A9-28				
46	A7-28*	A9-30				
222	A3-76	A7-43	A8-46*	A9-45*	A10-15 THRU A23-15	
	A24-6					
226	A3-77	A8-78*	A9-32	A24-10	A10-20 THRU A23-20	
309	A7-41*	A8-37	A9-62			
334	A1-54*	A3-28*	A4-27	A9-31*	A24-77*	A107-72
337	A3-34*	A8-61	A9-42*			
376	A6-74*	A9-34*	A24-57*	A107-75		
396	A2-46*	A5-78*	A6-32	A7-62*	A8-3*	A9-16*
	A107-16					
397	A2-44*	A5-80*	A6-60	A7-61*	A8-4*	A9-14*
	A107-18					
398	A2-29*	A5-76*	A6-61	A7-60*	A8-5*	A9-18*
	A107-12					
399	A2-30*	A5-59*	A6-33	A7-59*	A8-6*	A9-13*
	A107-14					
400	A2-19*	A5-52*	A6-65	A7-64*	A8-7*	A9-12*
	A107-29					
401	A2-20*	A5-51*	A6-64	A7-57*	A8-8*	A9-10*
	A107-38					
402	A2-12*	A5-49*	A6-67	A8-9*	A9-20*	A107-20
403	A2-9*	A5-43*	A6-66	A8-24*	A9-11*	A107-22
404	A2-53*	A5-31*	A6-52	A8-14*	A9-5*	A107-44
405	A2-54*	A5-32*	A6-51	A8-18*	A9-3*	A107-46
406	A2-43*	A5-29*	A6-54	A8-19*	A9-9*	A107-34
407	A2-49*	A5-30*	A6-53	A8-20*	A9-7*	A107-36
408	A2-31*	A5-10*	A6-38	A8-21*	A9-8*	A107-51
409	A2-21*	A5-8*	A6-37	A8-22*	A9-4*	A107-42
410	A2-10*	A5-6*	A6-42	A8-23*	A9-6*	A107-50
411	A1-14	A2-11*	A4-75	A5-4*	A6-41	A8-33*
	A9-84*	A107-52				
414	A7-33*	A9-50				
415	A7-36*	A9-49				
418	A7-69*	A9-51*	A15-16	A16-34	A23-16	
419	A7-70*	A9-52*	A14-16	A15-34	A22-16	A23-34
420	A7-72*	A9-59*	A13-16	A14-34	A21-16	A22-34
421	A7-73*	A9-58*	A12-16	A13-34	A20-16	A21-34
422	A7-74*	A9-60*	A11-16	A12-34	A19-16	A20-34
423	A7-75*	A9-56*	A10-16	A11-34	A18-16	A19-34
424	A7-76*	A9-54*	A10-34	A17-16	A18-34	
425	A7-77*	A9-57*	A16-16	A17-34		
426	A7-16*	A9-55*				
427	A7-15*	A9-53*	A16-14	A17-14,37 THRU A23-14,37		
428	A7-18*	A9-61*	A16-37	A10-14,37 THRU A15-14,37		
431	A1-53*	A3-22*	A8-60	A9-35*	A24-42*	A107-66
432	A3-30*	A4-59*	A9-41*	A107-74		
438	A3-46*	A8-62	A9-33*	A24-75*		
449	A3-38	A9-46*				
455	A9-72	A23-19*				
456	A9-73	A22-19*				
457	A9-70	A21-19*				
458	A9-71	A20-19*				
459	A9-63	A19-19*				
460	A9-65	A18-19*				
461	A9-75	A17-19*				
462	A9-77	A16-19*				
463	A9-64	A15-19*				
464	A9-68	A14-19*				
465	A9-67	A13-19*				
466	A9-66	A12-19*				
467	A9-69	A11-19*				
468	A9-74	A10-19*				

REF. NO.	BACKPLANE LOCATION			
A9(CONT)				* INDICATES SIGNAL SOURCE
473	A7-3	A8-55*	A9-43	A10-22 THRU A23-22
477	A3-53*	A9-38*	A24-73	A107-73
481	A8-54*	A9-37	A10-11 THRU A23-11	
482	A1-16	A8-44*	A9-80	
483	A3-26	A7-58	A8-43*	A9-81 A24-66
487	A7-32	A9-83*		
488	A7-27	A9-79*		
498	A3-37	A7-11	A8-81*	A9-26



DWG REV. C NOTE: E3 NOT USED ON CARD REV. A-1116-22.

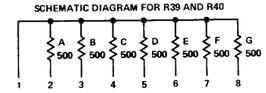
See table 4-11 for replaceable parts.



FF DEFINITIONS

CLC1 = CLEAR CONTROL 1
CLC2 = CLEAR CONTROL 2
CR1 = CYCLE REQUEST 1
CR2 = CYCLE REQUEST 2
IN1 = IN/OUT 1
IN2 = IN/OUT 2
PH5 = PHASE 5
STC1 = SET CONTROL 1
STC2 = SET CONTROL 2
T2T3 = I/O TIME PERIODS 2 AND 3
T3T4 = I/O TIME PERIODS 3 AND 4
T4T5 = I/O TIME PERIODS 4 AND 5

SCHEMATIC DIAGRAM FOR R39 AND R40



NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. SEE I/O CONTROL CARD DIAGRAM FOR DMA INTERRUPT LOGIC.
5. ON CARD REV. 1116, U113A PIN 1 IS CONNECTED TO U113A PIN 4 INSTEAD OF U125B PIN 8; U113B PIN 13 IS CONNECTED TO U113A PIN 4 INSTEAD OF U125D PIN 8.
6. E3 NOT USED ON CARD REV. 1116.

REF. NO.	BACKPLANE LOCATION			
A9(CONT)				
473	A7-3	A8-55*	A9-43	A10-22 THRU A23-22
477	A3-53*	A9-38*	A24-73	A107-73
481	A8-54*	A9-37	A10-11 THRU A23-11	
482	A1-16	A8-44*	A9-80	
483	A3-26	A7-58	A8-43*	A9-81 A24-66
487	A7-32	A9-83*		
488	A7-27	A9-79*		
498	A3-37	A7-11	A8-81*	A9-26

* INDICATES SIGNAL SOURCE

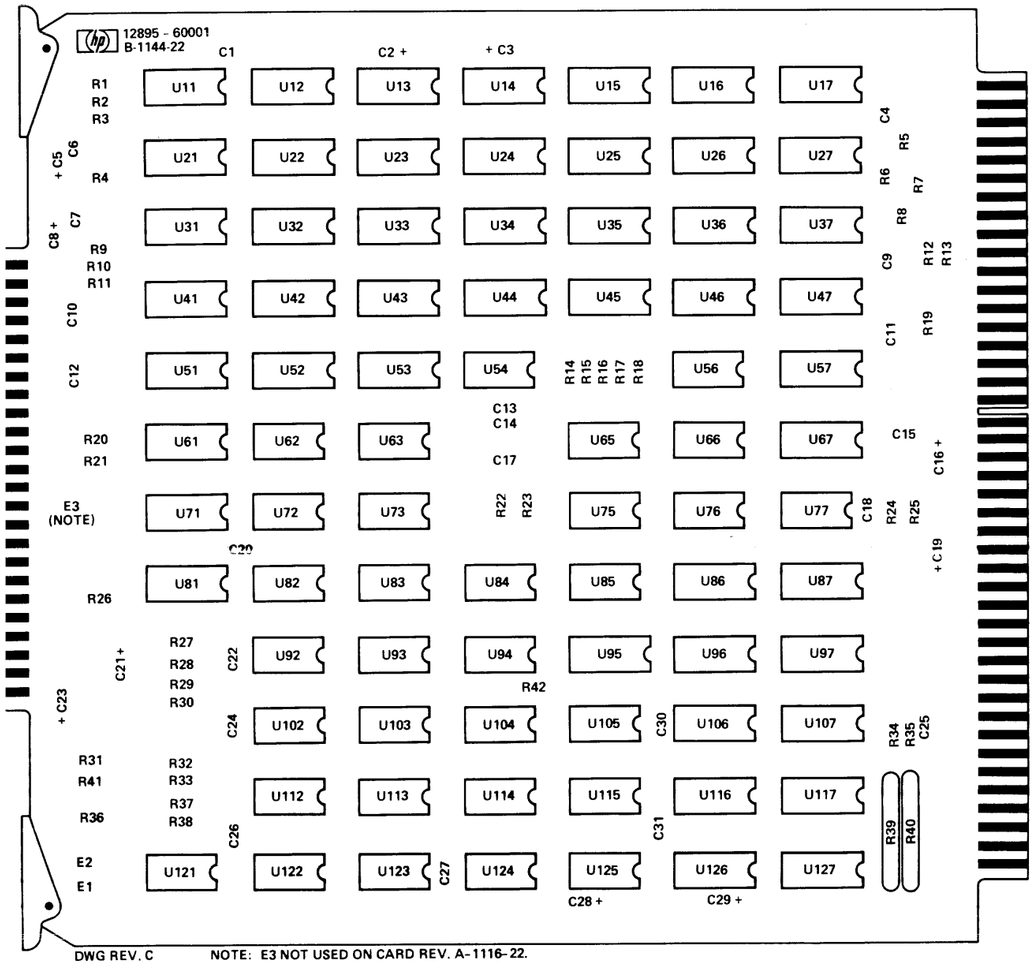
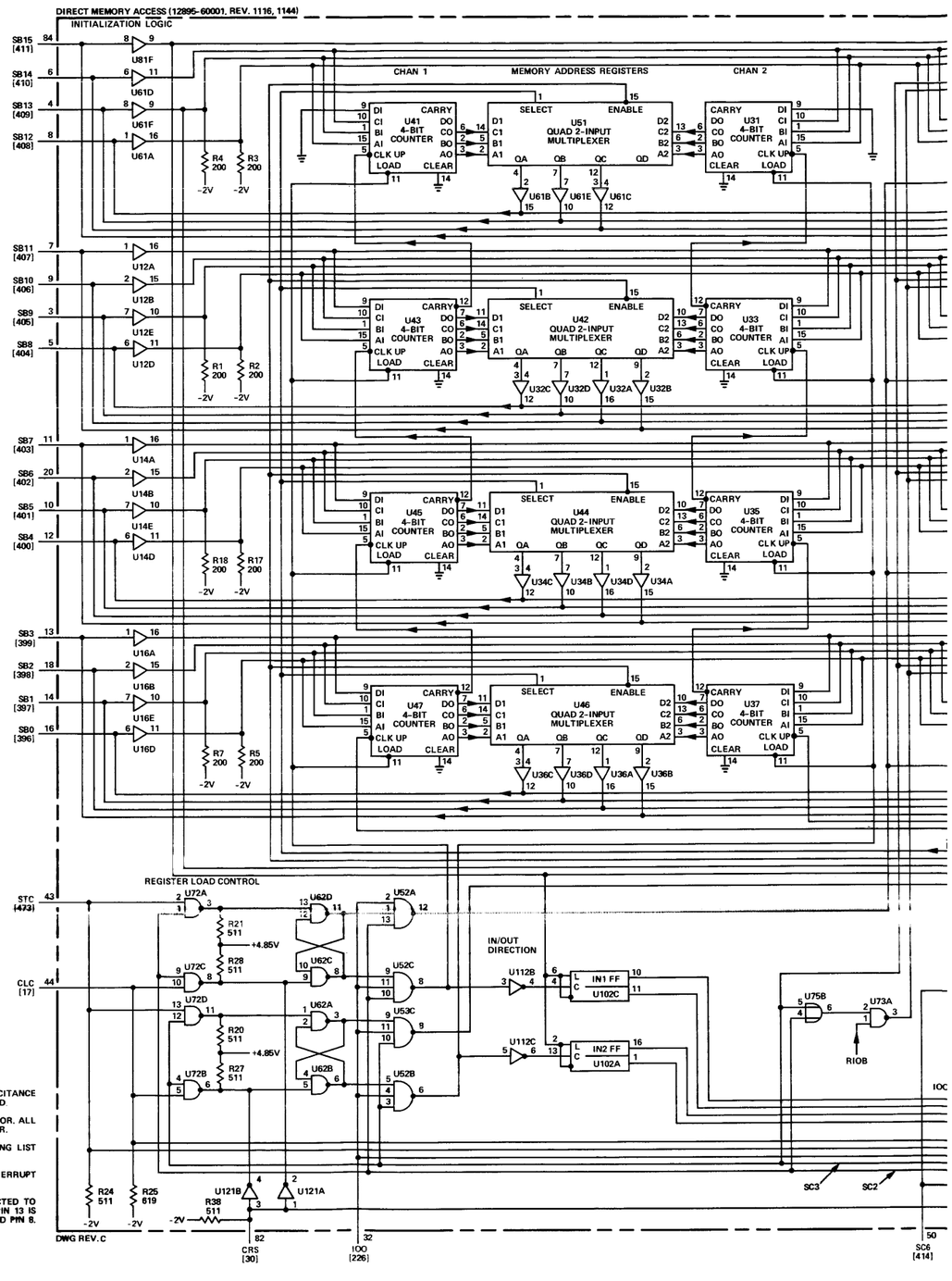
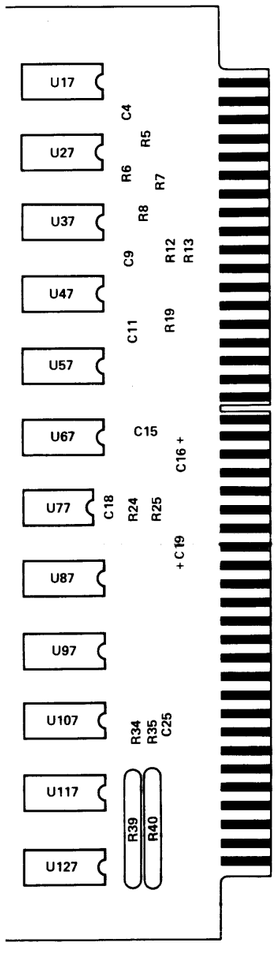


table 4-11 for replaceable parts.



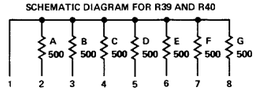
SOURCE



FF DEFINITIONS

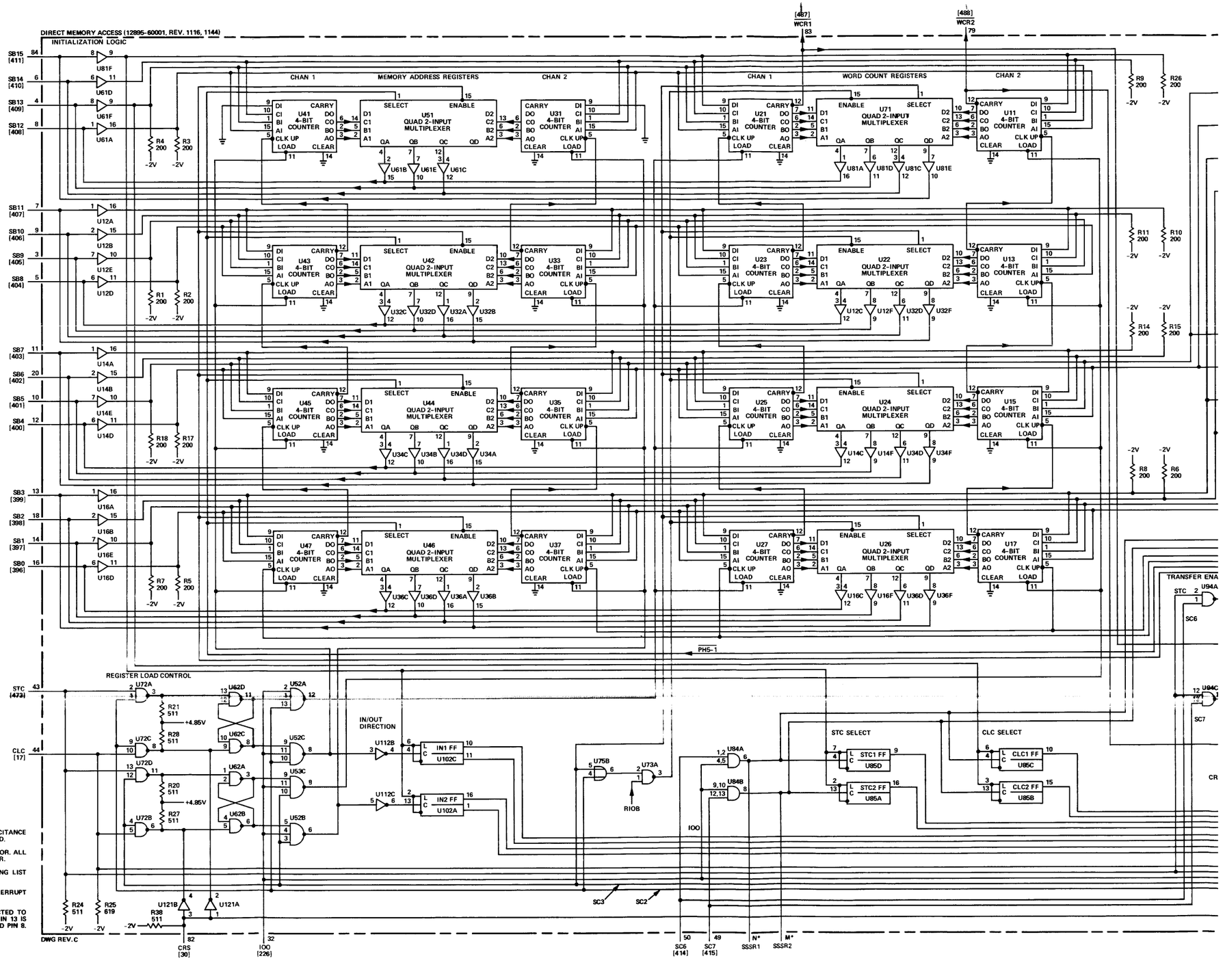
CLC1 = CLEAR CONTROL 1
CLC2 = CLEAR CONTROL 2
CR1 = CYCLE REQUEST 1
CR2 = CYCLE REQUEST 2
IN1 = IN/OUT 1
IN2 = IN/OUT 2
PH5 = PHASE 5
STC1 = SET CONTROL 1
STC2 = SET CONTROL 2
T2T3 = I/O TIME PERIODS 2 AND 3
T3T4 = I/O TIME PERIODS 3 AND 4
T4T5 = I/O TIME PERIODS 4 AND 5

SCHEMATIC DIAGRAM FOR R39 AND R40



NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. SEE I/O CONTROL CARD DIAGRAM FOR DMA INTERRUPT LOGIC.
5. ON CARD REV. 1116, U113A PIN 1 IS CONNECTED TO U113A PIN 4 INSTEAD OF U125B PIN 6; U113B PIN 13 IS CONNECTED TO U113A PIN 4 INSTEAD OF U125D PIN 8.
6. E3 NOT USED ON CARD REV. 1116.



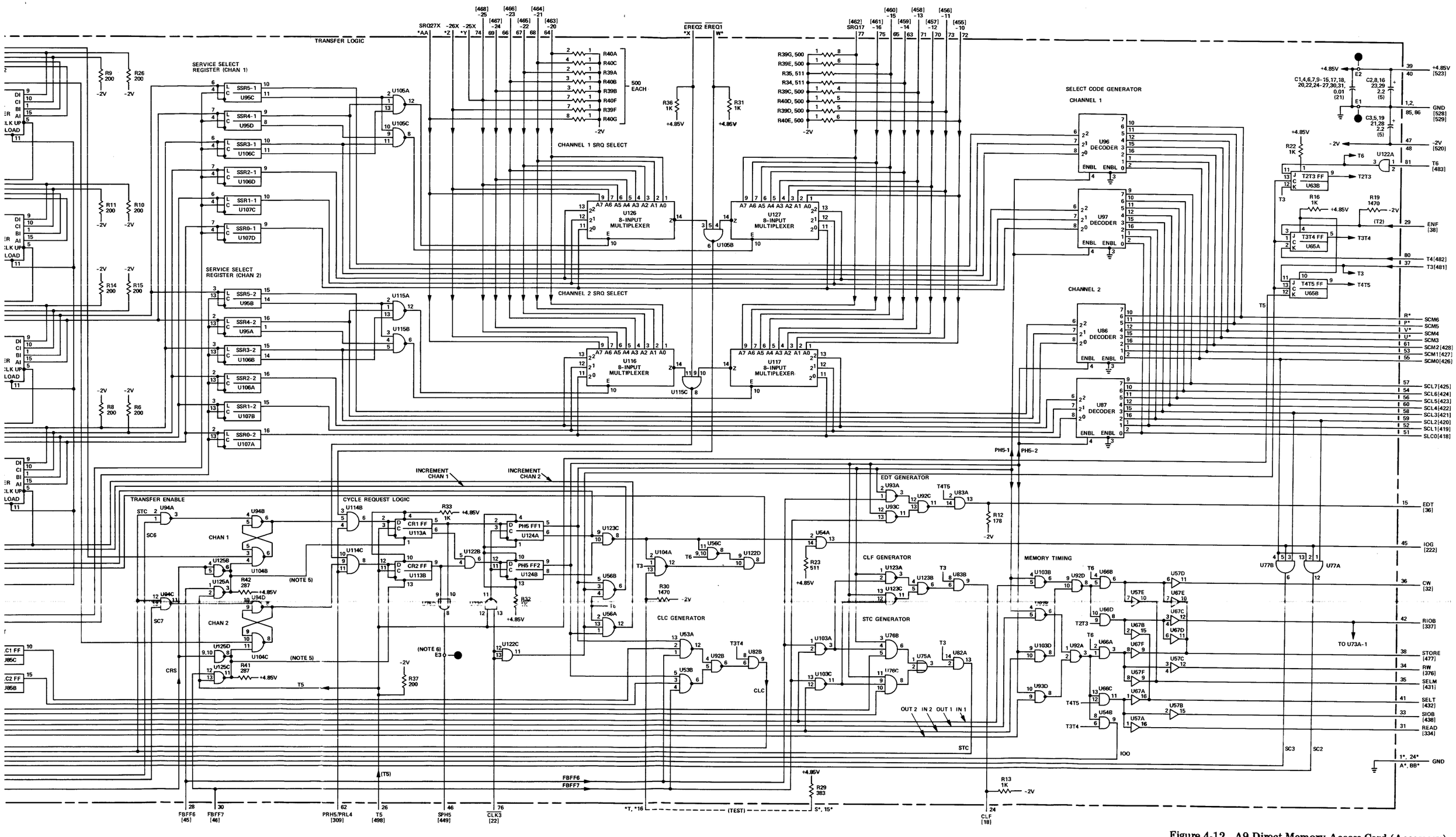


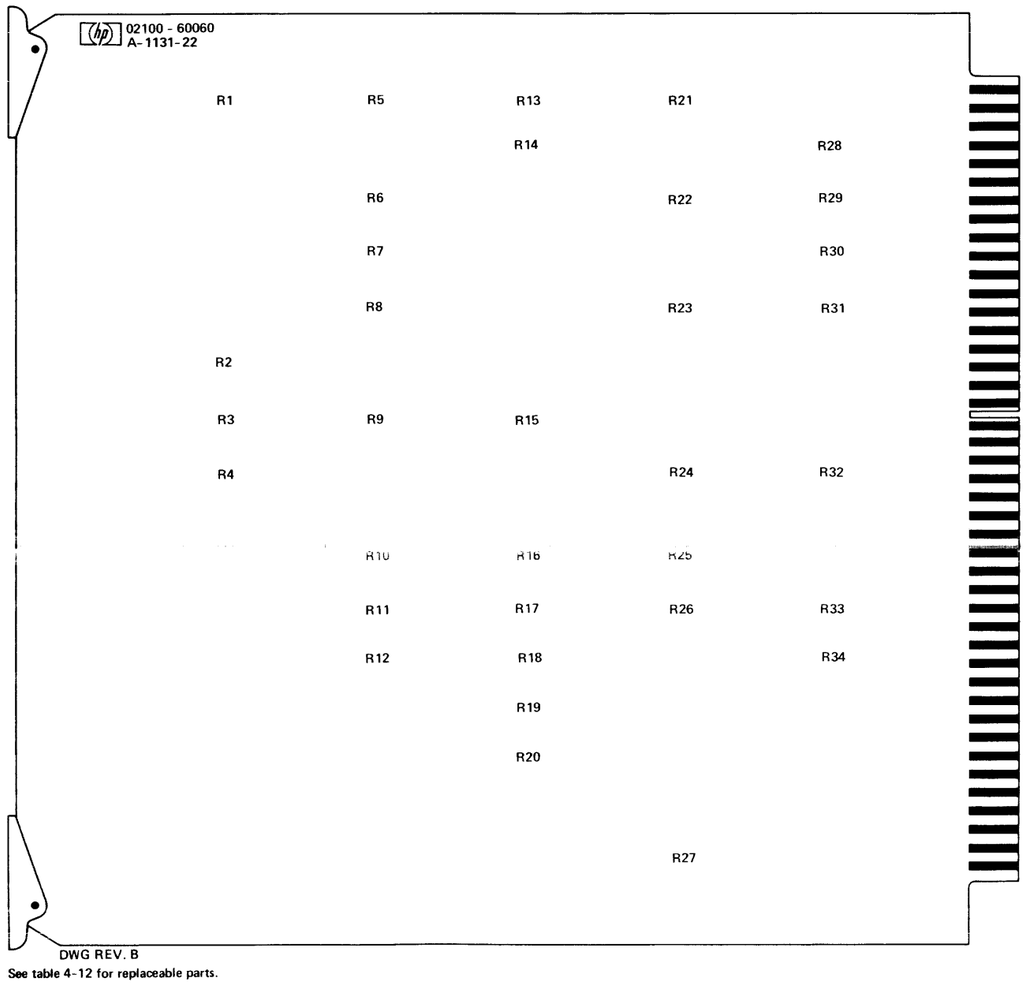
Figure 4-12. A9 Direct Memory Access Card (Accessory) Parts Location and Schematic Diagrams

Table 4-12. A16 I/O Terminator Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A16	02100-60060	1	I/O TERMINATOR CARD	28480	02100-60060
A16R1 THRU A16R15	0683-2215	32	R:FXD COMP 220 OHM 5% 1/4W	01121	CB 2215
A16R16	0683-1025	2	R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
A16R17 THRU A16R21	0683-2215		R:FXD COMP 220 OHM 5% 1/4W	01121	CB 2215
A16R22	0683-1025		R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
A16R23 THRU A16R34	0683-2215		R:FXD COMP 220 OHM 5% 1/4W	01121	CB 2215

REF. NO.	BACKPLANE LOCATION					* INDICATES SIGNAL SOURCE
A10	THRU A23					
17	A7-10	A8-66*	A9-44	A10-21 THRU A23-21		
18	A4-76	A7-5	A8-51*	A9-24	A10-7 THRU A23-7	
30	A7-19*	A9-82	A10-13 THRU A23-13			
36	A9-15*	A10-62 THRU A23-62				
38	A1-50	A7-4	A8-57*	A9-29	A10-46 THRU A23-46	
49	A7-71	A16-4*	A17-4* 49* THRU A23-4* 49*			
50	A7-34	A16-49*	A10-4*,49* THRU A15-4*,49*			
58	A7-14*	A8-84	A10-10 THRU A23-10			
205	A8-13*	A24-71	A10-26,35 THRU A23-26,35			
206	A8-12*	A24-70	A10-29,38 THRU A23-29,38			
207	A8-11*	A24-68	A10-30,41 THRU A23-30,41			
208	A8-17*	A24-72	A10-45,64 THRU A23-45,64			
209	A8-16*	A24-54	A10-42,77 THRU A23-42,77			
210	A8-15*	A24-53	A10-51,80 THRU A23-51,80			
211	A8-10*	A24-63	A10-53,81 THRU A23-53,81			
212	A8-32*	A24-61	A10-52,84 THRU A23-52,84			
213	A8-31*	A24-32	A10-27,54 THRU A23-27,54			
214	A8-29*	A24-34	A10-28,56 THRU A23-28,56			
215	A8-28*	A24-46	A10-31,58 THRU A23-31,58			
216	A8-27*	A24-44	A10-55,60 THRU A23-55,60			
217	A8-26*	A24-14	A10-57,78 THRU A23-57,78			
218	A8-25*	A24-16	A10-61,79 THRU A23-61,79			
219	A8-30*	A24-20	A10-65,82 THRU A23-65,82			
220	A8-34*	A24-18	A10-74,83 THRU A23-74,83			
221	A10-18 THRU A23-18					
222	A3-76	A7-43	A8-46*	A9-45*	A10-15 THRU A23-15	
	A24-6					
225	A7-53	A8-82*	A24-4	A24-80*	A10-24 THRU A23-24	
226	A3-77	A8-78*	A9-32	A24-10	A10-20 THRU A23-20	
246	A7-82	A13-6*	A14-33*	A21-6*	A22-33*	
247	A7-78	A12-6*	A13-33*	A20-6*	A21-33*	
248	A7-80	A11-6*	A12-33*	A19-6*	A20-33*	
249	A7-83	A8-67*	A10-6*	A11-33*	A18-6*	A19-33*
250	A7-81	A10-33*	A17-6*	A18-33*		
251	A7-84	A16-6*	A17-33*			
255	A10-59 THRU A23-59					
305	A1-6	A7-8*	A24-67	A104-42	A107-70	
	A10-66 THRU A23-66					
306	A7-23*	A24-65	A10-17 THRU A23-17			
311	A22-23	A23-3*				
312	A21-23	A22-3*				
313	A20-23	A21-3*				
314	A19-23	A20-3*				
315	A18-23	A19-3*				
316	A17-23	A18-3*				
317	A16-23	A17-3*				
318	A14-23	A15-3*				
319	A13-23	A14-3*				
320	A12-23	A13-3*				
321	A11-23	A12-3*				
322	A10-23	A11-3*				
323	A7-52	A16-3*				
375	A1-49*	A10-50 THRU A23-50				
418	A7-69*	A9-51*	A15-16	A16-34	A23-16	
419	A7-70*	A9-52*	A14-16	A15-34	A22-16	A23-34
420	A7-72*	A9-59*	A13-16	A14-34	A21-16	A22-34
421	A7-73*	A9-58*	A12-16	A13-34	A20-16	A21-34
422	A7-74*	A9-60*	A11-16	A12-34	A19-16	A20-34
423	A7-75*	A9-56*	A10-16	A11-34	A18-16	A19-34
424	A7-76*	A9-54*	A10-34	A17-16	A18-34	
425	A7-77*	A9-57*	A16-16	A17-34		
427	A7-15*	A9-53*	A16-14	A17-14,37 THRU A23-14,37		
428	A7-18*	A9-61*	A16-37	A10-14,37 THRU A15-14,37		
433	A4-70	A7-17	A8-52*	A10-5 THRU A23-5		
435	A4-72	A7-24	A8-59*	A10-25 THRU A23-25		
436	A10-73 THRU A23-73					
439	A8-56*	A10-32 THRU A23-32				
440	A1-17	A4-16*	A7-21*	A10-12* THRU A23-12*		
444	A10-68 THRU A23-68					
455	A9-72	A23-19*				
456	A9-73	A22-19*				

REF. NO.	BACKPLANE LOCATION			
A10 THRU A23 (CONT)				
457	A9-70	A21-19*		
458	A9-71	A20-19*		
459	A9-63	A19-19*		
460	A9-65	A18-19*		
461	A9-75	A17-19*		
462	A9-77	A16-19*		
463	A9-64	A15-19*		
464	A9-68	A14-19*		
465	A9-67	A13-19*		
466	A9-66	A12-19*		
467	A9-69	A11-19*		
468	A9-74	A10-19*		
473	A7-3	A8-55*	A9-43	A10-22 THRU A23-22
475	A4-73	A7-6	A8-49*	A10-9 THRU A23-9
481	A8-54*	A9-37	A10-11 THRU A23-11	
496	A7-50*	A23-8,23	A16-8 THRU A22-8	
497	A7-55*	A15-8,23	A10-8 THRU A14-8	



See table 4-12 for replaceable parts.

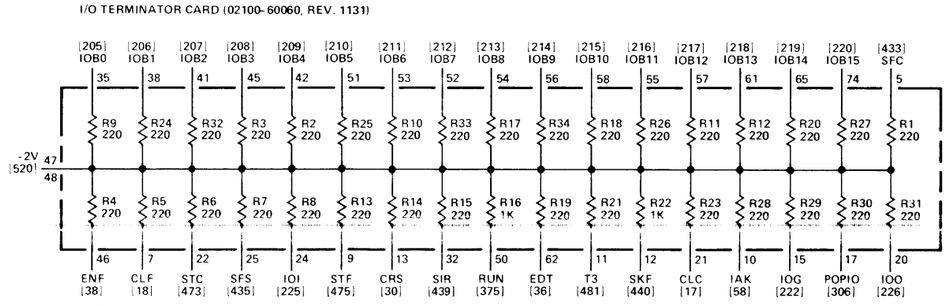


Figure 4-13. A16 I/O Terminator Card, Parts Location and Schematic Diagrams

Table 4-13. A24 Operator Panel Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A24	02100-60015	1	OPERATOR PANEL CARD	28480	02100-60015
A24C1	0180-0106	22	C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C4	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C5	0160-2055	26	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C9	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C12	0180-0291	2	C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
A24C13	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C14	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C16	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C17	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C18	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C20	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C21	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C22	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C23	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C24	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
A24C25	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C26	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C27	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C28	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C29	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C30	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C32	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C33	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C34	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C36	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C37	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C38	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C39	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C41	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C42	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C43	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C44	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C45	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C46	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C47	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C48	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C49	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C50	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C51	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C52	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C53	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C54	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C55	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C56	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24CR1	1901-0040	1	DIODE:SILICON 30MA 30WV	07263	FDG1088
A24DS1 THRU A24DS38	2140-0364	38	LAMP:INCANDESCENT	28480	2140-0364
A24Q1	1854-0477	4	TSTR:SI NPN	80131	2N2222A
A24Q2	1854-0477		TSTR:SI NPN	80131	2N2222A
A24Q3	1854-0477		TSTR:SI NPN	80131	2N2222A
A24Q4	1854-0477		TSTR:SI NPN	80131	2N2222A
A24R1	1810-0030	10	NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R2	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R3	0698-7260	1	R:FXD FLM 10K OHM 2% 1/8W	28480	0698-7260
A24R4	0698-7236	5	R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A24R5	0698-7244	2	R:FXD FLM 2.15K OHM 2% 1/8W	28480	0698-7244
A24R6	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R7	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R8	0757-0416	3	R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A24R9	0757-0280	2	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A24R10 (NOTE 2)	0757-0442	1	R:FXD MET FLM 10.0K OHM 1% 1/8W	28480	0757-0442
A24R10 (NOTE 1)	0757-0463	1	R:FXD MET FLM 82.5K OHM 1% 1/8W	28480	0757-0463
A24R11	0698-7244		R:FXD FLM 2.15K OHM 2% 1/8W	28480	0698-7244
A24R12	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A24R13	0698-7229	2	R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A24R14	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A24R15	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R16	1810-0063	3	RESISTIVE NETWORK:7 X 133 OHM 5% 2W EA	28480	1810-0063

NOTE: 1. First used on card rev. 1244.
2. Used on card rev. 1123.

Table 4-13. A24 Operator Panel Card, Replaceable Parts (Continued)

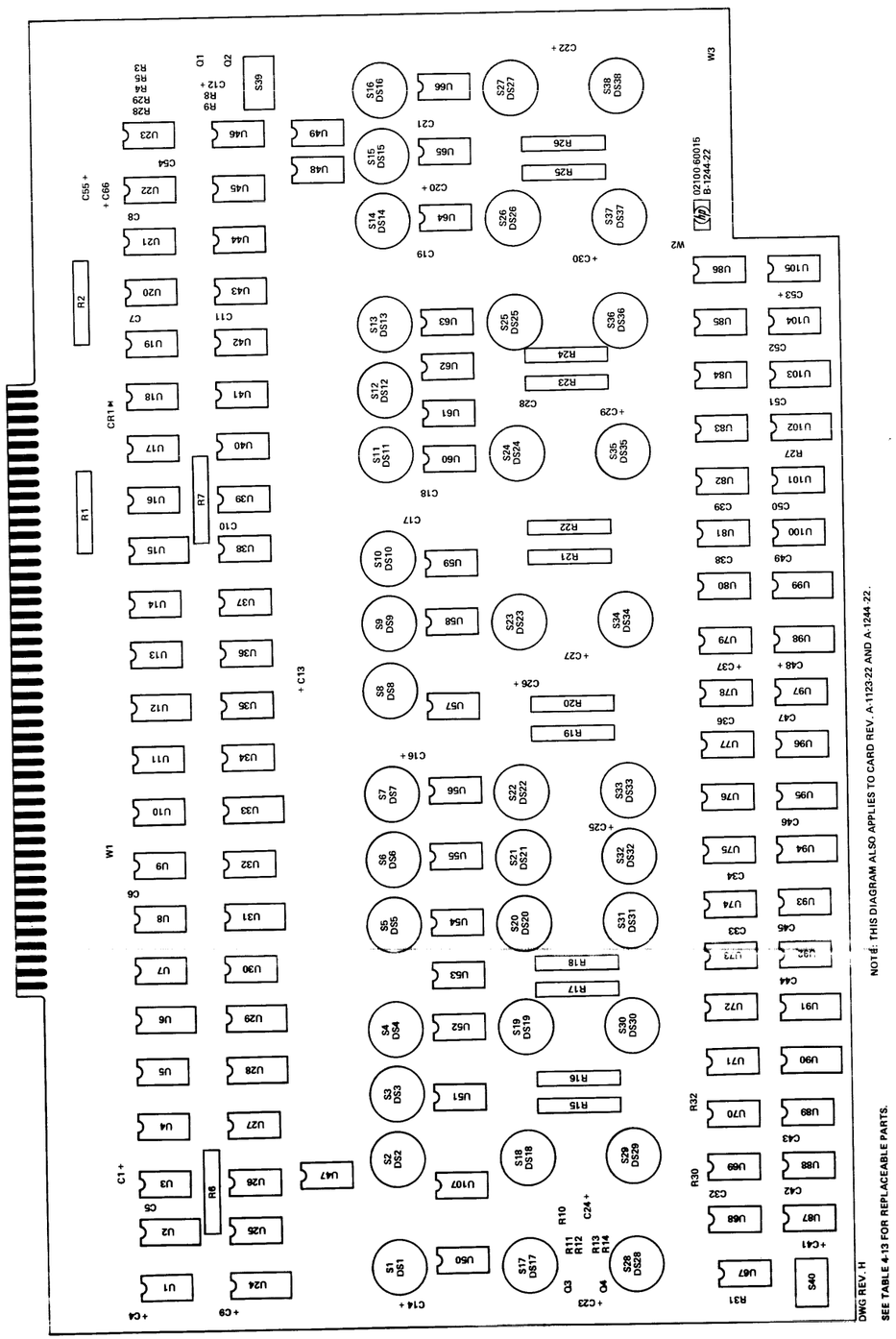
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A24R17	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R18	1810-0063		RESISTIVE NETWORK:7 X 133 OHM 5% 2W EA	28480	1810-0063
A24R19	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R20	1810-0063		RESISTIVE NETWORK:7 X 133 OHM 5% 2W EA	28480	1810-0063
A24R21	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R22	1810-0063		RESISTIVE NETWORK:7 X 133 OHM 5% 2W EA	28480	1810-0063
A24R23	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R24	1810-0063		RESISTIVE NETWORK:7 X 133 OHM 5% 2W EA	28480	1810-0063
A24R25	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R26	1810-0063		RESISTIVE NETWORK:7 X 133 OHM 5% 2W EA	28480	1810-0063
A24R27	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A24R28	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A24R29	0698-7229		R:FXD FLM 511 OHM 2% 1/8W	28480	0698-7229
A24R30	0698-3441	1	R:FXD MET FLM 215 OHM 1% 1/8W	28480	0698-3441
A24R31	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A24R32	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A24R33	0698-7236		R:FXD FLM 1K OHM 2% 1/8W	28480	0698-7236
A24S1 THRU	3101-1531	38	SWITCH:REED	28480	3101-1531
A24S38					
A24S39	3101-0973	2	SWITCH:SLIDE DPDT 0.5A 125V AC/DC	79727	G126-0018
A24S40	3101-0973		SWITCH:SLIDE DPDT 0.5A 125V AC/DC	79727	G126-0018
A24U1	1820-0141	17	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U2	1820-0485	4	IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A24U3	1820-0371	4	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A24U4	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A24U5	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U6	1820-0301	10	IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U7	1820-0377	1	IC:TTL HS DUAL 2-WIDE 2-INPT	01295	SN74H50N
A24U8	1820-0385	1	IC:TTL HS 4 W-3-2-2-3 INPT AND/OR EXP.	01295	SN74H62N
A24U9	1820-0205	13	IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U10	1820-0370	6	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U11	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U12	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A24U13	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U14	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U15	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A24U16	1820-0186	10	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U17	1820-0668	2	IC:TTL HEX BUFFER/DRIVER W/OPEN COLL.	01295	SN7407N
A24U18	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A24U19(NOTE 1)	1820-0451	6	IC:TTL DUAL J-K F/F	04713	MC3062P
A24U20(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A24U21(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A24U22(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A24U23	1820-0512	1	IC:TTL DUAL D F/F	01295	SN74H74N
A24U24	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U25	1820-0375	5	IC:TTL HS 8-INPT NAND GATE	01295	SN74H30N
A24U26	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U27	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U28	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U29	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U30	1820-0375		IC:TTL HS 8-INPT NAND GATE	01295	SN74H30N
A24U31	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U32	1820-0375		IC:TTL HS 8-INPT NAND GATE	01295	SN74H30N
A24U33	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U34	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U35	1820-0424	4	IC:TTL HS HEX INVERTER	04713	SN74H04N
A24U36	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A24U37	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U38	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A24U39	1820-0372	2	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A24U40	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U41	1820-0372		IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A24U42	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U43	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A24U44	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U45	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U46	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A24U47	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U48	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U49	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U50	1820-0769	11	IC:TTL DIGITAL	28480	1820-0769
A24U51	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U52	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U53	1820-0617	4	IC:TTL QUAD 2-INPT EXCL. NOR GATE	04713	MC3022P
A24U54	1820-0769		IC:TTL DIGITAL	28480	1820-0769

NOTES: 1. Part no. 1820-0695 used on some cards; the two parts are interchangeable.

Table 4-13. A24 Operator Panel Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A24U55	1820-1018		IC:TTL HS 8-INPT NAND GATE	01295	SN74H30H
A24U56	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U57	1820-0617		IC:TTL QUAD 2-INPT EXCL. NOR GATE	04713	MC3022P
A24U58	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U59	1820-0617		IC:TTL QUAD 2-INPT EXCL. NOR GATE	04713	MC3022P
A24U60	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U61	1820-0617		IC:TTL QUAD 2-INPT EXCL. NOR GATE	04713	MC3022P
A24U62	1820-0375		IC:TTL HS 8-INPT NAND GATE	01295	SN74H30N
A24U63	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U64	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U65	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U66	1820-0769		IC:TTL DIGITAL	28480	1820-0769
A24U67	1820-0140	1	IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A24U68	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U69(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A24U70	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U71	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U72	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U73	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U74	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U75	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U76	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U77	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U78	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U79	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U80	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U81	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U82	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U83	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U84	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U85	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U86	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U87	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A24U88	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U89	1820-0668		IC:TTL HEX BUFFER/DRIVER W/OPEN COLL.	01295	SN7407N
A24U90	1820-0437	4	IC:TTL QUAD D F/F	04713	MC4015P
A24U91	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U92	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U93	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U94	1820-0437		IC:TTL QUAD D F/F	04713	MC4015P
A24U95	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U96	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U97	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U98	1820-0437		IC:TTL QUAD D F/F	04713	MC4015P
A24U99	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U100	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U101	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U102	1820-0437		IC:TTL QUAD D F/F	04713	MC4015P
A24U103	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U104	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U105	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A24U107(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A24W1	8159-0005	3	JUMPER WIRE	28480	8159-0005
A24W2	8159-0005		JUMPER WIRE	28480	8159-0005
A24W3	8159-0005		JUMPER WIRE	28480	8159-0005

REF. NO.	BACKPLANE LOCATION					
	* INDICATES SIGNAL SOURCE					
A24						
22	A1-78*	A3-81	A7-56	A8-42	A9-76	A24-64
	A107-69					
28	A1-52*	A4-19	A24-43			
32	A6-73*	A9-36*	A24-55*	A107-76		
33	A1-42	A24-60*	A107-6			
35	A3-25	A24-76	A107-81*			
43	A7-42*	A24-12				
44	A4-10	A6-82*	A24-22			
47	A1-67	A4-64	A24-21*			
56	A1-65	A7-65*	A8-50*	A24-74		
198	A7-35*	A8-79	A24-24			
200	A1-37	A24-33*	A107-79			
225	A7-53	A8-82*	A24-4	A24-80*	A10-24 THRU A23-24	
258	A3-29	A24-78	A107-77*			
292	A4-68*	A6-8	A24-51			
300	A3-41*	A7-13	A24-56			
301	A24-79	S1A-8*				
302	A3-60	A4-28	A24-38*			
303	A3-72	A4-26	A24-41*			
304	A3-32	A24-36*				
305	A1-6	A7-8*	A24-67	A104-42	A107-70	
	A10-66 THRU A23-66					
306	A7-23*	A24-65	A10-17 THRU A23-17			
324	A7-22	A24-7*				
325	A1-4	A24-13*				
334	A1-54*	A3-28*	A4-27	A9-31*	A24-77*	A107-72
368	A3-24*	A4-57*	A5-35,36	A24-23*		
376	A6-74*	A9-34*	A24-57*	A107-75		
416	A1-66	A24-11*				
417	A1-68	A24-5*				
429	A1-79	A24-3*				
431	A1-53*	A3-22*	A8-60	A9-35*	A24-42*	A107-66
438	A3-46*	A8-62	A9-33*	A24-75*		
453	A1-74	A24-62*				
469	A1-62	A24-58*				
470	A1-64	A24-59*				
477	A3-53*	A9-38*	A24-73	A107-73		
483	A3-26	A7-58	A8-43*	A9-81	A24-66	
495	A24-9*	A107-67				
499	A4-63	A24-35*				



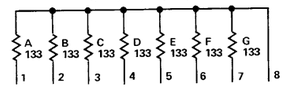
FF DEFINITIONS

AOP	=	"NOT" A OPERATE
ARS	=	"NOT" A REGISTER SELECT
BOP	=	"NOT" B OPERATE
BRS	=	"NOT" B REGISTER SELECT
DECM	=	"NOT" DECREMENT M
DO	=	"NOT" DO
DTSR	=	"NOT" DISPLAY TO SWITCH REGISTER
EDTSR	=	ENABLE DTSR
HLT	=	"NOT" HALT
HLT SW	=	HALT SWITCH
INCM	=	"NOT" INCREMENT M
LEN	=	"NOT" LOADER ENABLE
MDOP	=	"NOT" MEMORY DATA OPERATE
MOP	=	"NOT" M OPERATE
MRS	=	"NOT" M REGISTER SELECT
OPIH	=	"NOT" OPERATION INHIBIT
POP	=	"NOT" P OPERATE
PRS	=	"NOT" P REGISTER SELECT
PRSI	=	"NOT" PRESET INTERNAL
RDM	=	"NOT" READ MEMORY
RUN	=	"NOT" RUN
SCE	=	"NOT" SET/CLEAR EXTEND
SCO	=	"NOT" SET/CLEAR OVERFLOW
SCY	=	"NOT" SINGLE CYCLE
SFZ	=	"NOT" SET FLAG ZERO
SIN	=	"NOT" SINGLE INSTRUCTION
SOP	=	"NOT" S OPERATE
SRS	=	SWITCH REGISTER SELECT
SRTD	=	SWITCH REGISTER TO DISPLAY
STM	=	"NOT" STORE MEMORY
TRS	=	T REGISTER SELECT
UDS	=	UPDATE SELECT

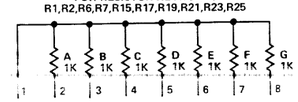
NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
3. PIN 9 OF U30 AND PIN 13 OF U62 ARE SPARE PINS AND ARE NOT SHOWN ON THIS DIAGRAM.
4. NUMBER-LETTER COMBINATIONS WITHIN PARENTHESIS IDENTIFY CARD COORDINATES FOR LOCATING AIR-LINED CIRCUITS.
5. "OR" GATE U88B IS NOT CONNECTED ON CARD REV. 1123. INSTEAD, PIN 5 OF U69A IS CONNECTED TO THE LEFT SIDE OF R12. ON CARD REV. 1123, R10 IS 10K OHMS.

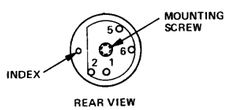
SCHEMATIC DIAGRAM
FOR RESISTOR NETWORKS
R16,R18,R20,R22,R24,R26



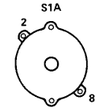
SCHEMATIC DIAGRAM
FOR RESISTOR NETWORKS
R1,R2,R6,R7,R15,R17,R19,R21,R23,R25



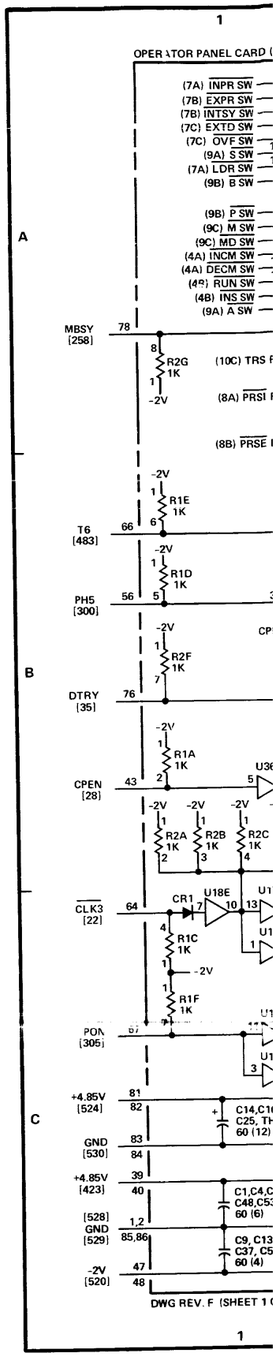
PIN IDENTIFICATION FOR
SWITCH-LAMP ASSEMBLIES
S1-DS1 THRU S38-DS38

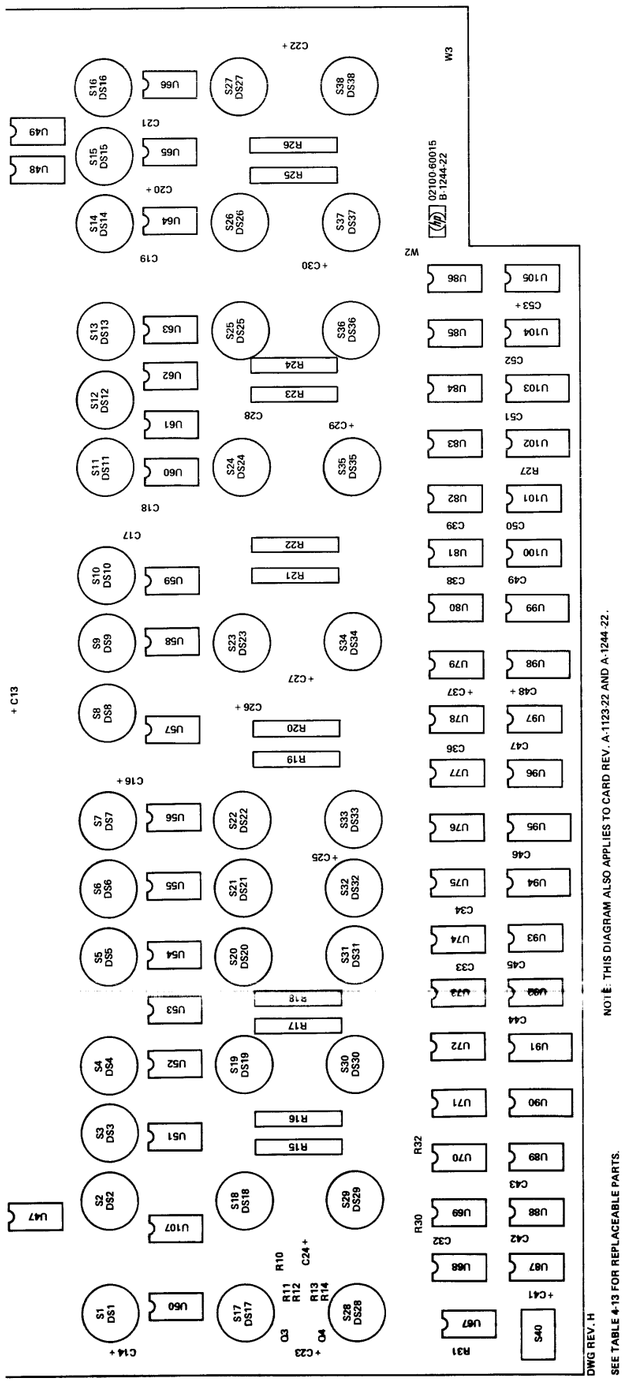


REAR VIEW



REAR VIEW





DWG REV. H

NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. A 1123-22 AND A-1244-22.

SEE TABLE 4-13 FOR REPLACEABLE PARTS.

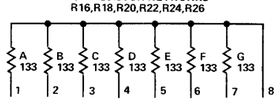
FF DEFINITIONS

$\overline{AOP}$	=	"NOT" A OPERATE
$\overline{ARS}$	=	"NOT" A REGISTER SELECT
$\overline{BOP}$	=	"NOT" B OPERATE
$\overline{BRS}$	=	"NOT" B REGISTER SELECT
$\overline{DECM}$	=	"NOT" DECREMENT M
$\overline{DO}$	=	"NOT" DO
$\overline{DTSR}$	=	"NOT" DISPLAY TO SWITCH REGISTER
EDTSR	=	ENABLE DTSR
HLT	=	"NOT" HALT
HLT SW	=	HALT SWITCH
$\overline{INCM}$	=	"NOT" INCREMENT M
$\overline{LEN}$	=	"NOT" LOADER ENABLE
$\overline{MDOP}$	=	"NOT" MEMORY DATA OPERATE
$\overline{MOP}$	=	"NOT" M OPERATE
$\overline{MRS}$	=	"NOT" M REGISTER SELECT
$\overline{OPIH}$	=	"NOT" OPERATION INHIBIT
$\overline{POP}$	=	"NOT" P OPERATE
$\overline{PRS}$	=	"NOT" P REGISTER SELECT
$\overline{PRSI}$	=	"NOT" PRESET INTERNAL
$\overline{RDM}$	=	"NOT" READ MEMORY
$\overline{RUN}$	=	"NOT" RUN
$\overline{SCE}$	=	"NOT" SET/CLEAR EXTEND
$\overline{SCO}$	=	"NOT" SET/CLEAR OVERFLOW
$\overline{SCY}$	=	"NOT" SINGLE CYCLE
$\overline{SFZ}$	=	"NOT" SET FLAG ZERO
$\overline{SIN}$	=	"NOT" SINGLE INSTRUCTION
$\overline{SOP}$	=	"NOT" S OPERATE
SRS	=	SWITCH REGISTER SELECT
SRTD	=	SWITCH REGISTER TO DISPLAY
$\overline{STM}$	=	"NOT" STORE MEMORY
TRS	=	T REGISTER SELECT
UDS	=	UPDATE SELECT

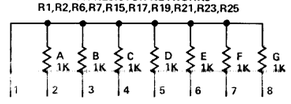
NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
3. PIN 9 OF U30 AND PIN 13 OF U62 ARE SPARE PINS AND ARE NOT SHOWN ON THIS DIAGRAM.
4. NUMBER-LETTER COMBINATIONS WITHIN PARENTHESIS IDENTIFY CARD COORDINATES FOR LOCATING AIR-LINED CIRCUITS.
5. "OR" GATE U88B IS NOT CONNECTED ON CARD REV. 1123. INSTEAD, PIN 5 OF U69A IS CONNECTED TO THE LEFT SIDE OF R12. ON CARD REV. 1123, R10 IS 10K OHMS.

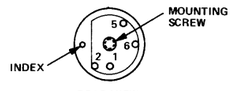
SCHEMATIC DIAGRAM
FOR RESISTOR NETWORKS
R16,R18,R20,R22,R24,R26



SCHEMATIC DIAGRAM
FOR RESISTOR NETWORKS
R1,R2,R6,R7,R15,R17,R19,R21,R23,R25

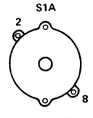


PIN IDENTIFICATION FOR
SWITCH-LAMP ASSEMBLIES
S1-DS1 THRU S38-DS38

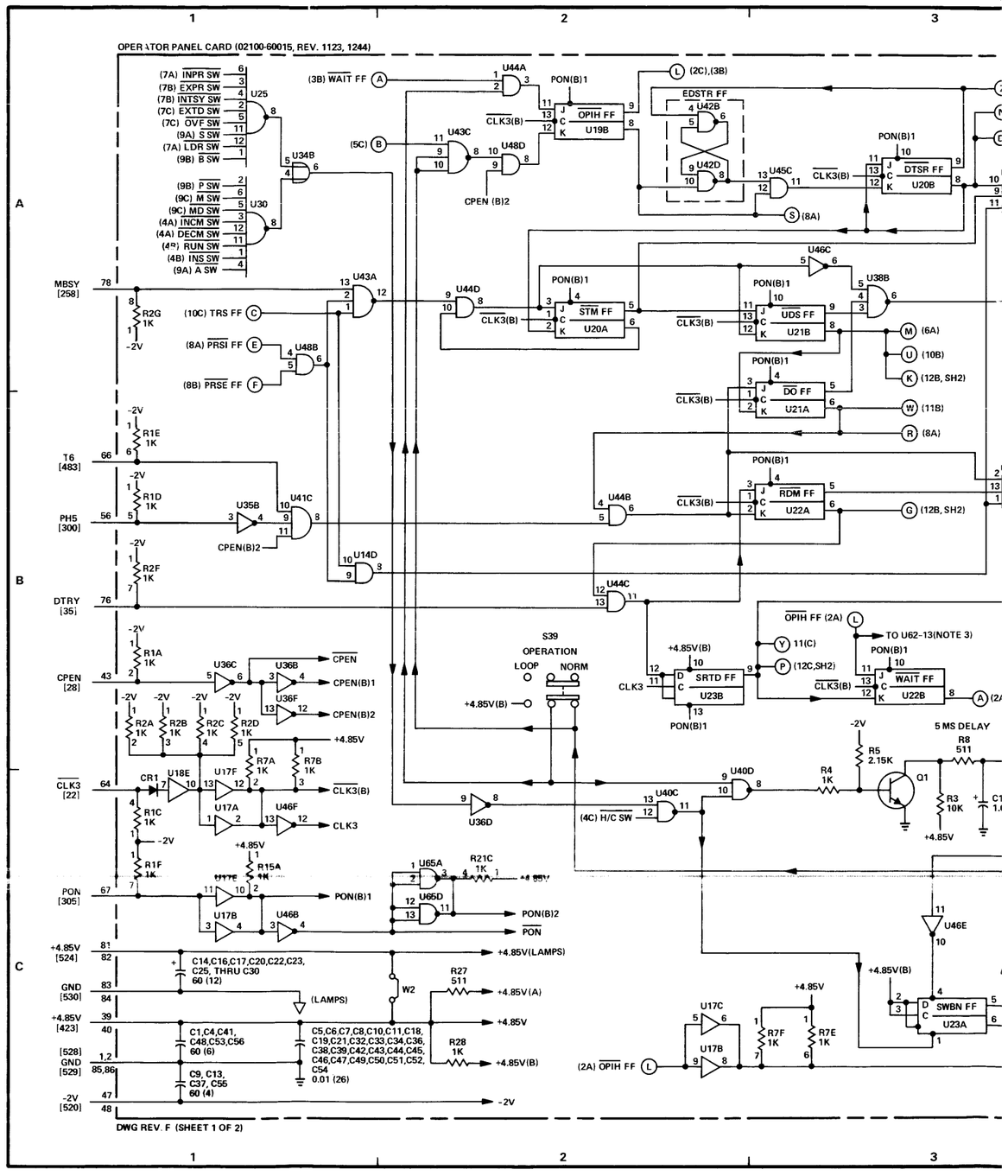


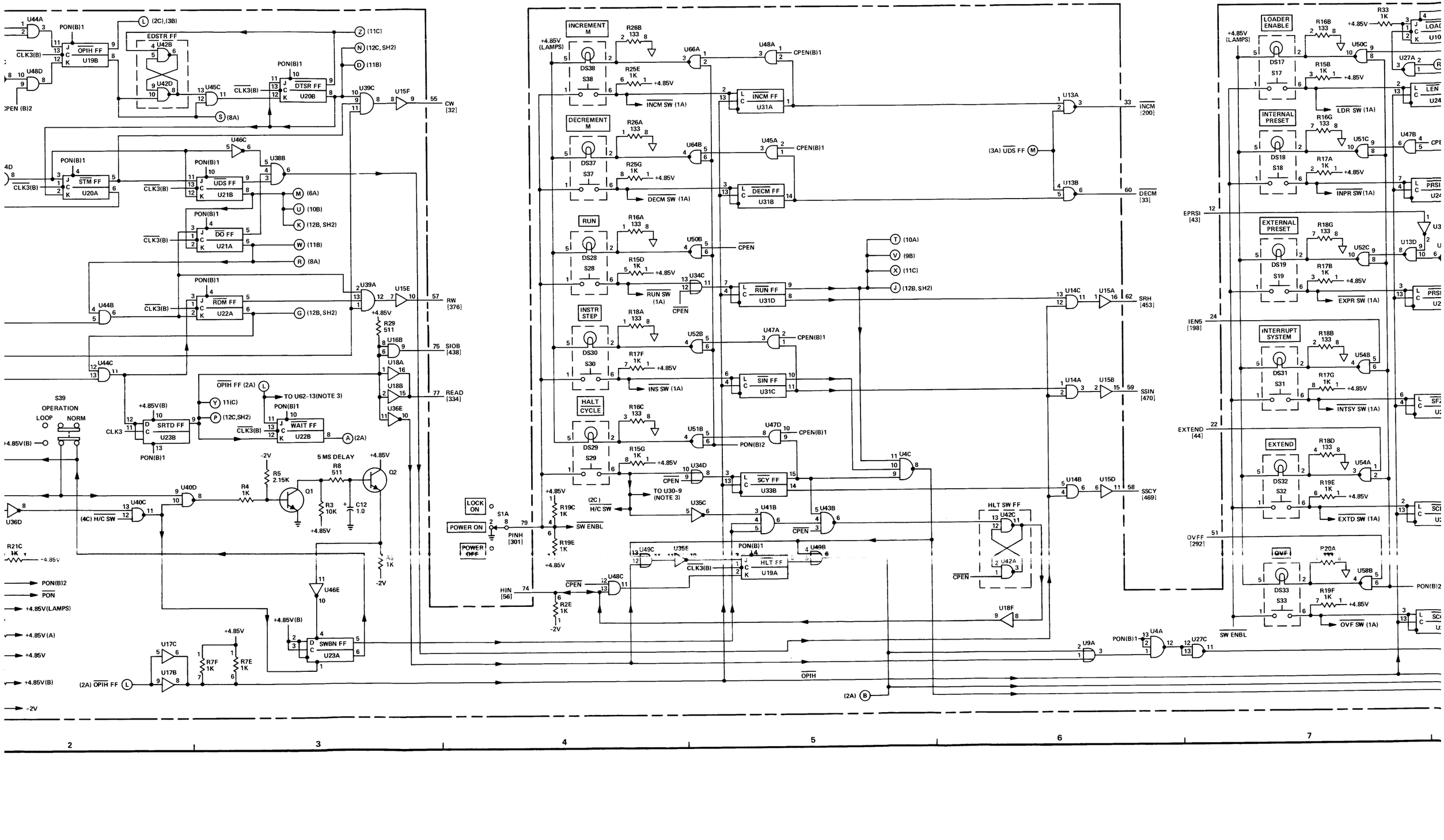
REAR VIEW

S1A



REAR VIEW




2
3
4
5
6
7
U44A
PON(B)1
CLK3(B)
OPIH FF
U19B
U48D
CPEN (B)2
EDSTR FF
U42B
U42D
(2C),(3B)
(11C)
(12C, SH2)
(11B)
U45C
CLK3(B)
DTSR FF
U20B
U39C
U15F
55 CW [32]
(8A)
U46C
U38B
STM FF
U20A
UDS FF
U21B
(6A)
(10B)
(12B, SH2)
DO FF
U21A
(11B)
(8A)
RDM FF
U22A
(12B, SH2)
U39A
U15E
57 RW [376]
+4.85V
R29 511
U16B
75 SIOB [438]
U18A
U18B
77 READ [334]
U36E
U44B
U44C
OPIH FF (2A)
TO U62-13(NOTE 3)
WAIT FF
U22B
(2A)
S39
OPERATION
LOOP
NORM
+4.85V(B)
SRTD FF
U23B
PON(B)2
PON
+4.85V(LAMPS)
+4.85V(A)
+4.85V
+4.85V(B)
-2V
U40D
U40C
(4C) H/C SW
U36D
R4 1K
R5 2.15K
Q1
R3 10K
5 MS DELAY
R8 511
C12 1.0
Q2
R21C 1K
U46E
SWBN FF
U23A
U17C
U17B
R7F 1K
R7E 1K
(2A) OPIH FF
INCREMENT M
DS38
S38
R26B 133
R25E 1K
INCM SW (1A)
DECREMENT M
DS37
S37
R26A 133
R25G 1K
DECM SW (1A)
RUN
DS28
S28
R16A 133
R15D 1K
RUN SW (1A)
INSTR STEP
DS30
S30
R18A 133
R17F 1K
INS SW (1A)
HALT CYCLE
DS29
S29
R16C 133
R15G 1K
U66A
U64B
U50B
U52B
U51B
U34C
U34D
U35C
U48A
U45A
U47A
U47D
CPEN(B)1
PON(B)2
INCM FF
U31A
DECM FF
U31B
RUN FF
U31D
SIN FF
U31C
SCY FF
U33B
CPEN
TO U30-9 (NOTE 3)
(2C) H/C SW
LOCK ON
POWER ON
POWER OFF
S1A
PINH [301]
SW ENBL
R19C 1K
R19E 1K
HIN [56]
R2E 1K
U49C
U35E
U48C
U49B
HLT FF
U19A
U41B
U43B
U4C
HLT SW FF
U42C
U42A
U18F
(3A) UDS FF (M)
U13A
U13B
33 INCM [200]
60 DECM [33]
(10A)
(9B)
(11C)
(12B, SH2)
U14C
U15A
62 SRH [453]
U14A
U15B
59 SSIN [470]
U14B
U15D
58 SSCY [469]
U9A
U4A
U27C
OPIH
(2A) (B)
LOADER ENABLE
DS17
S17
R16B 133
R15B 1K
LDR SW (1A)
INTERNAL PRESET
DS18
S18
R16G 133
R17A 1K
INPR SW (1A)
EXTERNAL PRESET
DS19
S19
R18G 133
R17B 1K
EXPR SW (1A)
INTERRUPT SYSTEM
DS31
S31
R18B 133
R17G 1K
INTSY SW (1A)
EXTEND
DS32
S32
R18D 133
R19E 1K
EXTD SW (1A)
OVF
DS33
S33
P20A
R19F 1K
OVF SW (1A)
R33 1K
U50C
U27A
U47B
U51C
U52C
U13D
U54B
U54A
U58B
EPRSI [43]
IEN5 [198]
EXTEND [44]
OVFF [51]
SW ENBL

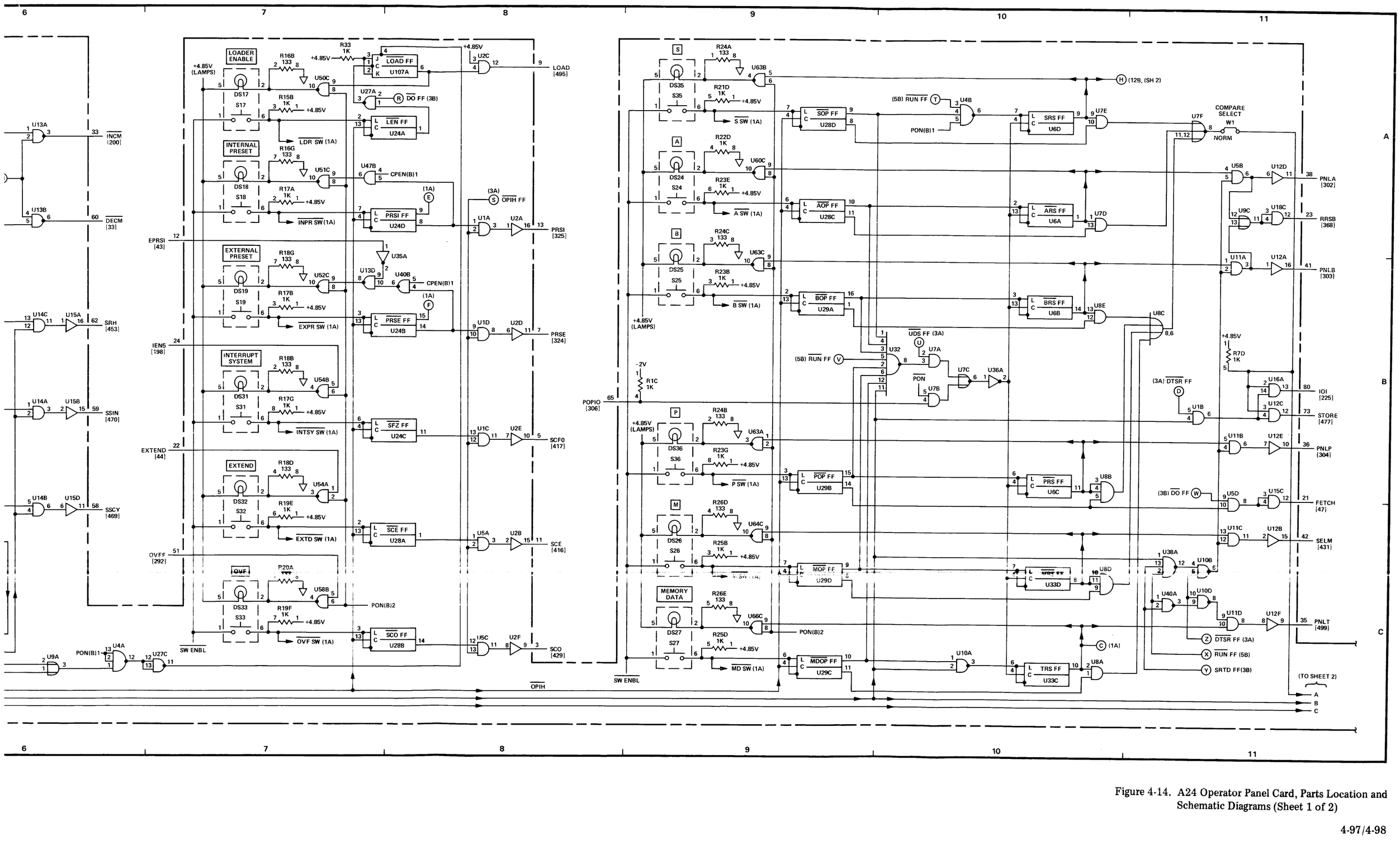
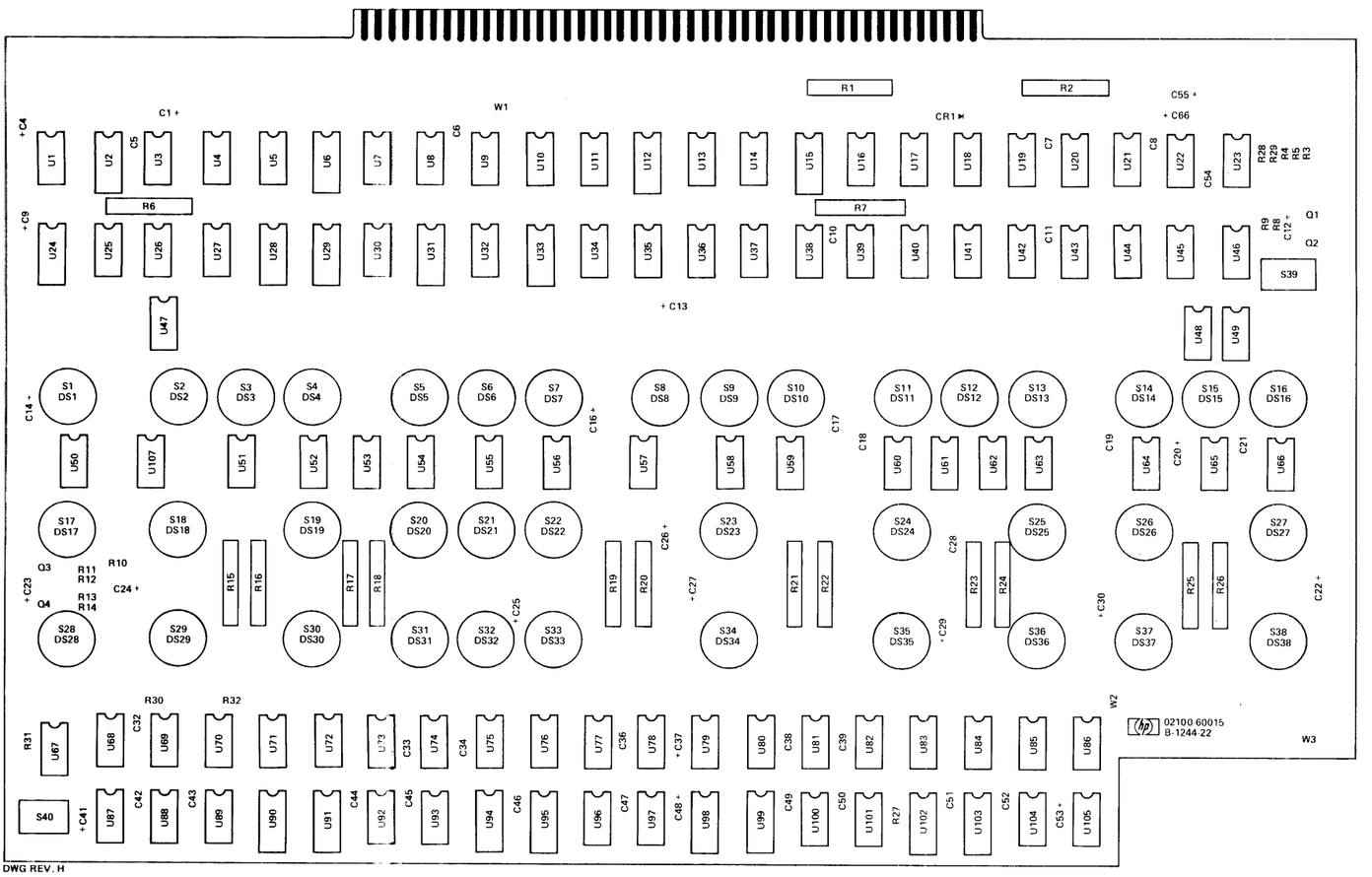


Figure 4-14. A24 Operator Panel Card, Parts Location and Schematic Diagrams (Sheet 1 of 2)

(Information continues on next page)

REF. NO.	BACKPLANE LOCATION					* INDICATES SIGNAL SOURCE
A24						
205	A8-13*	A24-71	A10-26,35	THRU	A23-26,35	
206	A8-12*	A24-70	A10-29,38	THRU	A23-29,38	
207	A8-11*	A24-68	A10-30,41	THRU	A23-30,41	
208	A8-17*	A24-72	A10-45,64	THRU	A23-45,64	
209	A8-16*	A24-54	A10-42,77	THRU	A23-42,77	
210	A8-15*	A24-53	A10-51,80	THRU	A23-51,80	
211	A8-10*	A24-63	A10-53,81	THRU	A23-53,81	
212	A8-32*	A24-61	A10-52,84	THRU	A23-52,84	
213	A8-31*	A24-32	A10-27,54	THRU	A23-27,54	
214	A8-29*	A24-34	A10-28,56	THRU	A23-28,56	
215	A8-28*	A24-46	A10-31,58	THRU	A23-31,58	
216	A8-27*	A24-44	A10-55,60	THRU	A23-55,60	
217	A8-26*	A24-14	A10-57,78	THRU	A23-57,78	
218	A8-25*	A24-16	A10-61,79	THRU	A23-61,79	
219	A8-30*	A24-20	A10-65,82	THRU	A23-65,82	
220	A8-34*	A24-18	A10-74,83	THRU	A23-74,83	
222	A3-76	A7-43	A8-46*	A9-45*	A10-15 THRU A23-15	
	A24-6					
225	A7-53	A8-82*	A24-4	A24-80*	A10-24 THRU A23-24	
226	A3-77	A8-78*	A9-32	A24-10	A10-20 THRU A23-20	
294	A8-69*	A24-52				
296	A1-41*	A8-53	A24-49			
297	A1-30*	A7-12	A8-71	A24-50		
298	A1-28*	A24-28				
299	A1-26*	A24-30				
412	A4-71	A7-49*	A8-74	A24-8		



DWG REV. H

SEE TABLE 4-13 FOR REPLACEABLE PARTS.

NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. A 1123-22 AND A-1244-22.

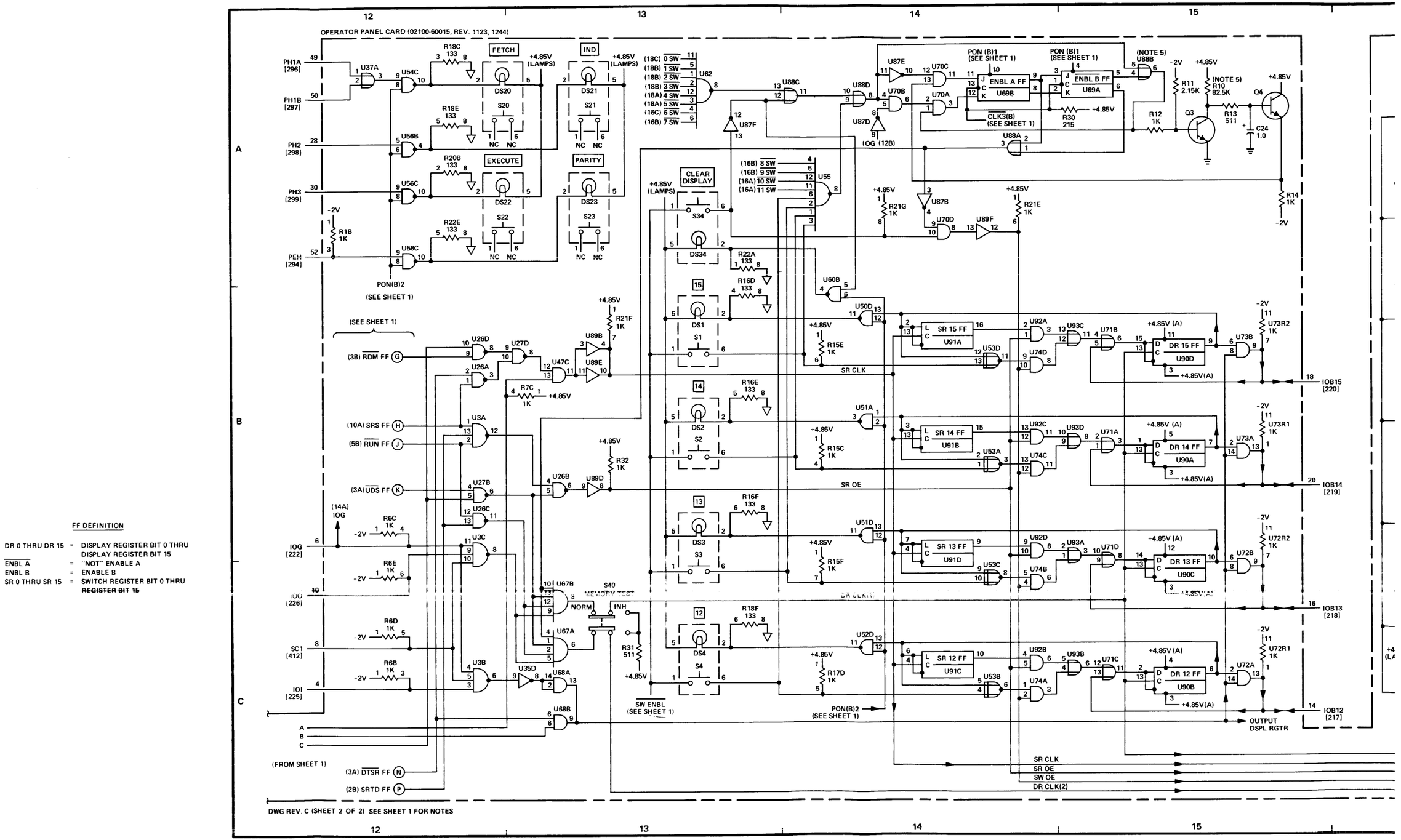
FF DEFINITION

DR 0 THRU DR 15 = DISPLAY REGISTER BIT 0 THRU DISPLAY REGISTER BIT 15

ENBL A = "NOT" ENABLE A

ENBL B = ENABLE B

SR 0 THRU SR 15 = SWITCH REGISTER BIT 0 THRU REGISTER BIT 15



FF DEFINITION

DR 0 THRU DR 15	=	DISPLAY REGISTER BIT 0 THRU DISPLAY REGISTER BIT 15
$\overline{\text{ENBL A}}$	=	"NOT" ENABLE A
ENBL B	=	ENABLE B
SR 0 THRU SR 15	=	SWITCH REGISTER BIT 0 THRU ~~REGISTER BIT 15~~

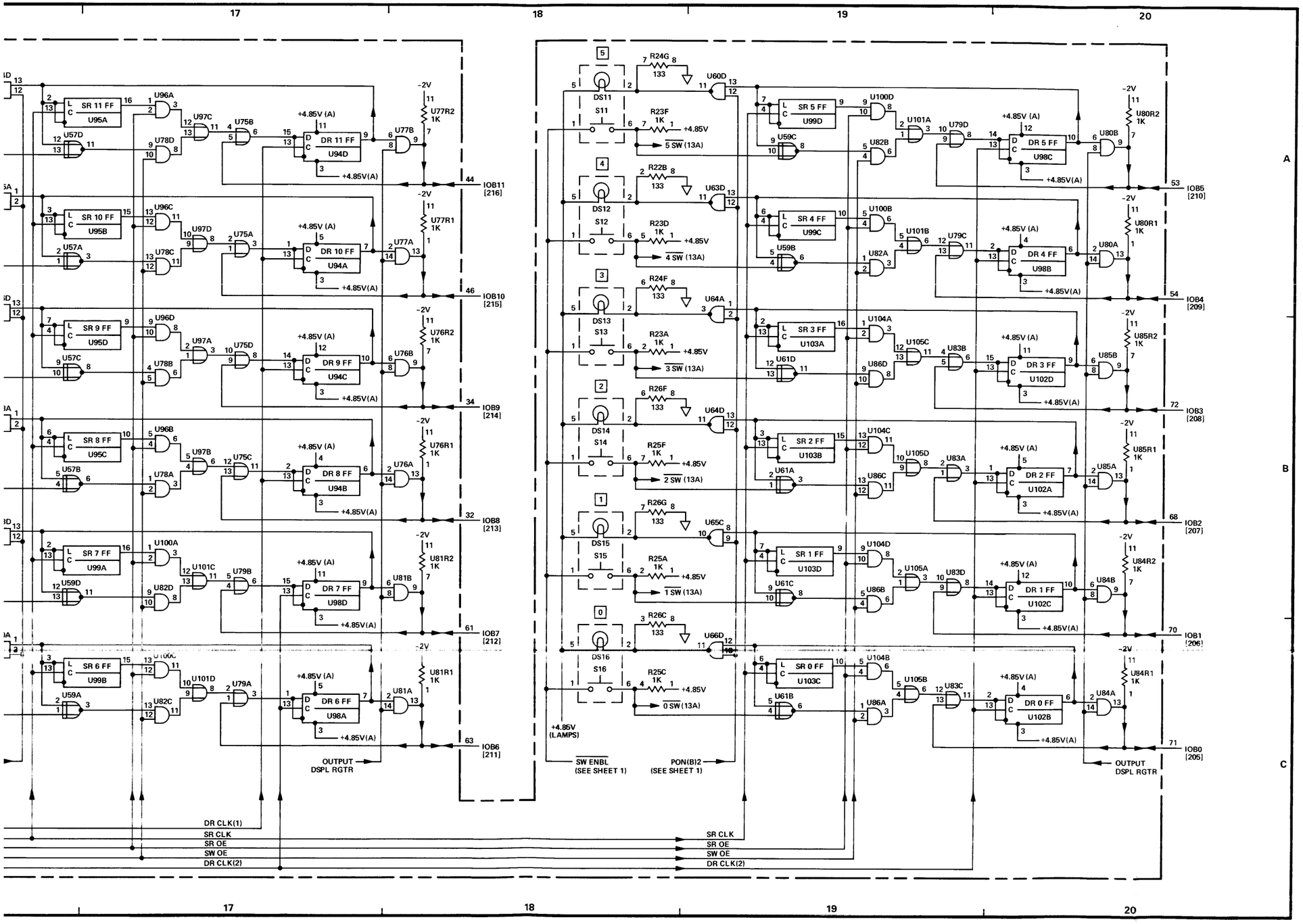
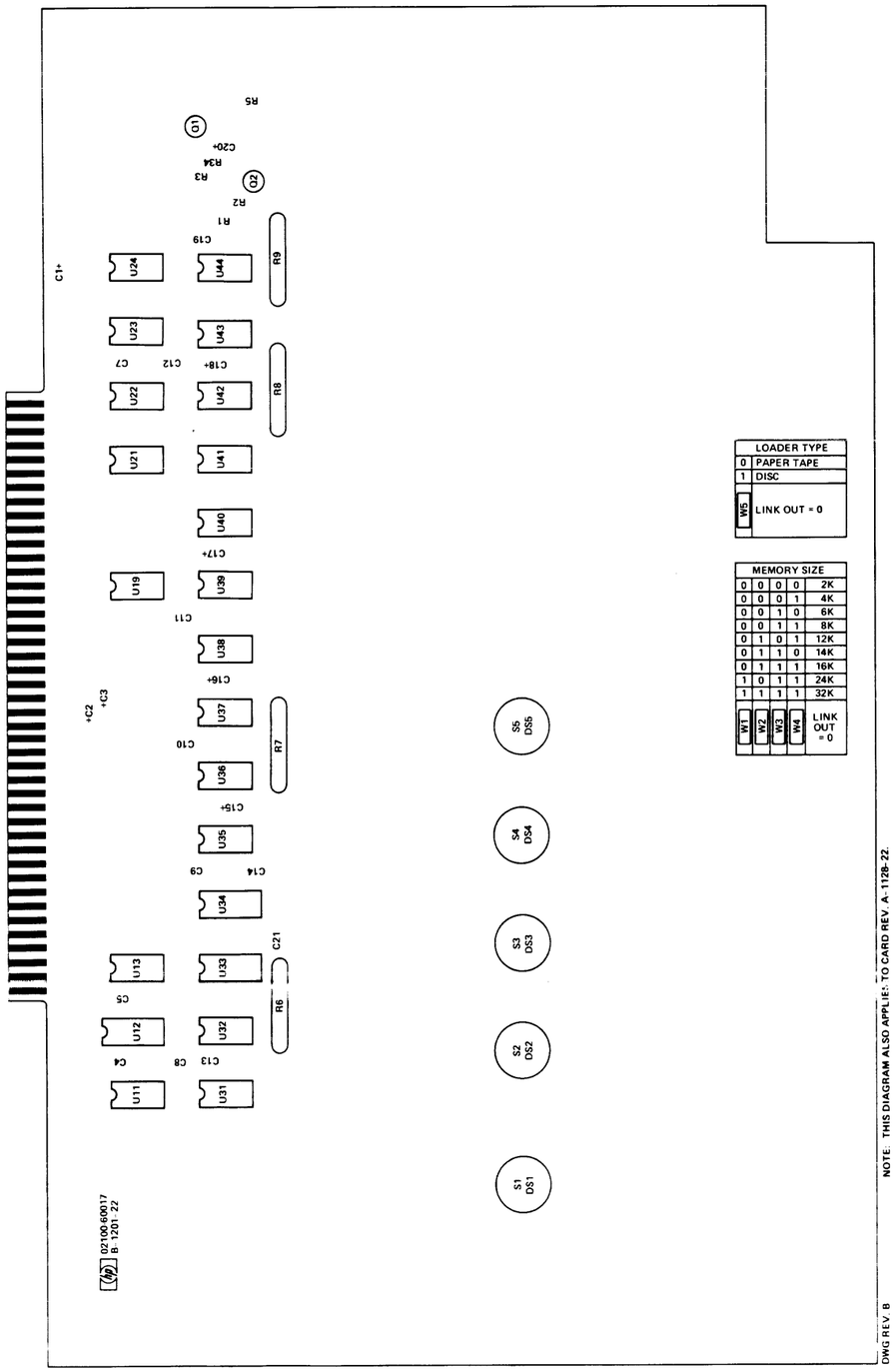


Figure 4-14. A24 Operator Panel Card, Parts Location and Schematic Diagrams (Sheet 2 of 2)

Table 4-14. A24 Controller Panel Card (Option 001), Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A24	02100-60017	1	CONTROLLER PANEL CARD	28480	02100-60017
A24C1	0180-0106	7	C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C2	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C3	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C4	0160-2055	13	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C5	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C7	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C10	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C15	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C16	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C17	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C18	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A24C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24C20	0180-0197	1	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A24C21	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A24DS1	2140-0364	5	LAMP:INCANDESCENT	28480	2140-0364
A24DS2	2140-0364		LAMP:INCANDESCENT	28480	2140-0364
A24DS3	2140-0364		LAMP:INCANDESCENT	28480	2140-0364
A24DS4	2140-0364		LAMP:INCANDESCENT	28480	2140-0364
A24DS5	2140-0364		LAMP:INCANDESCENT	28480	2140-0364
A24Q1	1854-0477	2	TSTR:SI NPN	80131	2N2222A
A24Q2	1854-0477		TSTR:SI NPN	80131	2N2222A
A24R1	0757-0280	2	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A24R2	0698-0084	1	R:FXD MET FLM 2.15K OHM 1% 1/8W	28480	0698-0084
A24R3	0757-0442	1	R:FXD MET FLM 10.0K OHM 1% 1/8W	28480	0757-0442
A24R4	0757-0416	1	R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A24R5	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A24R6	1810-0030	3	NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R7	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R8	1810-0030		NETWORK:7 RESISTORS 1K OHM 5% 0.15W EA	28480	1810-0030
A24R9	1810-0063	1	RESISTIVE NETWORK:7 X 133 OHM 5% 2W EA	28480	1810-0063
A24S1	3101-1531	5	SWITCH:REED	28480	3101-1531
A24S2	3101-1531		SWITCH:REED	28480	3101-1531
A24S3	3101-1531		SWITCH:REED	28480	3101-1531
A24S4	3101-1531		SWITCH:REED	28480	3101-1531
A24S5	3101-1531		SWITCH:REED	28480	3101-1531
A24U11	1820-0068	1	IC:TTL TRIPLE 3-INPUT POS NAND GATE	12040	SN7410N
A24U12	1820-0301	1	IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A24U13	1820-0069	1	IC:TTL DUAL 4-INPT POS NAND GATE	01295	SN7420N
A24U19	1820-0451	2	IC:TTL DUAL J-K F/F	04713	MC3062P
A24U21	1820-0424	1	IC:TTL HS HEX INVERTER	04713	SN74H04N
A24U22	1820-0370	3	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U23	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U24	1820-0256	2	IC:DTL QUAD 2-INPUT POWER GATE	04713	MC858P
A24U31	1820-0141	2	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U32	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A24U33	1820-0485	2	IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A24U34	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A24U35	1820-0186	7	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U36	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U37	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U38	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U39	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U40	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U41	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A24U42	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A24U43	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A24U44	1820-0256		IC:DTL QUAD 2-INPUT POWER GATE	04713	MC858P
A24W1	8159-0005	5	JUMPER WIRE	28480	8159-0005
A24W2	8159-0005		JUMPER WIRE	28480	8159-0005
A24W3	8159-0005		JUMPER WIRE	28480	8159-0005
A24W4	8159-0005		JUMPER WIRE	28480	8159-0005
A24W5	8159-0005		JUMPER WIRE	28480	8159-0005

REF. NO.	BACKPLANE LOCATION					
						* INDICATES SIGNAL SOURCE
A24						
22	A1-78*	A3-81	A7-56	A8-42	A9-76	A24-64
	A107-69					
28	A1-52*	A4-19	A24-43			
43	A7-42*	A24-12				
56	A1-65	A7-65*	A8-50*	A24-74		
209	A8-16*	A24-54	A10-42,77 THRU A23-42,77			
210	A8-15*	A24-53	A10-51,80 THRU A23-51,80			
211	A8-10*	A24-63	A10-53,81 THRU A23-53,81			
212	A8-32*	A24-61	A10-52,84 THRU A23-52,84			
213	A8-31*	A24-32	A10-27,54 THRU A23-27,54			
214	A8-29*	A24-34	A10-28,56 THRU A23-28,56			
215	A8-28*	A24-46	A10-31,58 THRU A23-31,58			
216	A8-27*	A24-44	A10-55,60 THRU A23-55,60			
217	A8-26*	A24-14	A10-57,78 THRU A23-57,78			
218	A8-25*	A24-16	A10-61,79 THRU A23-61,79			
219	A8-30*	A24-20	A10-65,82 THRU A23-65,82			
225	A7-53	A8-82*	A24-4	A24-80*	A10-24 THRU A23-24	
294	A8-69*	A24-52				
301	A24-79	S1A-8				
302	A3-60	A4-28	A24-38*			
303	A3-72	A4-26	A24-41*			
304	A3-32	A24-36*				
305	A1-6	A7-8*	A24-67	A104-42	A107-70	
	A10-66 THRU A23-66					
324	A7-22	A24-7*				
325	A1-4	A24-13*				
453	A1-74	A24-62*				
477	A3-53*	A9-38*	A24-73	A107-73		
495	A24-9*	A107-67				



LOADER TYPE	
0	PAPER TAPE
1	DISC
W5	LINK OUT = 0

MEMORY SIZE				
0	0	0	0	2K
0	0	0	1	4K
0	0	1	0	6K
0	0	1	1	8K
0	1	0	1	12K
0	1	1	0	14K
0	1	1	1	16K
1	0	1	1	24K
1	1	1	1	32K
W1	W2	W3	W4	LINK OUT = 0

NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1128-22.

See table 4-14 for replaceable parts.

FF DEFI

$\overline{\text{PRSI}}$	=	"NO
ENABLE A	=	ENA
ENABLE B	=	ENA
LOAD	=	"NO
LOAD 2	=	"NO
RUN	=	"NO

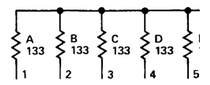
NOTES:

1. RESISTANCE VALUES ARE
   VALUES ARE IN UF UNLES
2. NUMERALS WITHIN BRACI
   LIST REFERENCE NUMBEF
3. JUMPERS W1 THRU W4 ARI
   TO THE MEMORY CAPACIT
   AS SHOWN BELOW.

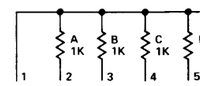
MEMORY CAPACITY	JUMPI CONNE
2K	NONE
4K	W4
6K	W3
8K	W3,W4
12K	W2,W4
14K	W2,W3
16K	W2,W3,W
24K	W1,W3,W
32K	W1,W2,W

4. JUMPER W5 IS CONNECTED
   IS USED AND IS REMOVED W
   IS USED.
5. NO INTERNAL CONNECTION
   27, 29, AND 37 ON CARD RE
6. CONNECTION BETWEEN +4.5
   RESPECTIVE COMMON RETU
   PROVIDED ON CARD REV. 1

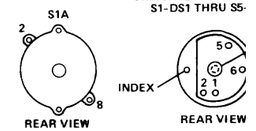
SCHEMATIC DIAG
FOR RESISTOR NETV



SCHEMATIC DIAG
FOR RESISTOR NETWOR



PIN IDENTIFICATIC
SWITCH-LAMP ASSE
S1-DS1 THRU S5-



FF DEFINITIONS

= "NOT" PRESET INTERNAL
E A = ENABLE A
E B = ENABLE B
= "NOT" LOAD
2 = "NOT" LOAD 2
= "NOT" RUN

E VALUES ARE IN OHMS AND CAPACITANCE
E IN UF UNLESS OTHERWISE SPECIFIED'

WITHIN BRACKETS [ ] ARE WIRING
ENCE NUMBERS.

'1 THRU W4 ARE CONFIGURED ACCORDING
MORY CAPACITY OF THE COMPUTER,
BELOW.

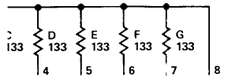
	JUMPERS CONNECTED	JUMPERS REMOVED
	NONE	W1,W2,W3,W4
	W4	W1,W2,W3
	W3	W1,W2,W4
	W3,W4	W1,W2
	W2,W4	W1,W3
	W2,W3	W1,W4
	W2,W3,W4	W1
	W1,W3,W4	W2
	W1,W2,W3,W4	NONE

S CONNECTED WHEN A DISC-TYPE LOADER
IS REMOVED WHEN A PAPER TAPE LOADER

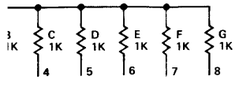
L CONNECTION IS PROVIDED TO PINS 25, 26,
7 ON CARD REV. 1128.

I BETWEEN +4.85V SUPPLIES AND THE
COMMON RETURN LINES ARE NOT
N CARD REV. 1128.

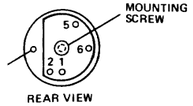
HEMATIC DIAGRAM
ESISTOR NETWORK R4



HEMATIC DIAGRAM
STOR NETWORKS R1, R2, R3



IDENTIFICATION FOR
CH-LAMP ASSEMBLIES
I-DS1 THRU S5-DS5



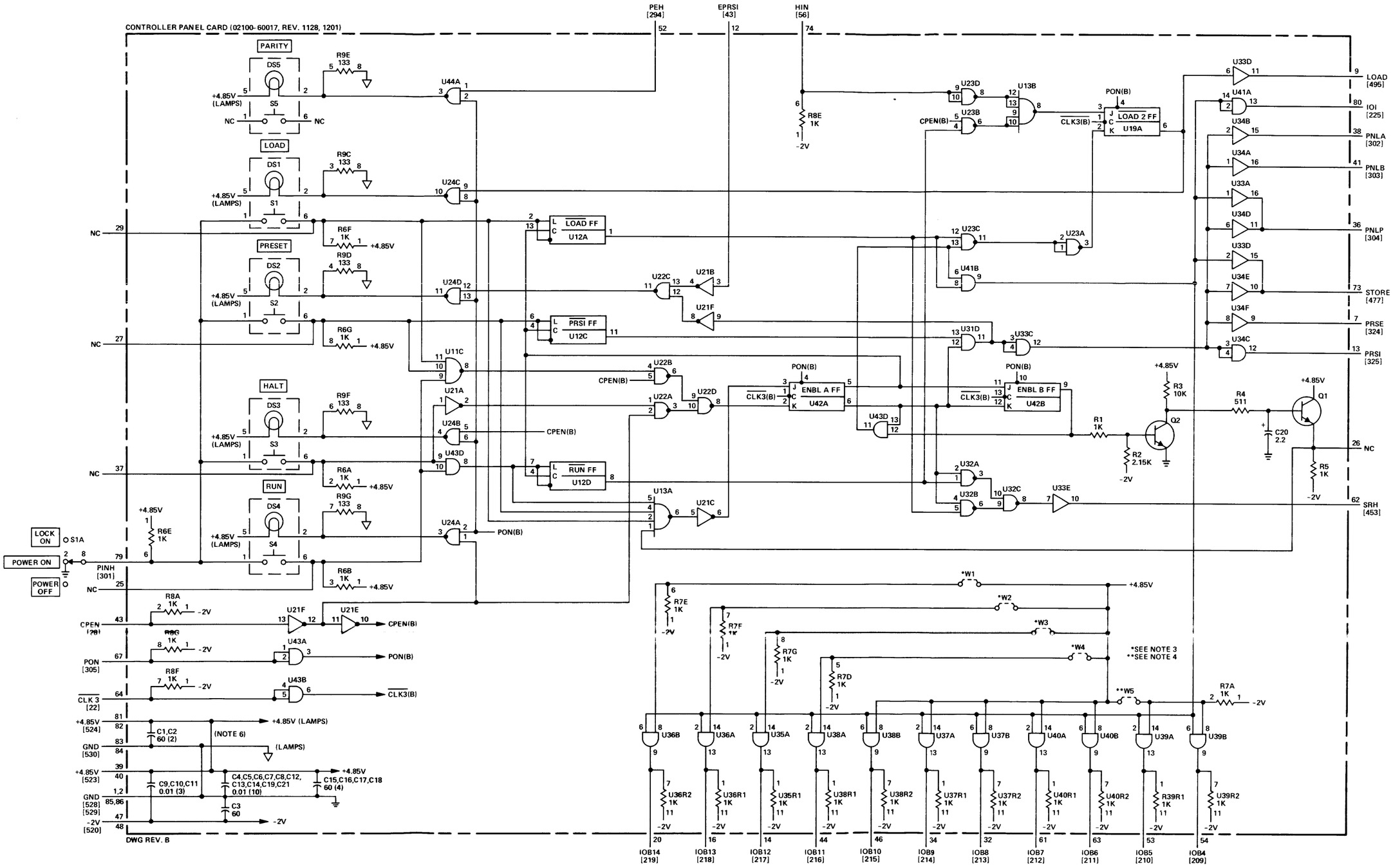


Figure 4-15. A24 Controller Panel Card (Option 001), Parts Location and Schematic Diagrams

Table 4-15. A101, A104, A109, A112 X-Y Driver/Switch Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A101	02100-60012	4	X-Y DRIVER/SWITCH CARD	28480	02100-60012
A101C1	0160-2940	3	C:FXD MICA 470 PF 5% 300VDCW	72136	RDM15F471J3C
A101C2	0160-2940		C:FXD MICA 470 PF 5% 300VDCW	72136	RDM15F471J3C
A101C3	0160-2940		C:FXD MICA 470 PF 5% 300VDCW	72136	RDM15F471J3C
A101C5	0160-0127	8	C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A101C6	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A101C7	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A101C8	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A101C9	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A101C10	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A101C11	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A101C12	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A101C13	0180-0161	2	C:FXD ELECT 3.3 UF 20% 35VDCW	56289	150D335X0035B2-DYS
A101C14	0180-0161		C:FXD ELECT 3.3 UF 20% 35VDCW	56289	150D335X0035B2-DYS
A101CR1 THRU A101CR96	1901-0040	96	DIODE: SILICON 30MA 30WV	07263	FDG1088
A101E1	0360-0294	6	TERMINAL:SOLDER POINT	28480	0360-0294
A101E2	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A101E3	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A101E4	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A101E5	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A101E6	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A101Q1	1853-0015	4	TSTR:SI PNP	80131	2N3640
A101Q2	1854-0019	4	TSTR:SI NPN	28480	1854-0019
A101Q3	1854-0019		TSTR:SI NPN	28480	1854-0019
A101Q4	1853-0015		TSTR:SI PNP	80131	2N3640
A101Q5	1853-0015		TSTR:SI PNP	80131	2N3640
A101Q6	1854-0019		TSTR:SI NPN	28480	1854-0019
A101Q7	1853-0015		TSTR:SI PNP	80131	2N3640
A101Q8	1854-0019		TSTR:SI NPN	28480	1854-0019
A101R1 THRU A101R32	0757-0280	36	R: FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A101R33 THRU A101R48	0698-3444	16	R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A101R49 THRU A101R116	0757-0180	68	R:FXD MET FLM 31.6 OHM 1% 1/8W	28480	0757-0180
A101R117	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A101R118	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A101R119	0698-3437	4	R:FXD MET FLM 133 OHM 1% 1/8W	28480	0698-3437
A101R120	0757-0421	4	R:FXD MET FLM 825 OHM 1% 1/8W	28480	0757-0421
A101R121(NOTE 1)	0757-0274	4	R:FXD MET FLM 1.21K OHM 1% 1/8W	28480	0757-0274
A101R121(NOTE 2)	0757-0421	4	R:FXD MET FLM 825 OHM 1% 1/8W	28480	0757-0421
A101R122	0698-3437		R:FXD MET FLM 133 OHM 1% 1/8W	28480	0698-3437
A101R123	0757-0421		R:FXD MET FLM 825 OHM 1% 1/8W	28480	0757-0421
A101R124(NOTE 1)	0757-0274		R:FXD MET FLM 1.21K OHM 1% 1/8W	28480	0757-0274
A101R124(NOTE 2)	0757-0421		R:FXD MET FLM 825 OHM 1% 1/8W	28480	0757-0421
A101R125	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A101R126	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A101R127(NOTE 1)	0757-0274		R:FXD MET FLM 1.21K OHM 1% 1/8W	28480	0757-0274
A101R127(NOTE 2)	0757-0421		R:FXD MET FLM 825 OHM 1% 1/8W	28480	0757-0421
A101R128	0698-3437		R:FXD MET FLM 133 OHM 1% 1/8W	28480	0698-3437
A101R129	0757-0421		R:FXD MET FLM 825 OHM 1% 1/8W	28480	0757-0421
A101R130(NOTE 1)	0757-0274		R:FXD MET FLM 1.21K OHM 1% 1/8W	28480	0757-0274
A101R130(NOTE 2)	0757-0421		R:FXD MET FLM 825 OHM 1% 1/8W	28480	0757-0421
A101R131	0698-3437		R:FXD MET FLM 133 OHM 1% 1/8W	28480	0698-3437
A101R132	0757-0421		R:FXD MET FLM 825 OHM 1% 1/8W	28480	0757-0421
A101R133	0757-1090	4	R:FXD MET FLM 261 OHM 1% 1/2W	28480	0757-1090
A101R134	0757-1090		R:FXD MET FLM 261 OHM 1% 1/2W	28480	0757-1090
A101R135	0757-1090		R:FXD MET FLM 261 OHM 1% 1/2W	28480	0757-1090
A101R156	0757-1090		R:FXD MET FLM 261 OHM 1% 1/2W	28480	0757-1090
A101R157	0811-2084	4	R:FXD WW 43 OHM 1% 5W	28480	0811-2084
A101R158	0811-2084		R:FXD WW 43 OHM 1% 5W	28480	0811-2084
A101R159	0811-2084		R:FXD WW 43 OHM 1% 5W	28480	0811-2084
A101R160	0811-2084		R:FXD WW 43 OHM 1% 5W	28480	0811-2084
A101R161 THRU A101R224	0757-0403	64	R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A101T1 THRU A101T16	9100-3130	16	TRANSFORMER:PULSE	28480	9100-3130
A101U1 THRU A101U16	1821-0006	16	TSTR:QUAD NPN NETWORK	28480	1821-0006
A101U17	1820-0482	8	IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A101U18	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A101U19	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A101U20	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A101U21	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A101U22	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A101U23	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A101U24	1820-0482		IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A101W1	8159-0005	6	JUMPER WIRE	28480	8159-0005
A101W2	8159-0005		JUMPER WIRE	28480	8159-0005

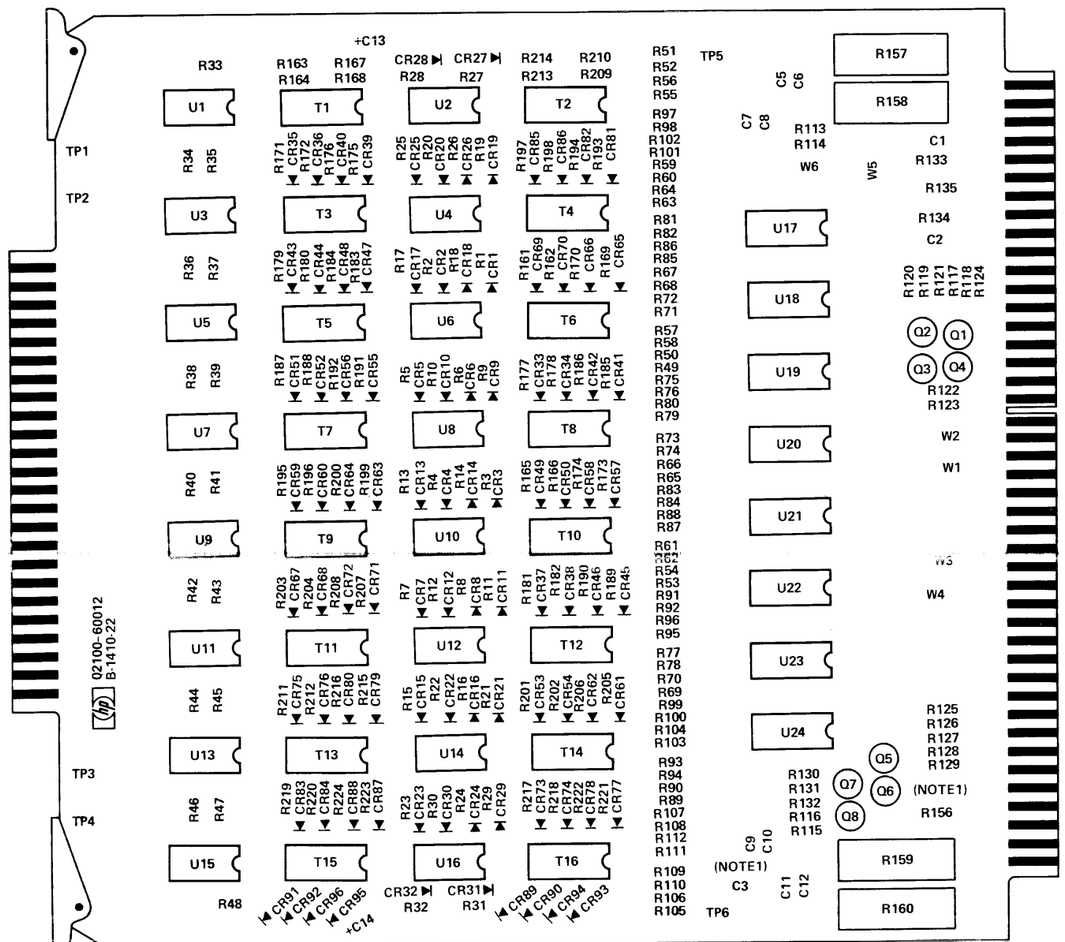
NOTES: 1. USED ON CARD REV. 1121, 1132, AND 1152.
2. USED ON CARD REV. 1410 AND SUBSEQUENT.

Table 4-15. A101, A104, A109, A112 X-Y Driver/Switch Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A101W3	8159-0005		JUMPER WIRE	28480	8159-0005
A101W4	8159-0005		JUMPER WIRE	28480	8159-0005
A101W5	8159-0005		JUMPER WIRE	28480	8159-0005
A101W6	8159-0005		JUMPER WIRE	28480	8159-0005
A104			SAME AS A101, USE PREFIX A104		
A109			SAME AS A101, USE PREFIX A109		
A112			SAME AS A101, USE PREFIX A112		

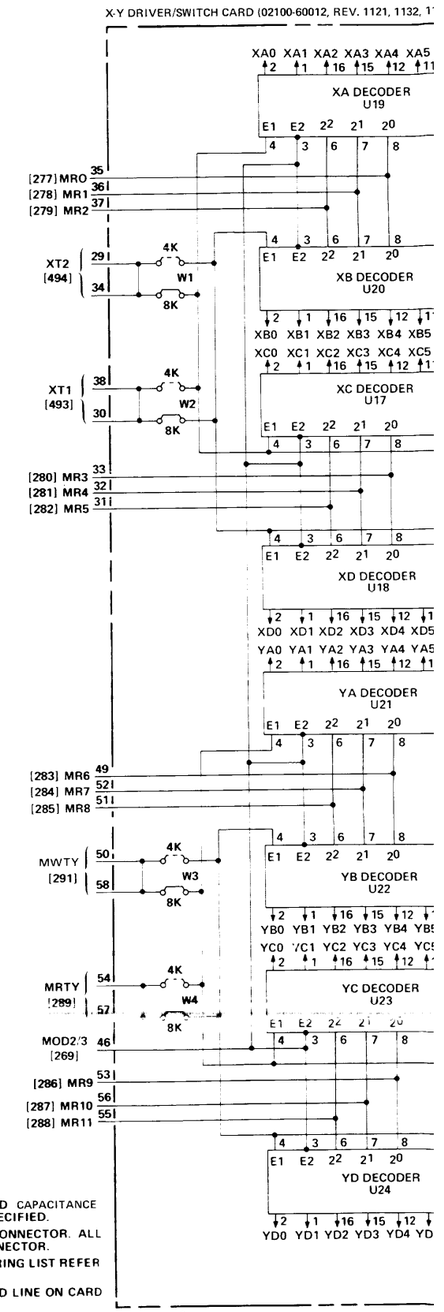
* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION				
A101					
269	A101-46	A107-60*			
277	A101-35	A104-35	A107-3*	A109-35	A112-35
278	A101-36	A104-36	A107-5*	A109-36	A112-36
279	A101-37	A104-37	A107-8*	A109-37	A112-37
280	A101-33	A104-33	A107-10*	A109-33	A112-33
281	A101-32	A104-32	A107-24*	A109-32	A112-32
282	A101-31	A104-31	A107-23*	A109-31	A112-31
283	A101-49	A104-49	A107-25*	A109-49	A112-49
284	A101-52	A104-52	A107-26*	A109-52	A112-52
285	A101-51	A104-51	A107-27*	A109-51	A112-51
286	A101-53	A104-53	A107-4*	A109-53	A112-53
287	A101-56	A104-56	A107-30*	A109-56	A112-56
288	A101-55	A104-55	A107-32*	A109-55	A112-55
289	A107-84*	A101-54,57	A104-54,57	A109-54,57	A112-54,57
291	A107-28*	A101-50,58	A104-50,58	A109-50,58	A112-50,58
493	A107-65*	A101-30,38	A104-30,38	A109-30,38	A112-30,38
494	A107-64*	A101-29,34	A104-29,34	A109-29,34	A112-29,34



See Table 4-15 for replaceable parts.

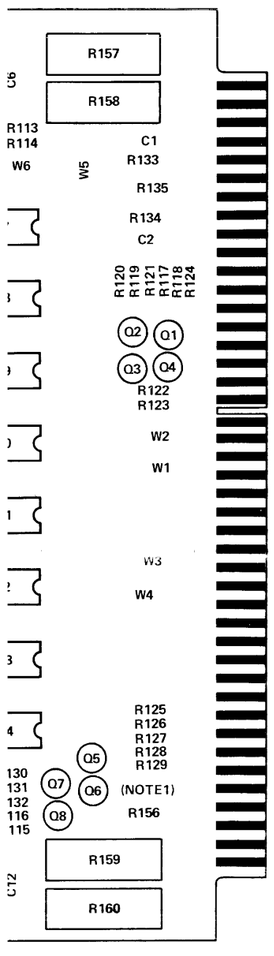
NOTES: 1. C3 IS LOCATED BELOW R129 ON CARD REV.1121 AND 1132
2. THIS DIAGRAM ALSO APPLIES TO CARD REV. 1152.

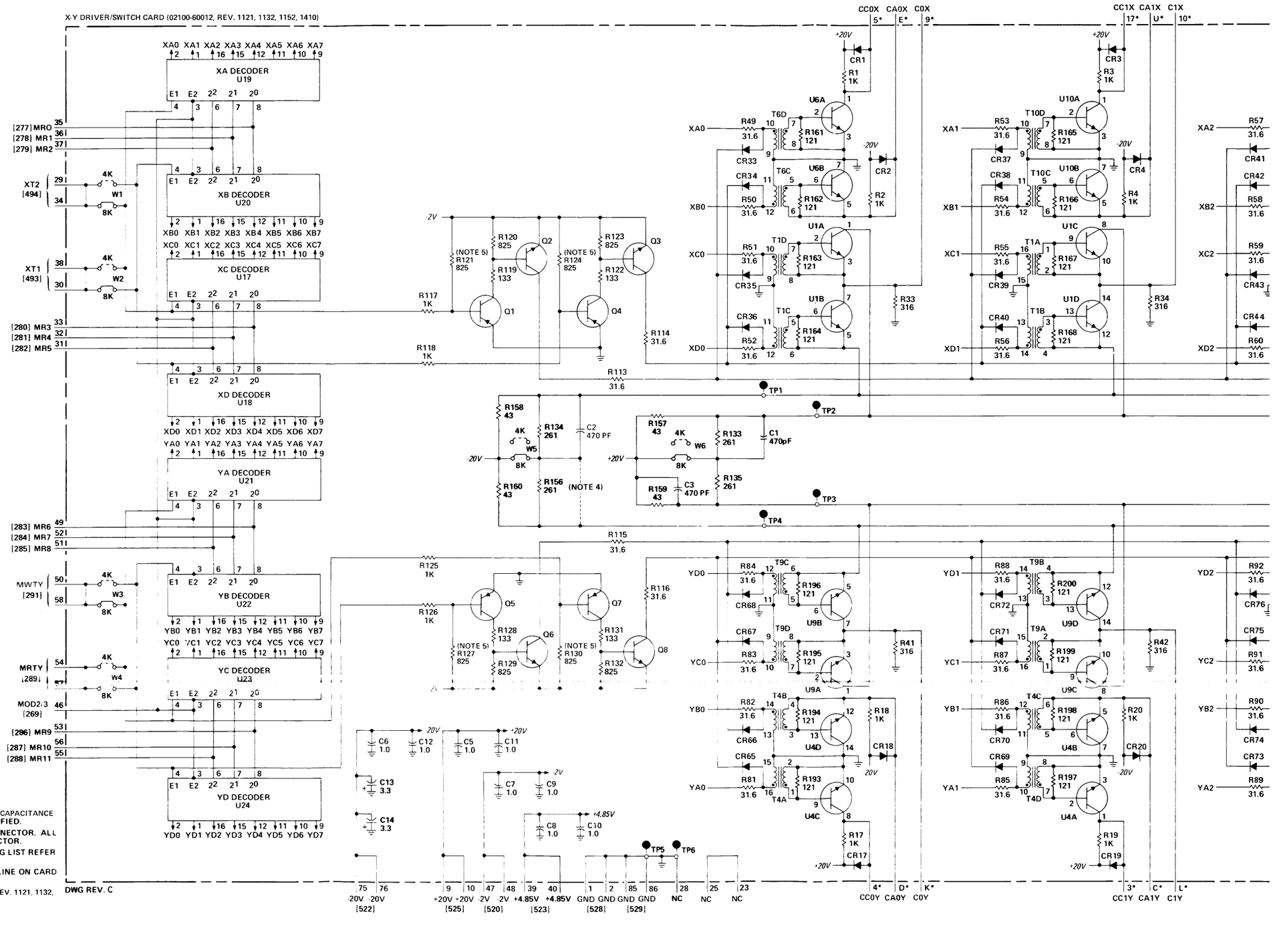


NOTES:
1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. C3 WIRED IN POSITION SHOWN BY DASHED LINE ON CARD REV. 1132 AND 1121.
5. R121, R124, R127, AND R130 ARE 1.2K ON CARD REV. 1121, 1132, AND 1152.

SOURCE

X-Y DRIVER/SWITCH CARD (02100-60012, REV. 1121, 1132, 1152, 1410)





NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. C3 WIRED IN POSITION SHOWN BY DASHED LINE ON CARD REV. 1132 AND 1121.
5. R121, R124, R127, AND R130 ARE 1.2K ON CARD REV. 1121, 1132, AND 1152.

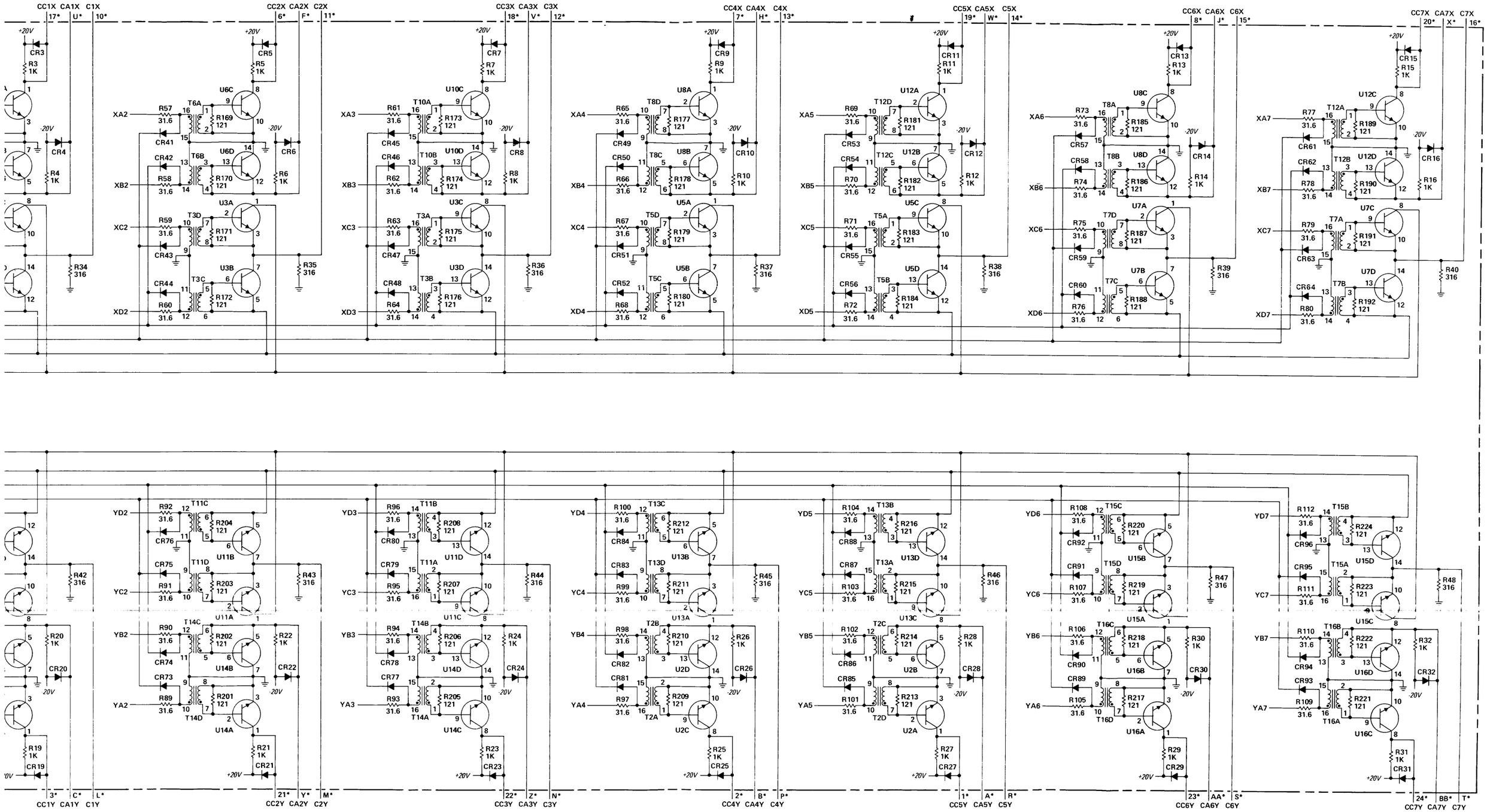


Figure 4-16. A101 X-Y Driver/Switch Card, Parts Location and Schematic Diagrams

Table 4-16. A102, A103 Core Stack/Sense Amplifier Card (4K), Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A102	02100-60040	2	CORE STACK/SENSE AMPL CARD-4K	28480	02100-60040
A102A1	5087-0002	1	4K CORE STACK ASSY	28480	5087-0002
A102C1	0160-2055	9	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C2	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C3	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C4	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C5	0160-0127	9	C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C6	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C7	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C8	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C9	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C10	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C11	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C13	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C15	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A102C16	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C17	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C18	0160-2307	1	C:FXD MICA 47 PF 5%	28480	0160-2307
A102C19 (NOTE1)	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C20 (NOTE1)	0180-0229	3	C:FXD ELECT 33 UF 10% 10VDCW	28480	0180-0229
A102C21 (NOTE1)	0180-0229		C:FXD ELECT 33 UF 10% 10VDCW	28480	0180-0229
A102C22 (NOTE1)	0180-0229		C:FXD ELECT 33 UF 10% 10VDCW	28480	0180-0229
A102CR1	1910-0016	1	DIODE:GERMANIUM 100MA/0.85V 60PIV	93332	D2361
A102Q1	1854-0215	18	TSTR:SI NPN	80131	2N3904
A102Q2	1853-0086	35	TSTR:SI PNP	80131	2N5087
A102Q3	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q4	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q5	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q6	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q7	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q8	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q9	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q10	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q11	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q12	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q13	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q14	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q15	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q16	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q17	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q18	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q19	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q20	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q21	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q22	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q23	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q24	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q25	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q26	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q27	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q28	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q29	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q30	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q31	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q32	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q33	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q34	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q35	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q36	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q37	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q38	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q39	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q40	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q41	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q42	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q43	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q44	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q45	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q46	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q47	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q48	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q49	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q50	1854-0215		TSTR:SI NPN	80131	2N3904

NOTES: 1. First used on card rev. 1148.

Table 4-16. A102, A103 Core Stack/Sense Amplifier Card (4K), Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A102Q51	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q52	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q53	1854-0215		TSTR:SI NPN	80131	2N3904
A102R1	0698-7310	34	R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R2	0757-0290	17	R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R3	0698-3447	17	R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R4	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R5	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R6	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R7	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R8	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R9	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R10	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R11	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R12	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R13	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R14	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R15	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R16	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R17	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R18	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R19	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R20	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R21	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R22	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R23	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R24	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R25	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R26	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R27	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R28	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R29	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R30	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R31	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R32	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R33	0698-3441	1	R:FXD MET FLM 215 OHM 1% 1/8W	28480	0698-3441
A102R34	0757-0280	1	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A102R35	0757-0417	1	R:FXD MET FLM 562 OHM 1% 1/8W	28480	0757-0417
A102R36	0757-0420	1	R:FXD MET FLM 750 OHM 1% 1/8W	28480	0757-0420
A102R37	0698-0082	1	R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A102R38	1810-0045	3	RESISTOR PACK:7 RES. 200 OHM 5% 0.15W	28480	1810-0045
A102R39	1810-0045		RESISTOR PACK:7 RES. 200 OHM 5% 0.15W	28480	1810-0045
A102R40	2100-2061	1	R:VAR FLM 200 OHM 10% LIN 1/2W	28480	2100-2061
A102R41	1810-0045		RESISTOR PACK:7 RES. 200 OHM 5% 0.15W	28480	1810-0045
A102R42	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R43	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R44	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R45	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R46	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R47	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R48	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R49	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R50	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R51	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R52	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R53	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R54	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R55	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R56	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R57	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R58	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R59	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R60	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R61	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R62	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R63	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R64	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R65	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R66	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R67	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R68	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R69	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R70	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R71	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R72	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310

Table 4-16. A102, A103 Core Stack/Sense Amplifier Card (4K), Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A102R73	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R74	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R75	0698-3447		R:FXD MET FLM 422 OHM 1% 1/8W	28480	0698-3447
A102R76	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
A102R77	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R78	0757-0401	1	R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A102U1	1858-0001	9	TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U2	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U3	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U4	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U5	0960-0111	9	BALUN MODULE	28480	0960-0111
A102U6	0960-0111		BALUN MODULE	28480	0960-0111
A102U7	0960-0111		BALUN MODULE	28480	0960-0111
A102U8	0960-0111		BALUN MODULE	28480	0960-0111
A102U9	1820-0370	1	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A102U10	0960-0111		BALUN MODULE	28480	0960-0111
A102U11	0960-0111		BALUN MODULE	28480	0960-0111
A102U12	0960-0111		BALUN MODULE	28480	0960-0111
A102U13	0960-0111		BALUN MODULE	28480	0960-0111
A102U14	0960-0111		BALUN MODULE	28480	0960-0111
A102U15	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U16	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U17	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U18	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U19	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U36 THRU A102U51	5087-1013	16	DIODE MODULE	28480	5087-1013
A103			SAME AS A102, USE PREFIX A103		

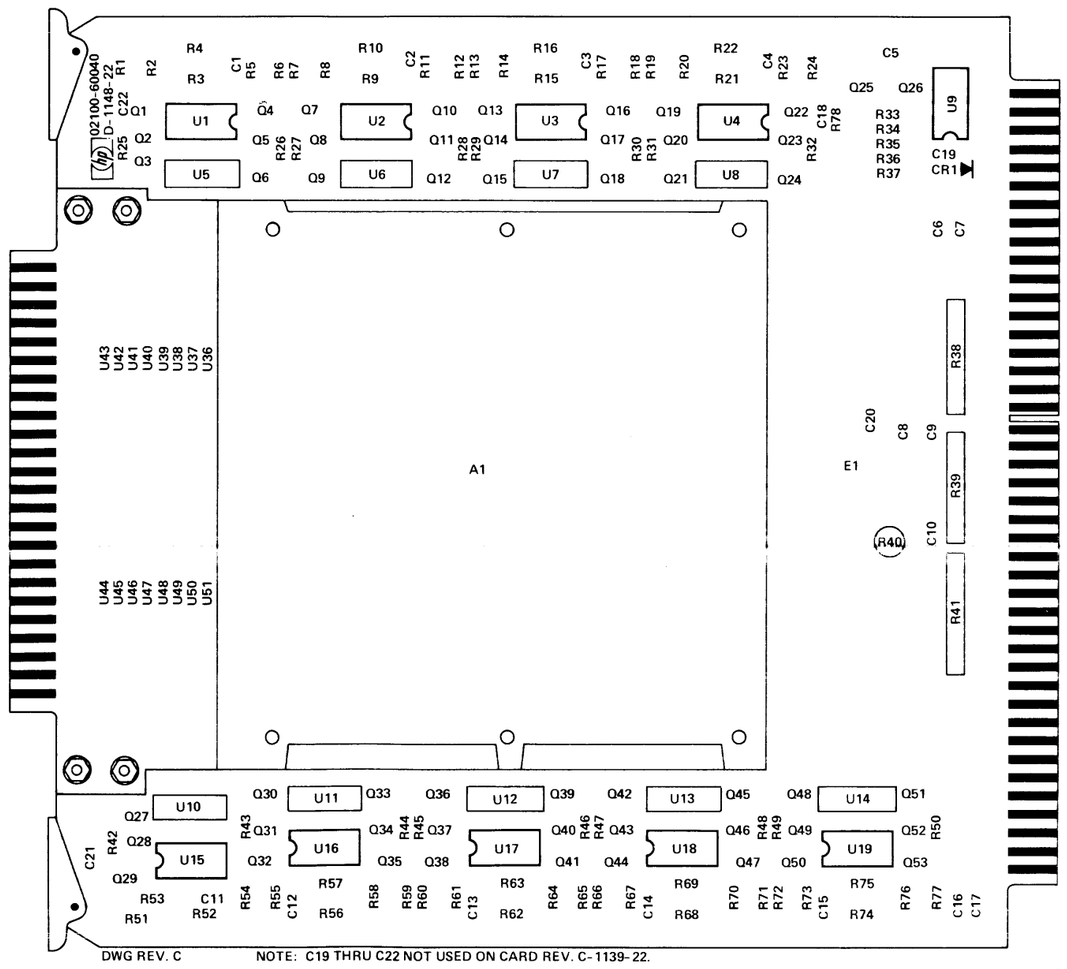
CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

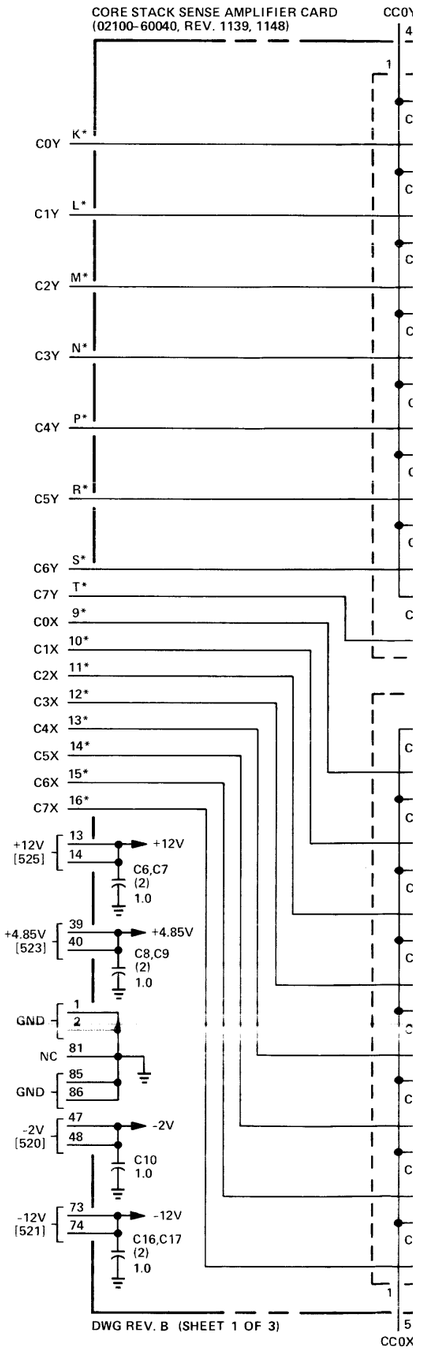
NOTES:

1. THIS CARD MUST NOT BE REPAIRED IN THE FIELD. FIELD REMOVAL OR REPLACEMENT OF ANY COMPONENT VOIDS THE WARRANTY ON THE CARD.
2. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
3. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
4. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
5. EACH FERRITE CORE SHOWN REPRESENTS 4,096 CORES.
6. † INDICATES SELECTED RESISTOR. R2, R5, AND R8 SELECTED FROM 5.11K, 5.62K, 6.19K, 6.81K, 7.50K, OR 8.25K. R11, R14, R17, R20, R23, R53, R55, R58, R61, R64, R67, R70, R73, R76 SELECTED FROM 5.62K OR 6.19K. NORMAL VALUES SHOWN.
7. C19 THRU C22 NOT USED ON CARD REV. 1139.



NOTE: C19 THRU C22 NOT USED ON CARD REV. C-1139-22.

See table 4-16 for replaceable parts.



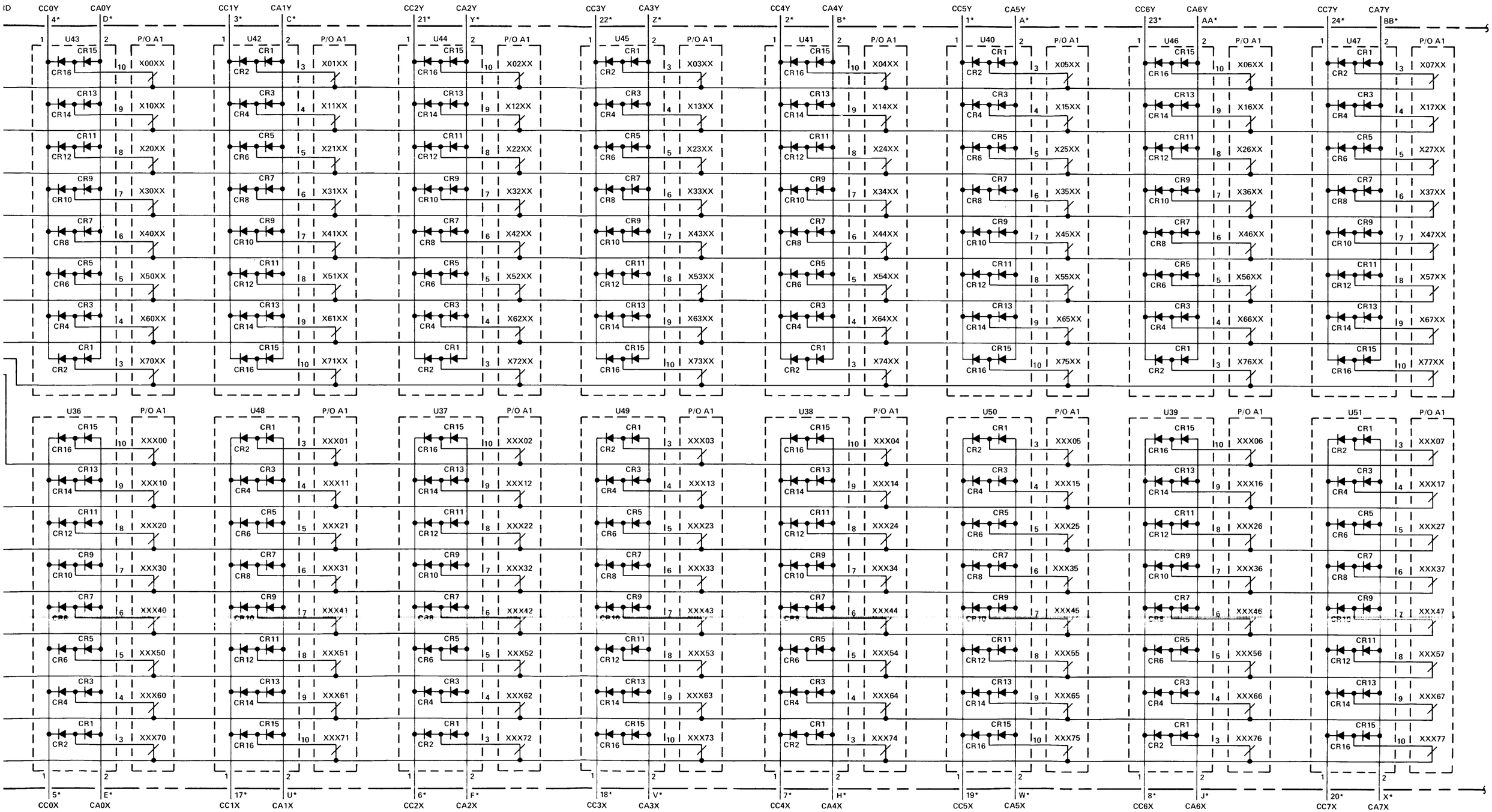


Figure 4-17. A102 Core Stack/Sense Amplifier Card (4K), Parts Location and Schematic Diagrams (Sheet 1 of 3)

CORE STACK/SENSE AMPLIFIER
(02100-60040, REV. 1139, 1148)

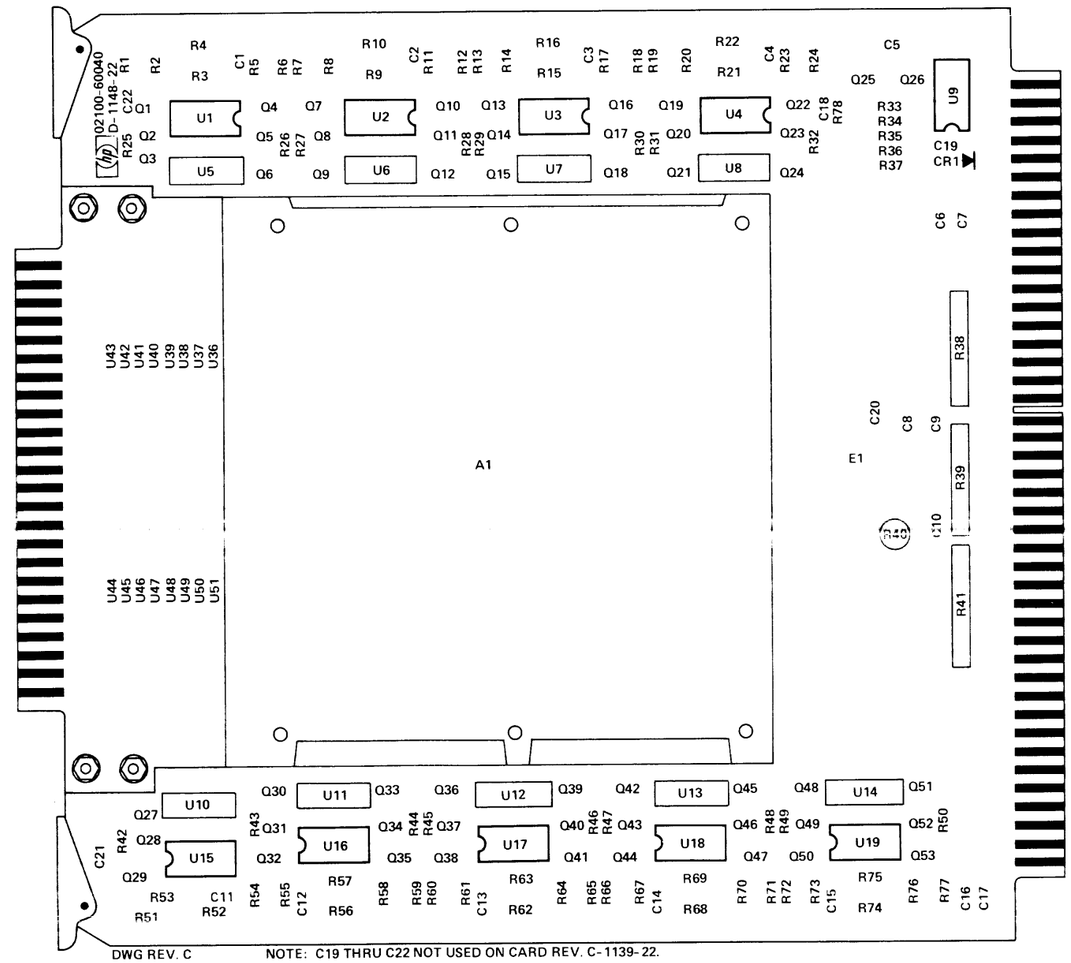
CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION				
A102 (4K)					
95	A102-25	A105-26*			
96	A102-27	A105-19*			
97	A102-29	A105-25*			
98	A102-31	A105-24*			
99	A102-33	A105-53*			
100	A102-35	A105-60*			
101	A102-37	A105-59*			
102	A102-41	A105-58*			
103	A102-43	A105-52*			
378	A102-15*	A103-15*	A107-13	A110-15*	A111-15*
379	A102-18*	A103-18*	A107-11	A110-18*	A111-18*
380	A102-17*	A103-17*	A107-7	A110-17*	A111-17*
381	A102-20*	A103-20*	A107-9	A110-20*	A111-20*
382	A102-19*	A103-19*	A107-17	A110-19*	A111-19*
383	A102-22*	A103-22*	A107-15	A110-22*	A111-22*
384	A102-21*	A103-21*	A107-19	A110-21*	A111-21*
385	A102-63*	A103-63*	A107-21	A110-63*	A111-63*
386	A102-64*	A103-64*	A107-31	A110-64*	A111-64*



DWG REV. C

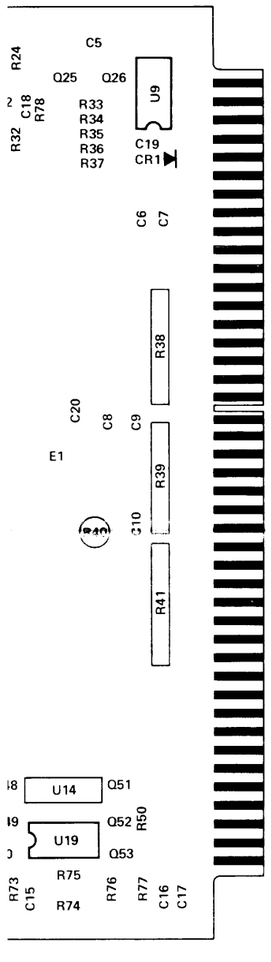
NOTE: C19 THRU C22 NOT USED ON CARD REV. C-1139-22.

See table 4-16 for replaceable parts.

DWG REV. B (SHEET 2 OF 3)
SEE SHEET 1 FOR NOTES

A102 –

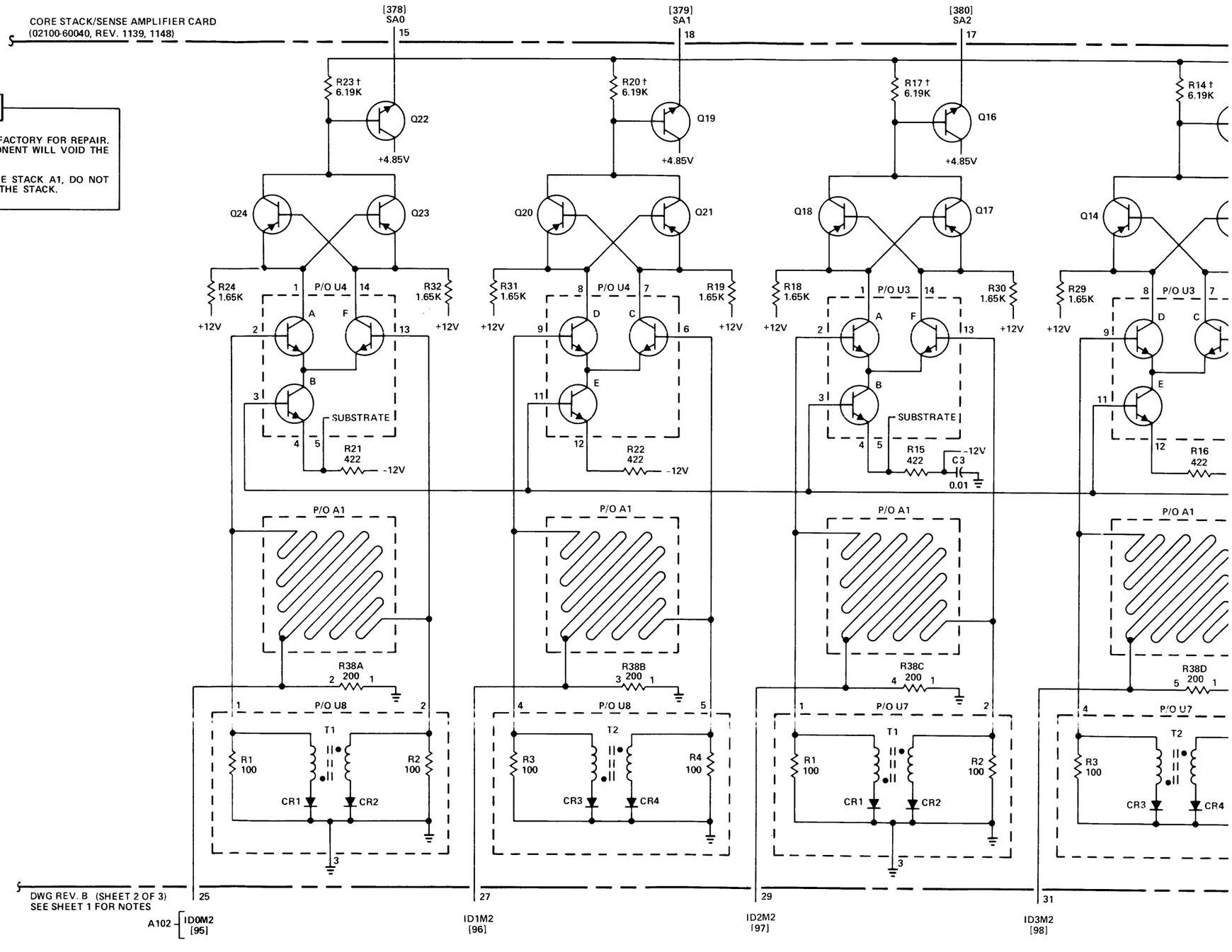
L SOURCE



CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.



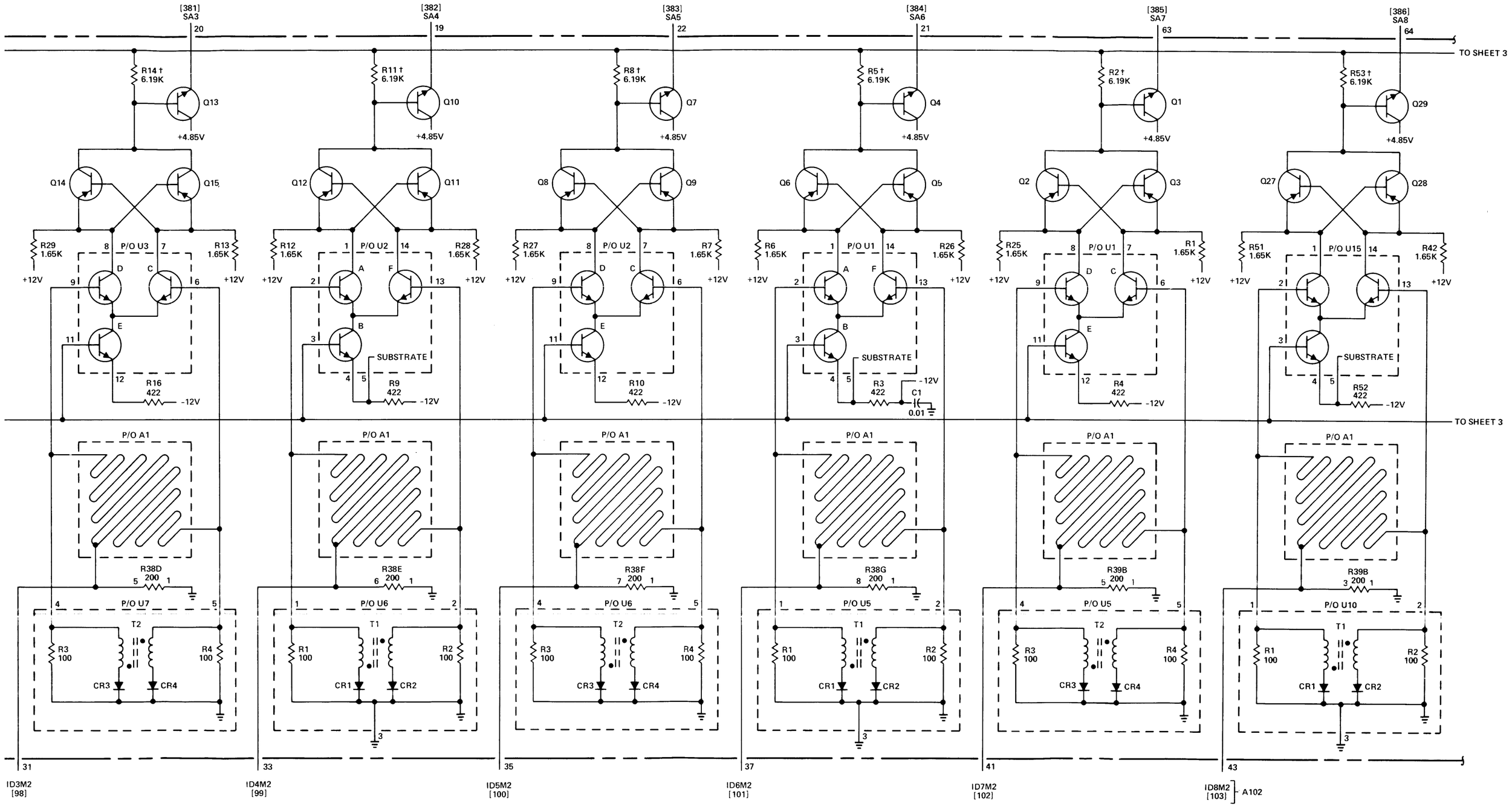
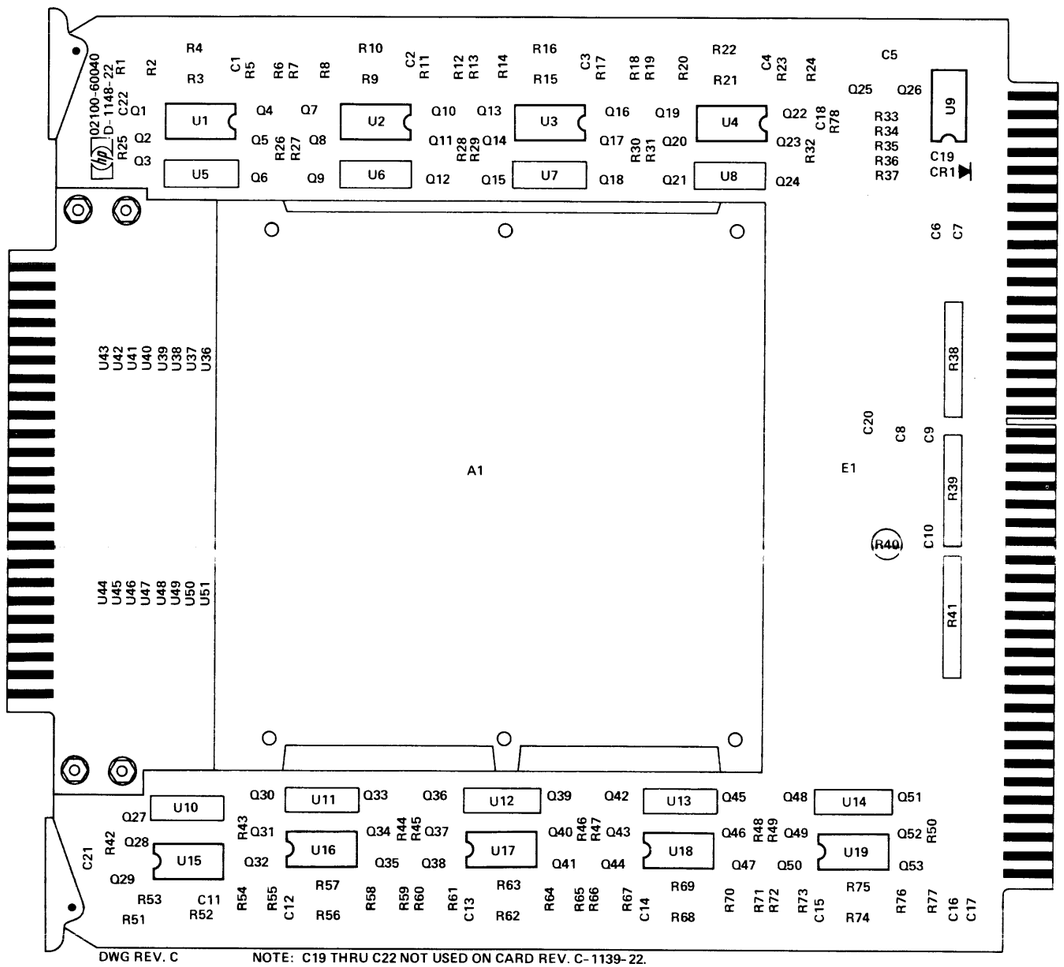


Figure 4-17. A102 Core Stack/Sense Amplifier Card (4K), Parts Location and Schematic Diagrams (Sheet 2 of 3)

REF. NO.	BACKPLANE LOCATION	* INDICATES SIGNAL SOURCE			
A102 (4K)					
104	A102-45	A105-44*			
105	A102-49	A105-51*			
106	A102-51	A105-45*			
107	A102-53	A105-76*			
108	A102-55	A105-73*			
109	A102-57	A105-74*			
110	A102-59	A105-75*			
111	A102-61	A105-17*			
262	A102-3	A107-55*			
272	A102-5*	A103-5*	A107-80	A110-5*	A111-5*
290	A102-6	A103-6	A107-83*	A110-6	A111-6
387	A102-65*	A103-65*	A107-33	A110-65*	A111-65*
388	A102-66*	A103-66*	A107-35	A110-66*	A111-66*
389	A102-67*	A103-67*	A107-37	A110-67*	A111-67*
390	A102-68*	A103-68*	A107-41	A110-68*	A111-68*
391	A102-69*	A103-69*	A107-43	A110-69*	A111-69*
392	A102-70*	A103-70*	A107-45	A110-70*	A111-70*
393	A102-71*	A103-71*	A107-49	A110-71*	A111-71*
394	A102-72*	A103-72*	A107-71	A110-72*	A111-72*



See table 4-16 for replaceable parts.

CORE STACK/SENSE AMPLIFIER
(02100-60040, REV. 1139, 1148)

FROM SHEET

CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

FROM SHEET 2

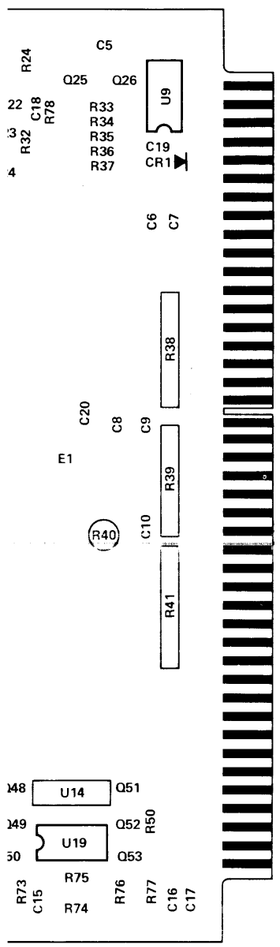
DWG REV. B (SHEET 3 OF 3)
SEE SHEET 1 FOR NOTES

L SOURCE

CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.



CORE STACK/SENSE AMPLIFIER CARD
(02100-60040, REV. 1139, 1148)

[387] SA9 65 | [388] SA10 66 | [389] SA11 67

FROM SHEET 2

R55 † 6.19K | R58 † 6.19K | R61 † 6.19K | R64 6.19

Q32 | Q35 | Q38

+4.85V

Q30 Q31 | Q34 Q33 | Q36 Q37 | Q40

R54 1.65K | R44 1.65K | R60 1.65K | R46 1.65K

R43 1.65K | R59 1.65K | R45 1.65K

+12V

P/O U16 (1, 2, 3, 4, 5, 13, 14; A, B, F) | P/O U16 (7, 8, 9, 11, 12; C, D, E) | P/O U17 (1, 2, 3, 4, 5, 13, 14; A, B, F) | P/O U17 (8, 9, 11, 12; D, C, E)

SUBSTRATE

R57 422 | C12 0.01 | R56 422 | R63 422 | R62 422

-12V

FROM SHEET 2

P/O A1

R39A 200 (2, 1) | R41G 200 (8, 1) | R41F 200 (7, 1) | R41E 200 (6)

P/O U11 (1, 2) | P/O U11 (4, 5) | P/O U12 (1, 2) | P/O U12 (4)

T1 | T2 | T1

R1 100 | R3 100 | R1 100 | R3 100

R2 100 | R4 100 | R2 100

CR1 CR2 | CR3 CR4 | CR1 CR2 | CR3

3

DWG REV. B (SHEET 3 OF 3)
SEE SHEET 1 FOR NOTES

45 ID9M2 [104] | 49 ID10M2 [105] | 51 ID11M2 [106] | 53 ID12M2 [107]

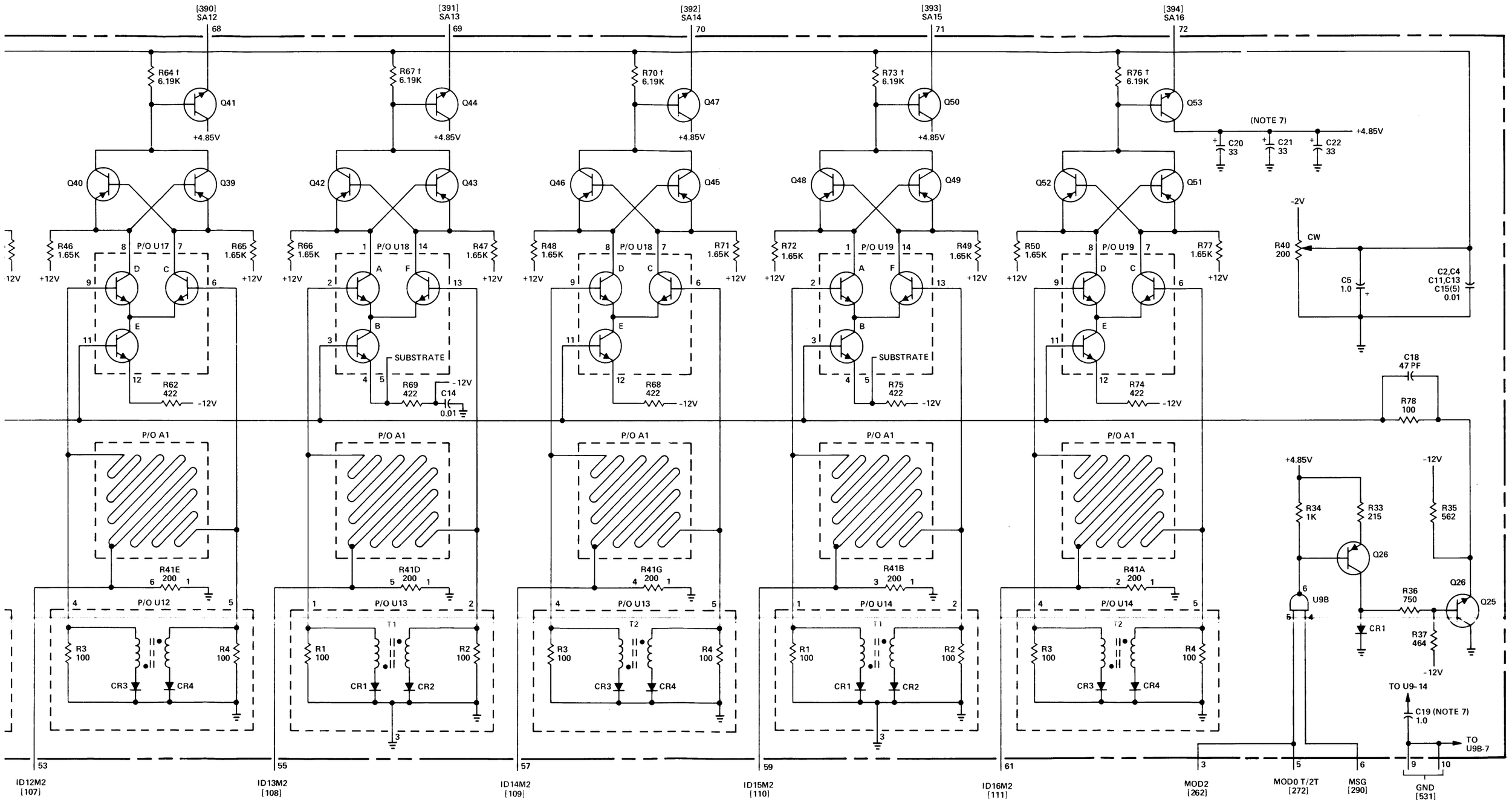


Figure 4-17. A102 Core Stack/Sense Amplifier Card (4K), Parts Location and Schematic Diagrams (Sheet 3 of 3)

Table 4-17. A102, A103, A110, A111 Core Stack/Sense Amplifier Card (8K), Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A102 OR	5060-8331	4	CORE STACK/SENSE AMPL CARD-8K	28480	5060-8331
A102	5060-8324	4	CORE STACK/SENSE AMPL CARD-8K	28480	5060-8324
A102A1	5087-0001	1	8K CORE STACK ASSY	28480	5087-0001
A102C1	0160-0127	11	C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C2	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C3	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C4	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C5	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C6	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C7	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C8	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C9	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C10(NOTE 1)	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C11(NOTE 1)	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A102C12(NOTE 1)	0180-0229	3	C:FXD ELECT 33 UF 10% 10VDCW	28480	0180-0229
A102C13(NOTE 1)	0180-0229		C:FXD ELECT 33 UF 10% 10VDCW	28480	0180-0229
A102C14(NOTE 1)	0180-0229		C:FXD ELECT 33 UF 10% 10VDCW	28480	0180-0229
A102C15(NOTE 3)	0160-2306	2	C:FXD MICA 27 PF 5%	28480	0160-2306
A102C16(NOTE 3)	0160-2306		C:FXD MICA 27 PF 5%	28480	0160-2306
A102CR1	1910-0016	2	DIODE:GE 100MA/0.85V 60PIV	93332	D2361
A102CR2	1910-0016		DIODE:GE 100MA/0.85V 60PIV	93332	D2361
A102E1	0360-0294	2	TERMINAL:SOLDER POINT	28480	0360-0294
A102E2	0360-0294		TERMINAL:SOLDER POINT	28480	0360-0294
A102E3 THRU A102E6 (NOTE 2)	9170-0847	4	CORE: FERRITE	02114	56-590-65-3B
A102Q1	1853-0086	36	TSTR:SI PNP	80131	2N5087
A102Q2	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q3	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q4	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q5	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q6	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q7	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q8	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q9	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q10	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q11	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q12	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q13	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q14	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q15	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q16	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q17	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q18	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q19	1854-0215	17	TSTR:SI NPN	80131	2N3904
A102Q20	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q21	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q22	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q23	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q24	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q25	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q26	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q27	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q28	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q29	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q30	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q31	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q32	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q33	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q34	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q35	1854-0215		TSTR:SI NPN	80131	2N3904
A102Q36	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q37	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q38	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q39	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q40	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q41	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q42	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q43	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q44	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q45	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q46	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q47	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q48	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q49	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q50	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q51	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q52	1853-0086		TSTR:SI PNP	80131	2N5087
A102Q53	1853-0086		TSTR:SI PNP	80131	2N5087
A102R1	0698-7310	34	R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310

NOTES: 1. Used on card part no. 5060-8331 only.
2. Used on card part no. 5060-8324, rev. 1136 only.
3. First used on card rev. 1301.

Table 4-17. A102, A103, A110, A111 Core Stack/Sense Amplifier Card (8K), Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A102R2	0698-3488	68	R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R3	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R4	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R5	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R6	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R7	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R8	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R9	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R10	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R11	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R12	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R13	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R14	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R15	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R16	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R17	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R18	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R19	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R20	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R21	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R22	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R23	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R24	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R25	0698-3430	2	R:FXD MET FLM 21.5 OHM 1% 1/8W	28480	0698-3430
A102R26		1	R:FXD(SELECTED FROM ONE OF THE FOLLOWING)		
	0698-4411		R:FXD FLM 140 OHM 1% 1/8W	28480	0698-4411
	0757-0402		R:FXD MET FLM 110 OHM 1% 1/8W	28480	0757-0402
	0757-0284		R:FXD MET FLM 150 OHM 1% 1/8W	28480	0757-0284
	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
	0757-0404		R:FXD FLM 130 OHM 1% 1/8W	28480	0757-0404
A102R27	0757-0276	2	R:FXD MET FLM 61.9 OHM 1% 1/8W	28480	0757-0276
A102R28	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A102R29	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A102R30	0698-3430		R:FXD MET FLM 21.5 OHM 1% 1/8W	28480	0698-3430
A102R31	0757-0401	1	R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A102R32		1	R:FXD(SELECTED FROM ONE OF THE FOLLOWING)		
	0698-4411		R:FXD FLM 140 OHM 1% 1/8W	28480	0698-4411
	0757-0402		R:FXD MET FLM 110 OHM 1% 1/8W	28480	0757-0402
	0757-0284		R:FXD MET FLM 150 OHM 1% 1/8W	28480	0757-0284
	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
	0757-0404		R:FXD FLM 130 OHM 1% 1/8W	28480	0757-0404
A102R33	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A102R34	0757-0276		R:FXD MET FLM 61.9 OHM 1% 1/8W	28480	0757-0276
A102R35 THRU A102R51		17	R:FXD(SELECTED FROM ONE OF THE FOLLOWING)		
	0757-0200		R:FXD MET FLM 5.62K OHM 1% 1/8W	28480	0757-0200
	0757-0290		R:FXD MET FLM 6.19K OHM 1% 1/8W	28480	0757-0290
	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
	0757-0439		R:FXD MET FLM 6.81K OHM 1% 1/8W	28480	0757-0439
	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
	0757-0441		R:FXD MET FLM 8.25K OHM 1% 1/8W	28480	0757-0441
A102R52	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R53	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R54	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R55	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R56	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R57	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R58	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R59	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R60	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R61	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R62	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R63	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R64	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R65	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R66	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R67	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R68	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R69	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R70	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R71	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R72	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R73	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310

Table 4-17. A102, A103, A110, A111 Core Stack/Sense Amplifier Card (8K), Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A102R74	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R75	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R76	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R77	0698-7310		R:FXD FLM 1.65K OHM 0.25% 1/8W	28480	0698-7310
A102R78	0698-3488		R:FXD MET FLM 442 OHM 1% 1/8W	28480	0698-3488
A102R79	2100-2061	1	R:VAR FLM 200 OHM 10% LIN 1/2W	28480	2100-2061
A102R80	1810-0045	5	RESISTOR PACK:7 RES. 200 OHM 5% 0.15W	28480	1810-0045
A102R81	1810-0045		RESISTOR PACK:7 RES. 200 OHM 5% 0.15W	28480	1810-0045
A102R82	1810-0045		RESISTOR PACK:7 RES. 200 OHM 5% 0.15W	28480	1810-0045
A102R83	1810-0045		RESISTOR PACK:7 RES. 200 OHM 5% 0.15W	28480	1810-0045
A102R84	1810-0045		RESISTOR PACK:7 RES. 200 OHM 5% 0.15W	28480	1810-0045
A102R85	0698-3132	1	R:FXD FLM 261 OHM 1% 1/8W	28480	0698-3132
A102U1	1858-0001	17	TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U2	0960-0111	17	BALUN MODULE	28480	0960-0111
A102U3	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U4	0960-0111		BALUN MODULE	28480	0960-0111
A102U5	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U6	0960-0111		BALUN MODULE	28480	0960-0111
A102U7	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U8	0960-0111		BALUN MODULE	28480	0960-0111
A102U9	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U10	0960-0111		BALUN MODULE	28480	0960-0111
A102U11	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U12	0960-0111		BALUN MODULE	28480	0960-0111
A102U13	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U14	0960-0111		BALUN MODULE	28480	0960-0111
A102U15	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U16	0960-0111		BALUN MODULE	28480	0960-0111
A102U17	1820-0956	1	IC:CTL DUAL 2-INPT AND BUFFER	07263	U6A995679X
A102U18	0960-0111		BALUN MODULE	28480	0960-0111
A102U19	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U20	0960-0111		BALUN MODULE	28480	0960-0111
A102U21	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U22	0960-0111		BALUN MODULE	28480	0960-0111
A102U23	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U24	0960-0111		BALUN MODULE	28480	0960-0111
A102U25	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U26	0960-0111		BALUN MODULE	28480	0960-0111
A102U27	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U28	0960-0111		BALUN MODULE	28480	0960-0111
A102U29	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U30	0960-0111		BALUN MODULE	28480	0960-0111
A102U31	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U32	0960-0111		BALUN MODULE	28480	0960-0111
A102U33	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U34	0960-0111		BALUN MODULE	28480	0960-0111
A102U35	1858-0001		TSTR ARRAY:DUAL DIFF AMPL W/CONST CUR	02735	80381
A102U36 THRU A102U51	5087-1013	16	DIODE MODULE	28480	5087-1013
A102W1	8159-0005	1	JUMPER WIRE	28480	8159-0005
A103			SAME AS A102, USE PREFIX A103		
A110			SAME AS A102, USE PREFIX A110		
A111			SAME AS A102, USE PREFIX A111		

REF. NO.	BACKPLANE LOCATION				
			* INDICATES SIGNAL SOURCE		
A102 (8K)					
95	A102-25	A105-26*			
96	A102-27	A105-19*			
97	A102-29	A105-25*			
98	A102-31	A105-24*			
99	A102-33	A105-53*			
100	A102-35	A105-60*			
101	A102-37	A105-59*			
102	A102-41	A105-58*			
103	A102-43	A105-52*			
104	A102-45	A105-44*			
105	A102-49	A105-51*			
106	A102-51	A105-45*			
107	A102-53	A105-76*			
108	A102-55	A105-73*			
109	A102-57	A105-74*			
110	A102-59	A105-75*			
111	A102-61	A105-17*			
112	A102-26	A105-20*			
113	A102-28	A105-23*			
114	A102-30	A105-22*			
115	A102-32	A105-21*			
116	A102-34	A105-57*			
117	A102-36	A105-54*			
118	A102-38	A105-56*			
119	A102-42	A105-55*			
120	A102-44	A105-78*			
121	A102-46	A105-79*			
122	A102-50	A105-81*			
123	A102-52	A105-80*			
124	A102-54	A105-84*			
125	A102-56	A105-77*			
126	A102-58	A105-83*			
127	A102-60	A105-82*			
128	A102-62	A105-18*			
262	A102-3	A107-55*			
263	A102-4	A107-56*			
272	A102-5*	A103-5*	A107-80	A110-5*	A111-5*
290	A102-6	A103-6	A107-83*	A110-6	A111-6
378	A102-15*	A103-15*	A107-13	A110-15*	A111-15*
379	A102-18*	A103-18*	A107-11	A110-18*	A111-18*
380	A102-17*	A103-17*	A107-7	A110-17*	A111-17*
381	A102-20*	A103-20*	A107-9	A110-20*	A111-20*
382	A102-19*	A103-19*	A107-17	A110-19*	A111-19*
383	A102-22*	A103-22*	A107-15	A110-22*	A111-22*
384	A102-21*	A103-21*	A107-19	A110-21*	A111-21*
385	A102-63*	A103-63*	A107-21	A110-63*	A111-63*
386	A102-64*	A103-64*	A107-31	A110-64*	A111-64*
387	A102-65*	A103-65*	A107-33	A110-65*	A111-65*
388	A102-66*	A103-66*	A107-35	A110-66*	A111-66*
389	A102-67*	A103-67*	A107-37	A110-67*	A111-67*
390	A102-68*	A103-68*	A107-41	A110-68*	A111-68*
391	A102-69*	A103-69*	A107-43	A110-69*	A111-69*
392	A102-70*	A103-70*	A107-45	A110-70*	A111-70*
393	A102-71*	A103-71*	A107-49	A110-71*	A111-71*
394	A102-72*	A103-72*	A107-71	A110-72*	A111-72*

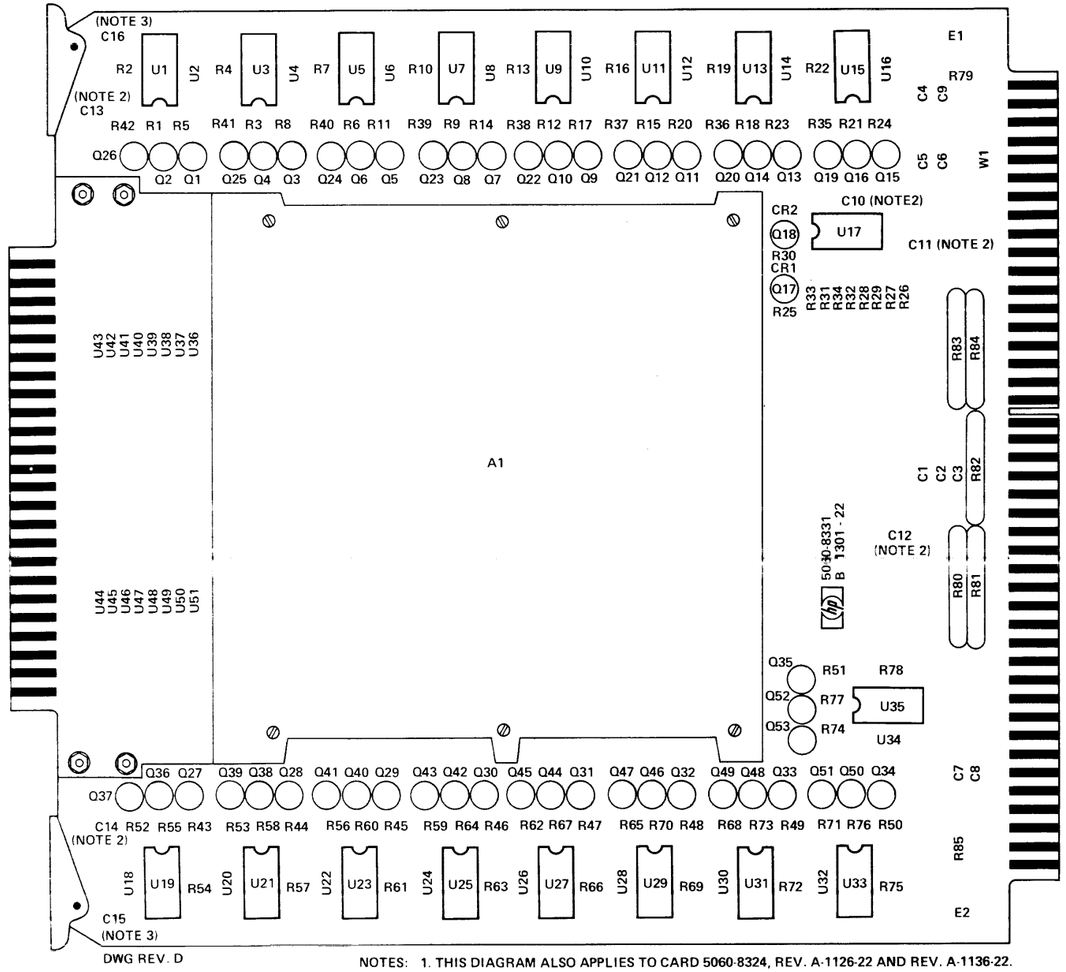
CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

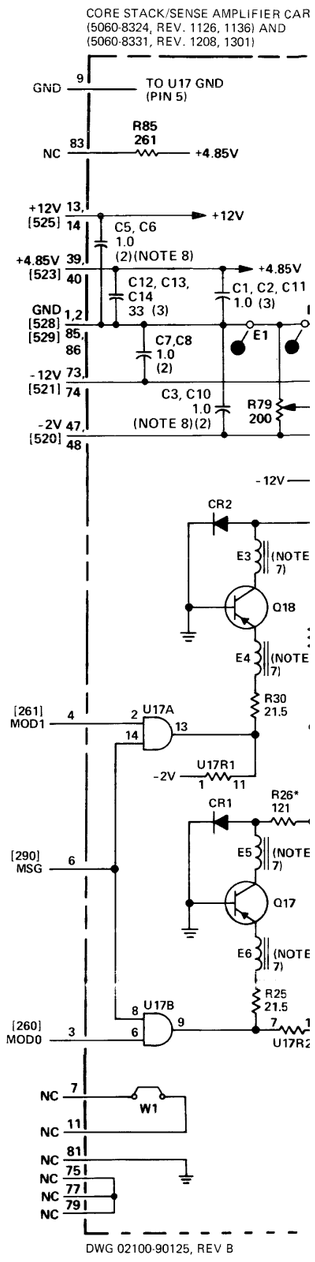
NOTES:

1. THIS CARD MUST NOT BE REPAIRED IN THE FIELD. FIELD REMOVAL OR REPLACEMENT OF ANY COMPONENT VOIDS THE WARRANTY ON THE CARD.
2. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
3. ALL PIN NUMBERS REFER TO 86 PIN CONNECTOR UNLESS OTHERWISE INDICATED.
4. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
5. DIODES ARE MOUNTED WITH CATHODE END AWAY FROM CARD.
6. * INDICATES SELECTED RESISTOR. R26, R32 ARE SELECTED FROM 100, 110, 121, 130, 140, OR 150. R35 THRU R51 ARE SELECTED FROM 5.11K, 5.62K, 6.19K, 6.81K, 7.50K OR 8.25K.
7. E3 THRU E6 USED ONLY ON CARD 5060-8324, REV. 1136.
8. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
9. R79 IS NOT USED ON ALL CARDS. WHEN R79 IS NOT USED, VTH IS CONNECTED TO -2V AS SHOWN BY DOTTED LINE.
10. C15 AND C16 FIRST USED ON CARD REV. 1301.



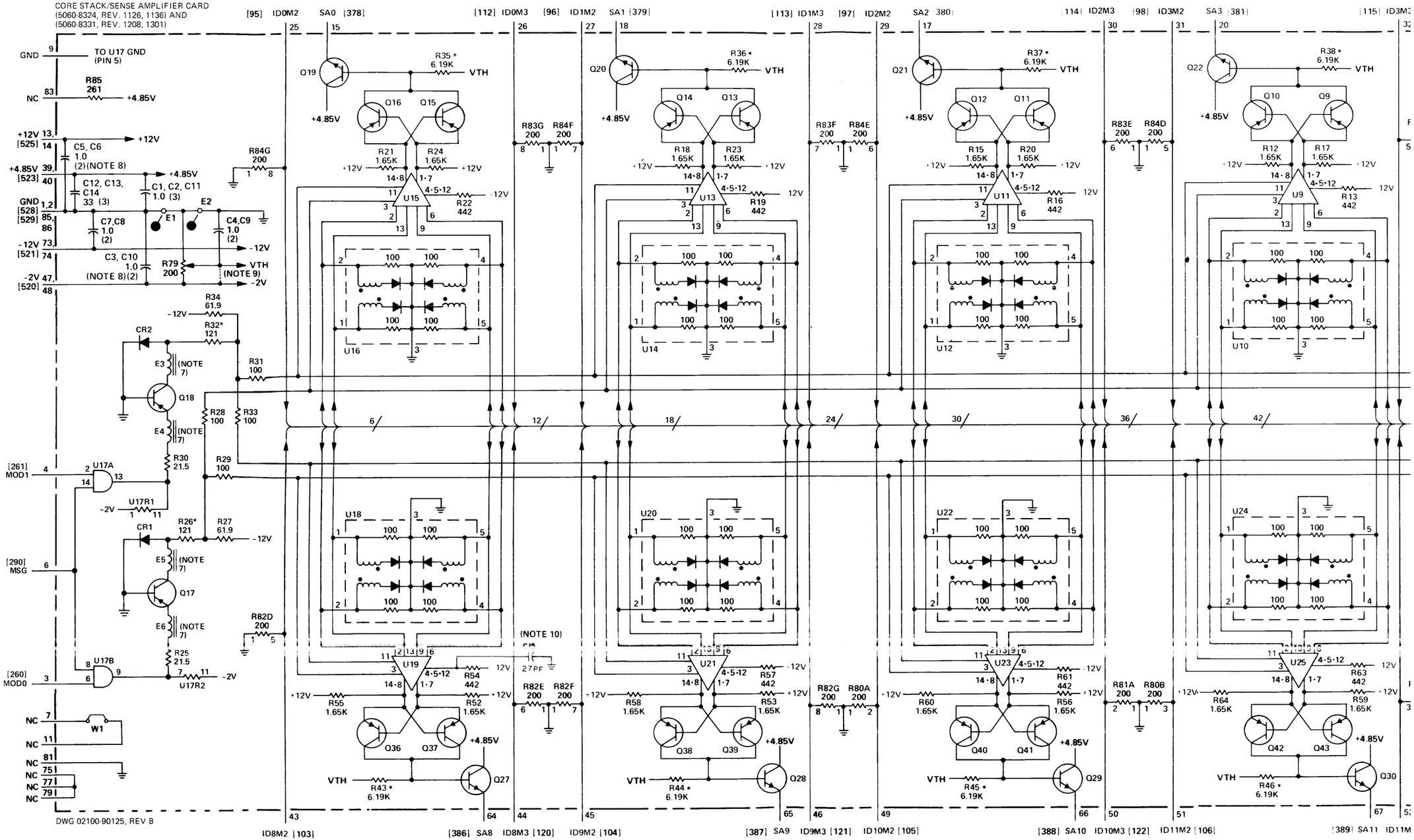
See table 4-17 for replaceable parts.

NOTES: 1. THIS DIAGRAM ALSO APPLIES TO CARD 5060-8324, REV. A-1126-22 AND REV. A-1136-22.
2. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
3. C15 AND C16 FIRST USED ON CARD 5060-8331, REV. A-1301-22.



DWG 02100-90125, REV B

CORE STACK/SENSE AMPLIFIER CARD
(5060-8324, REV. 1126, 1136) AND
(5060-8331, REV. 1208, 1301)



DWG 02100-90125, REV B

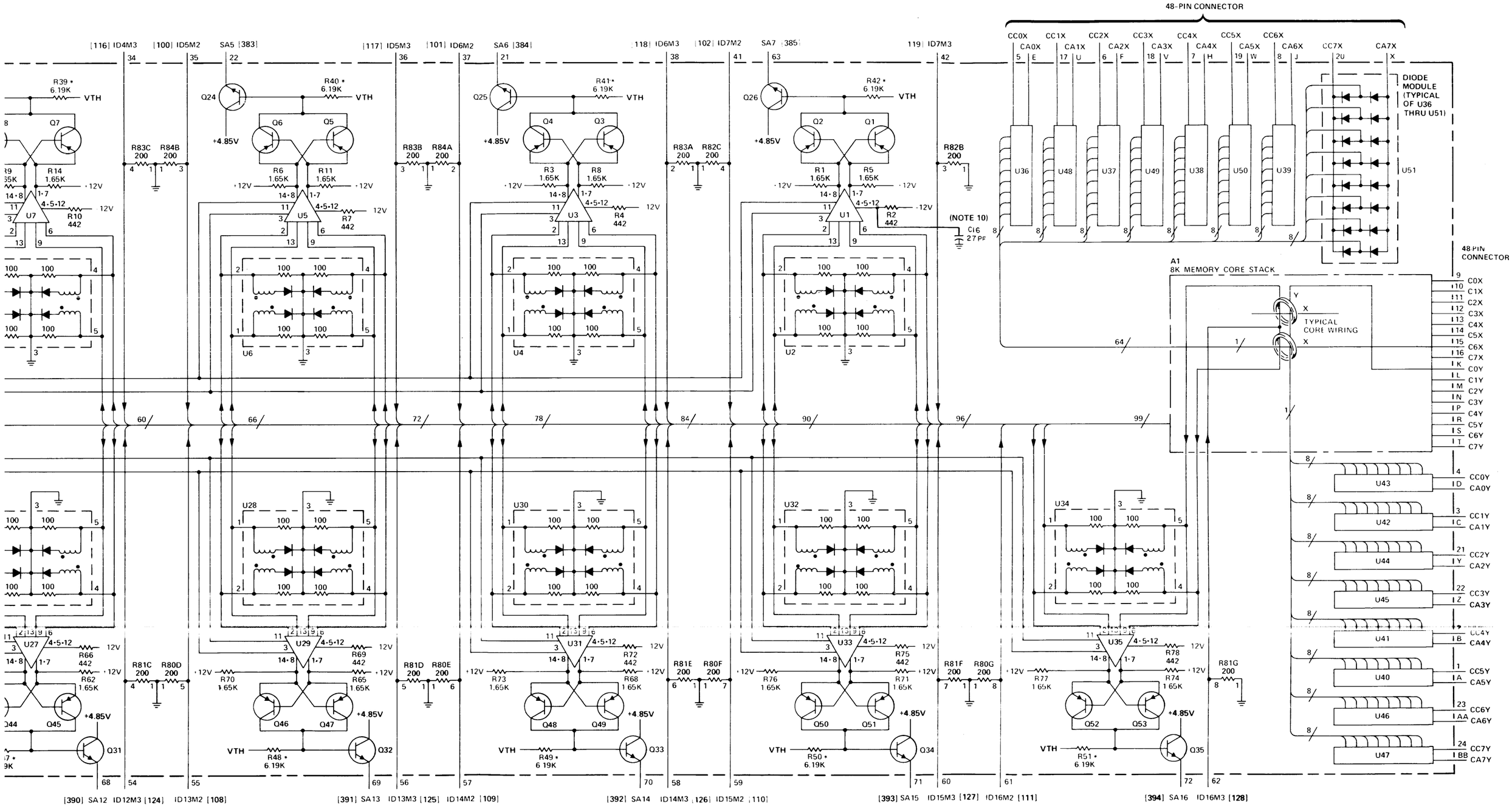


Figure 4-18. A102 Core Stack/Sense Amplifier Card (8K), Parts Location and Schematic Diagrams

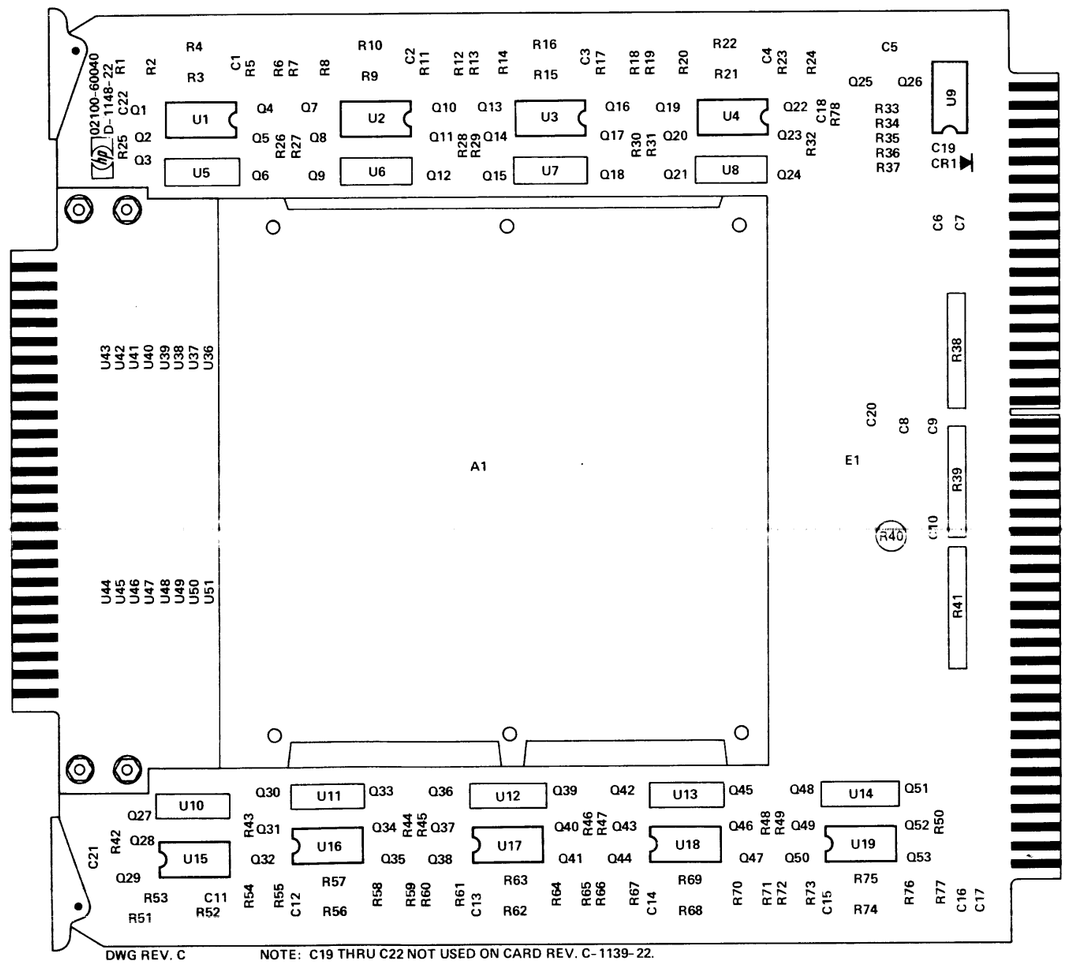
CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

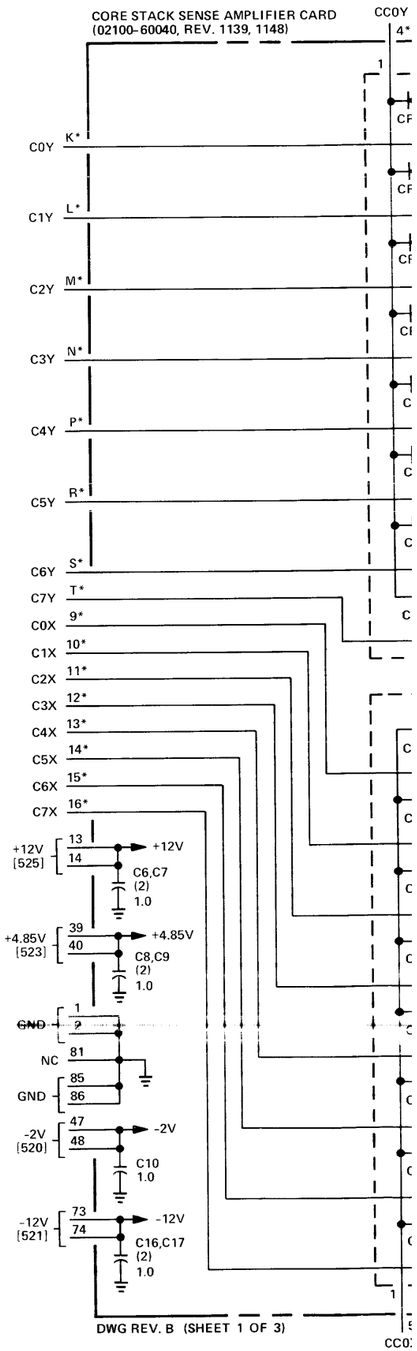
TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

NOTES:

1. THIS CARD MUST NOT BE REPAIRED IN THE FIELD. FIELD REMOVAL OR REPLACEMENT OF ANY COMPONENT VOIDS THE WARRANTY ON THE CARD.
2. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
3. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
4. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
5. EACH FERRITE CORE SHOWN REPRESENTS 4,096 CORES.
6. † INDICATES SELECTED RESISTOR. R2, R5, AND R8 SELECTED FROM 5.11K, 5.62K, 6.19K, 6.81K, 7.50K, OR 8.25K. R11, R14, R17, R20, R23, R53, R55, R58, R61, R64, R67, R70, R73, R76 SELECTED FROM 5.62K OR 6.19K. NORMAL VALUES SHOWN.
7. C19 THRU C22 NOT USED ON CARD REV. 1139.



See table 4-16 for replaceable parts.



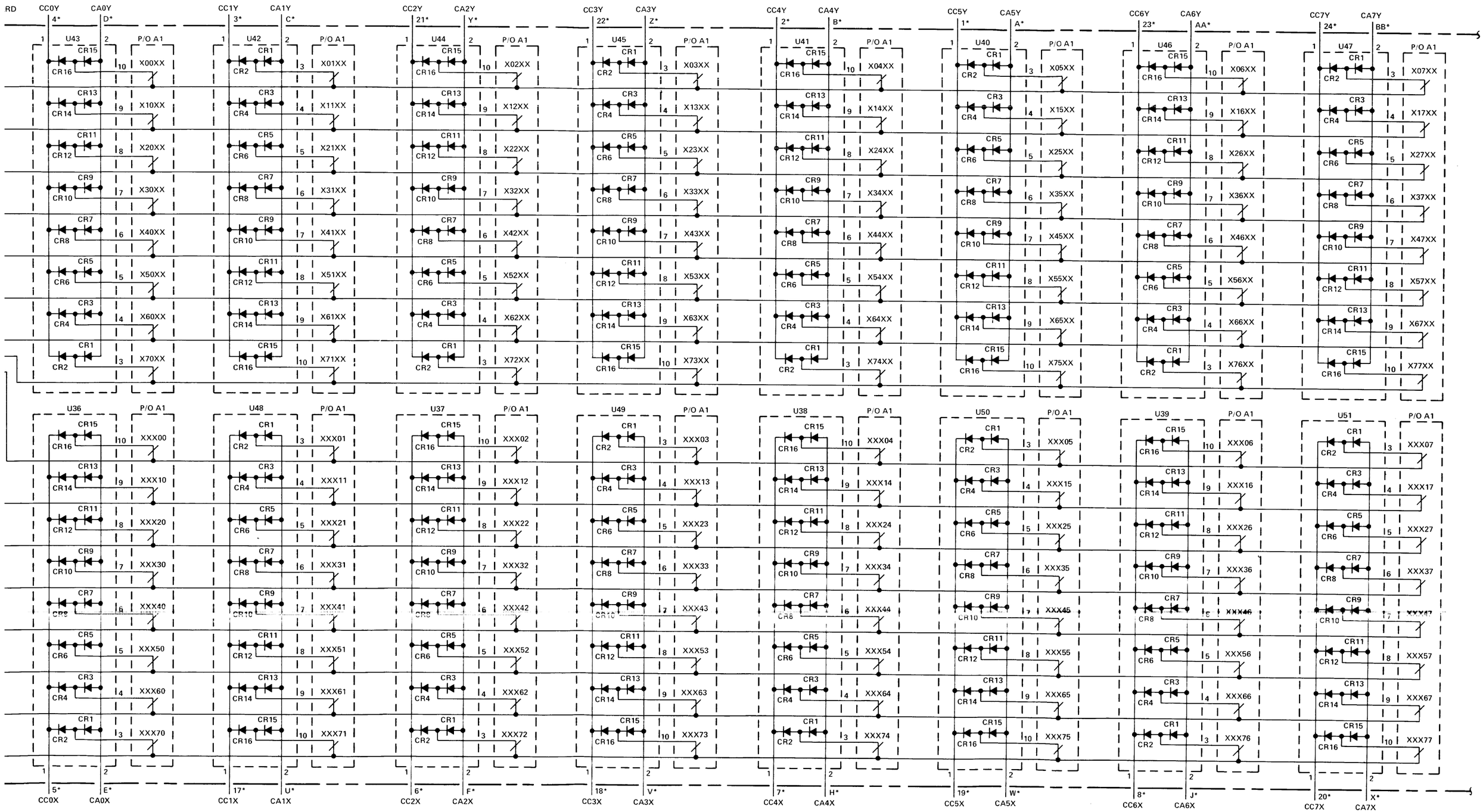


Figure 4-19. A103 Core Stack/Sense Amplifier Card (4K), Parts Location and Schematic Diagrams (Sheet 1 of 3)

CORE STACK/SENSE AMPLIFIE
(02100-60040, REV. 1139, 1148)

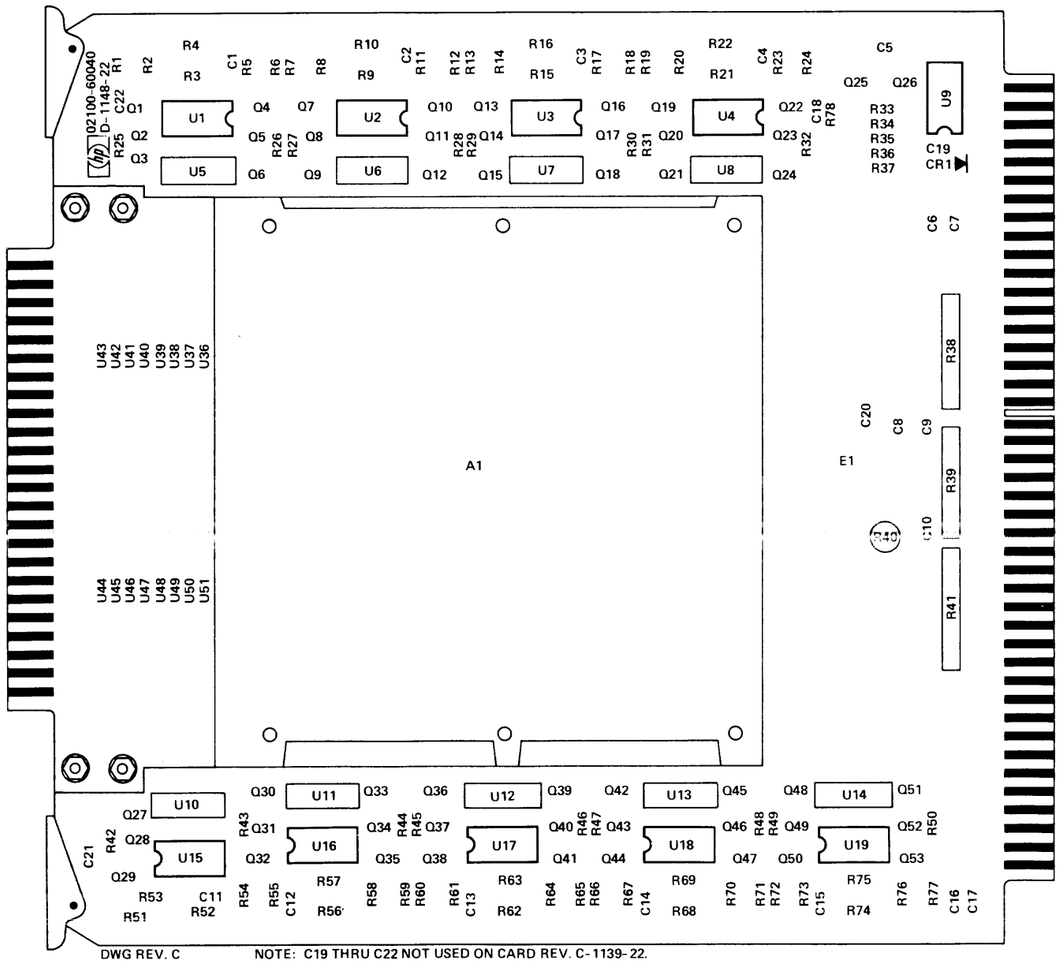
CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION				
A103(4K)					
61	A103-25	A105-10*			
62	A103-27	A105-7*			
63	A103-29	A105-8*			
64	A103-31	A105-9*			
65	A103-33	A105-37*			
66	A103-35	A105-32*			
67	A103-37	A105-33*			
68	A103-41	A105-34*			
69	A103-43	A105-31*			
378	A102-15*	A103-15*	A107-13	A110-15*	A111-15*
379	A102-18*	A103-18*	A107-11	A110-18*	A111-18*
380	A102-17*	A103-17*	A107-7	A110-17*	A111-17*
381	A102-20*	A103-20*	A107-9	A110-20*	A111-20*
382	A102-19*	A103-19*	A107-17	A110-19*	A111-19*
383	A102-22*	A103-22*	A107-15	A110-22*	A111-22*
384	A102-21*	A103-21*	A107-19	A110-21*	A111-21*
385	A102-63*	A103-63*	A107-21	A110-63*	A111-63*
386	A102-64*	A103-64*	A107-31	A110-64*	A111-64*



See table 4-16 for replaceable parts.

DWG REV. B (SHEET 2 OF 3)
SEE SHEET 1 FOR NOTES
A103

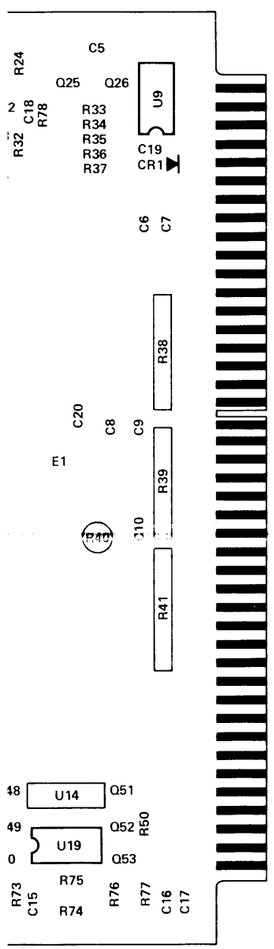
SOURCE

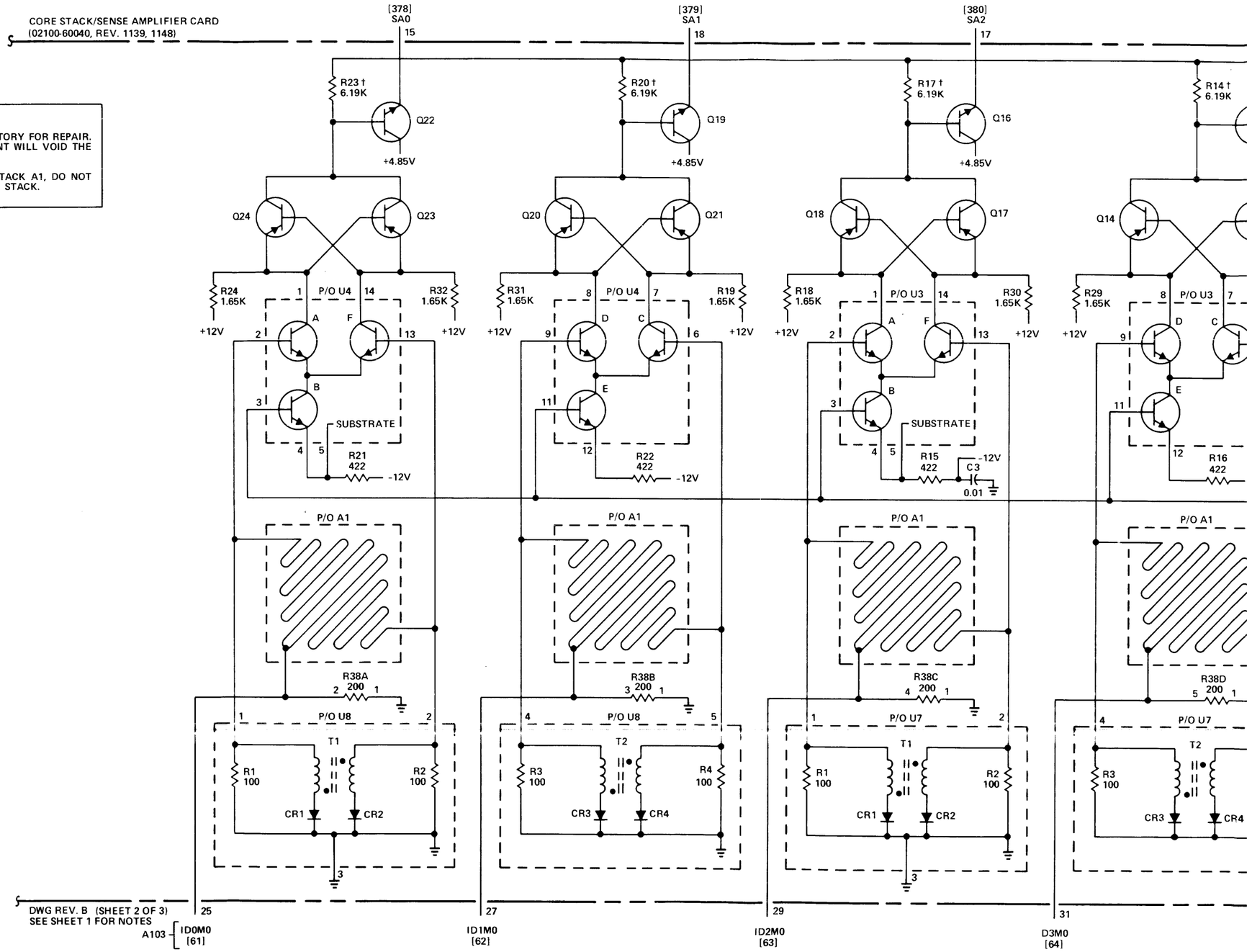
CORE STACK/SENSE AMPLIFIER CARD
(02100-60040, REV. 1139, 1148)

CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.





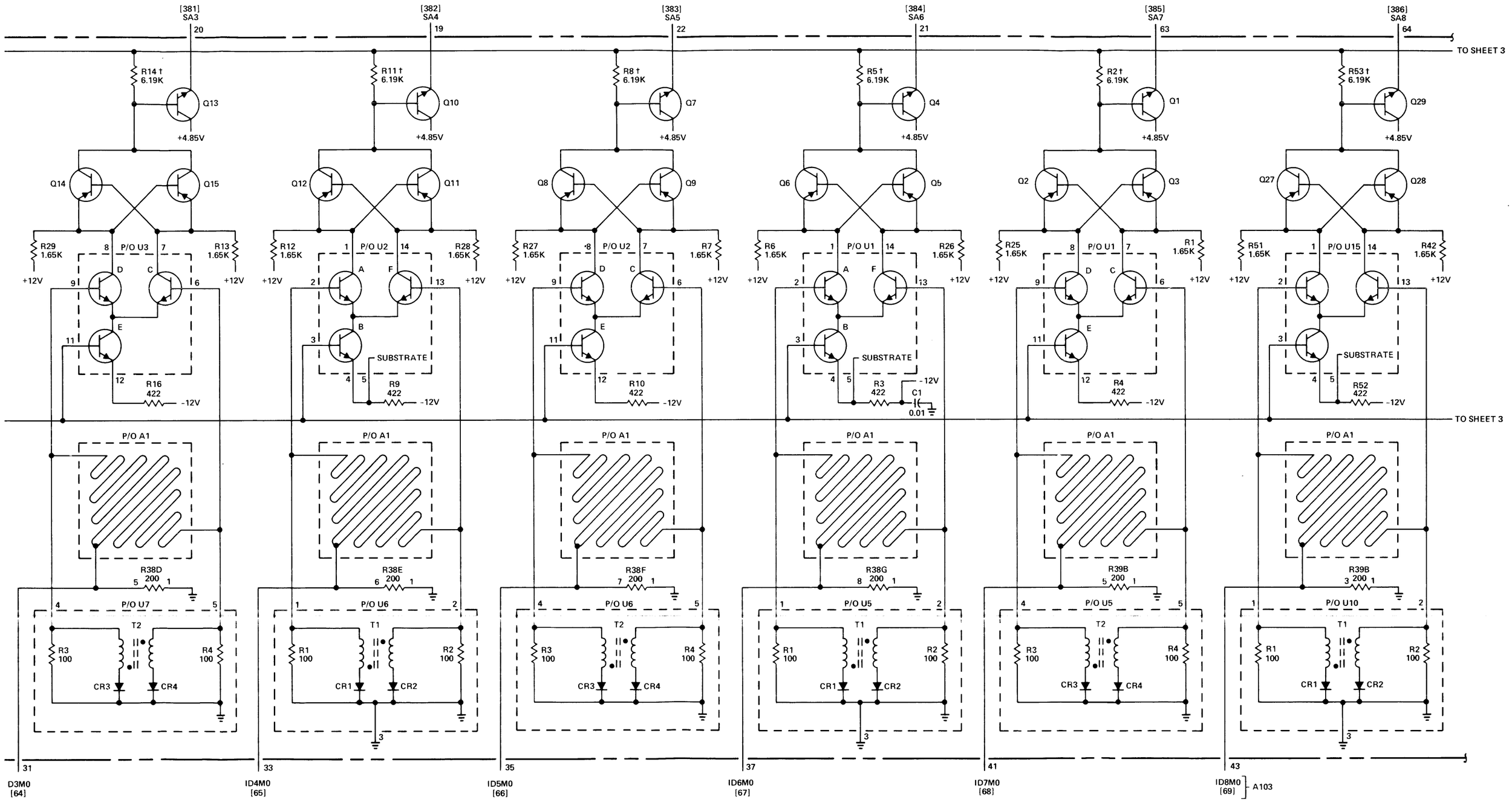
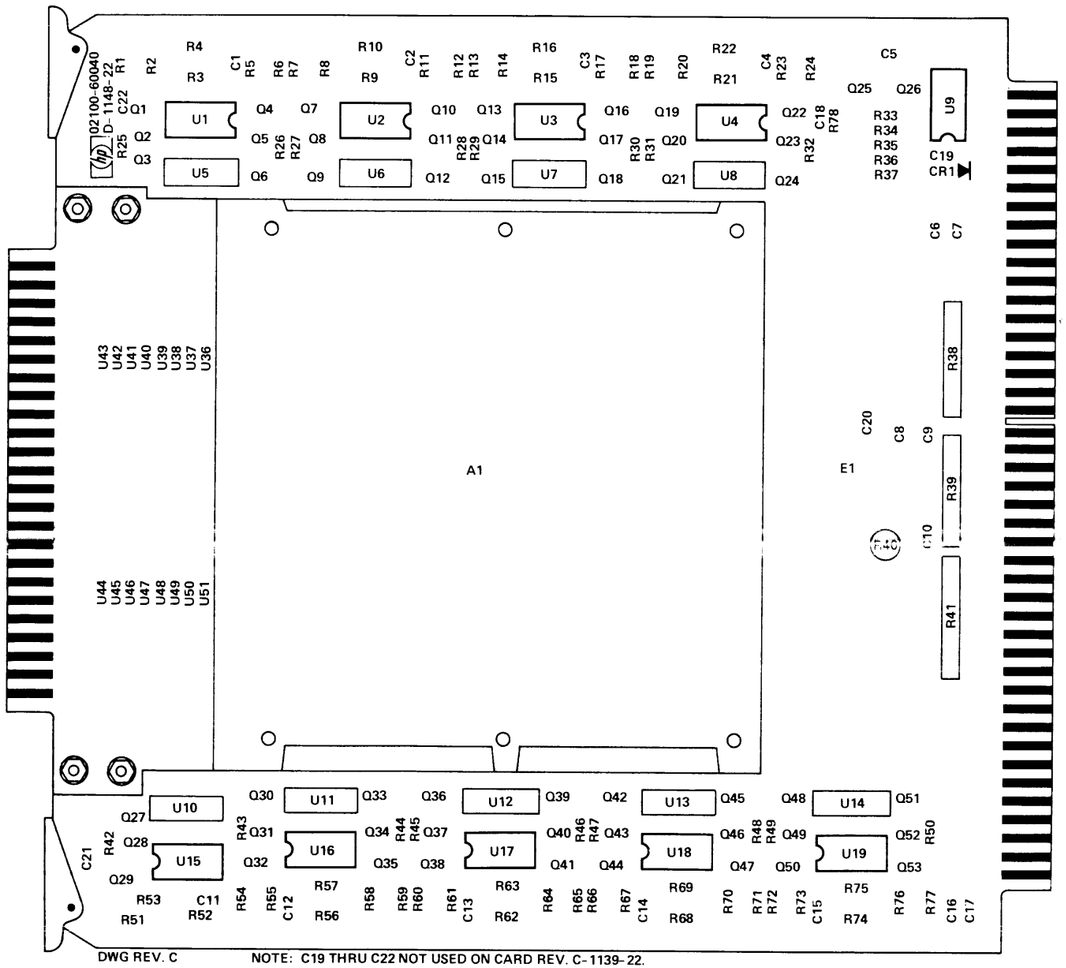


Figure 4-19. A103 Core Stack/Sense Amplifier Card (4K), Parts Location and Schematic Diagrams (Sheet 2 of 3)

REF. NO.	BACKPLANE LOCATION				
	* INDICATES SIGNAL SOURCE				
A103(4K)					
70	A103-45	A105-46*			
71	A103-49	A105-49*			
72	A103-51	A105-50*			
73	A103-53	A105-61*			
74	A103-55	A105-69*			
75	A103-57	A105-70*			
76	A103-59	A105-71*			
77	A103-61	A105-15*			
260	A103-3	A107-68*			
272	A102-5*	A103-5*	A107-80	A110-5*	A111-5*
290	A102-6	A103-6	A107-83*	A110-6	A111-6
387	A102-65*	A103-65*	A107-33	A110-65*	A111-65*
388	A102-66*	A103-66*	A107-35	A110-66*	A111-66*
389	A102-67*	A103-67*	A107-37	A110-67*	A111-67*
390	A102-68*	A103-68*	A107-41	A110-68*	A111-68*
391	A102-69*	A103-69*	A107-43	A110-69*	A111-69*
392	A102-70*	A103-70*	A107-45	A110-70*	A111-70*
393	A102-71*	A103-71*	A107-49	A110-71*	A111-71*
394	A102-72*	A103-72*	A107-71	A110-72*	A111-72*



See table 4-16 for replaceable parts.

CORE STACK/SENSE AMPLIFIER
(02100-60040, REV. 1139, 1148)

FROM SHEET 1

CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

FROM SHEET 2

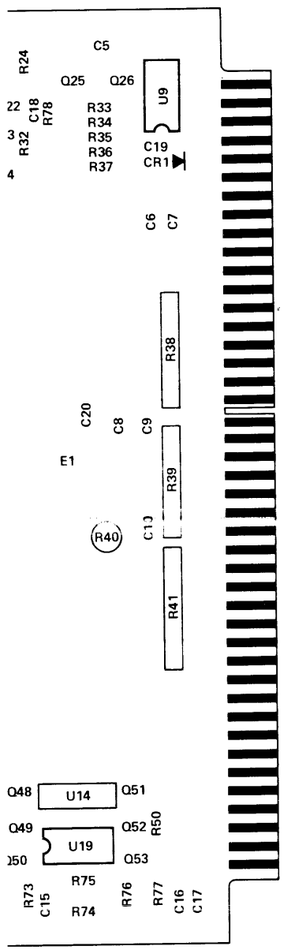
DWG REV. B (SHEET 3 OF 3)
SEE SHEET 1 FOR NOTES

SOURCE

CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.



CORE STACK/SENSE AMPLIFIER CARD
(02100-60040, REV. 1139, 1148)

FROM SHEET 2

[387] SA9 65 | [388] SA10 66 | [389] SA11 67

R55 † 6.19K | R58 † 6.19K | R61 † 6.19K | R64 † 6.19K

Q32 | Q35 | Q38

+4.85V

Q30 Q31 | Q34 Q33 | Q36 Q37 | Q40

R54 1.65K | R44 1.65K | R60 1.65K | R46 1.65K

R43 1.65K | R59 1.65K | R45 1.65K

+12V

P/O U16 | P/O U16 | P/O U17 | P/O U17

SUBSTRATE

R57 422 | C12 0.01 | -12V

R56 422 -12V

R63 422 -12V

R62 422

FROM SHEET 2

P/O A1

R39A 200

R41G 200

R41F 200

R41E 200

P/O U11 | P/O U11 | P/O U12

T1 | T2 | T1

R1 100 | R2 100 | R3 100 | R4 100 | R1 100 | R2 100 | R3 100

CR1 | CR2 | CR3 | CR4 | CR1 | CR2 | CR3

DWG REV. B (SHEET 3 OF 3)
SEE SHEET 1 FOR NOTES

45 ID9M0 [70]

49 ID10M0 [71]

51 ID11M0 [72]

53 ID12M0 [73]

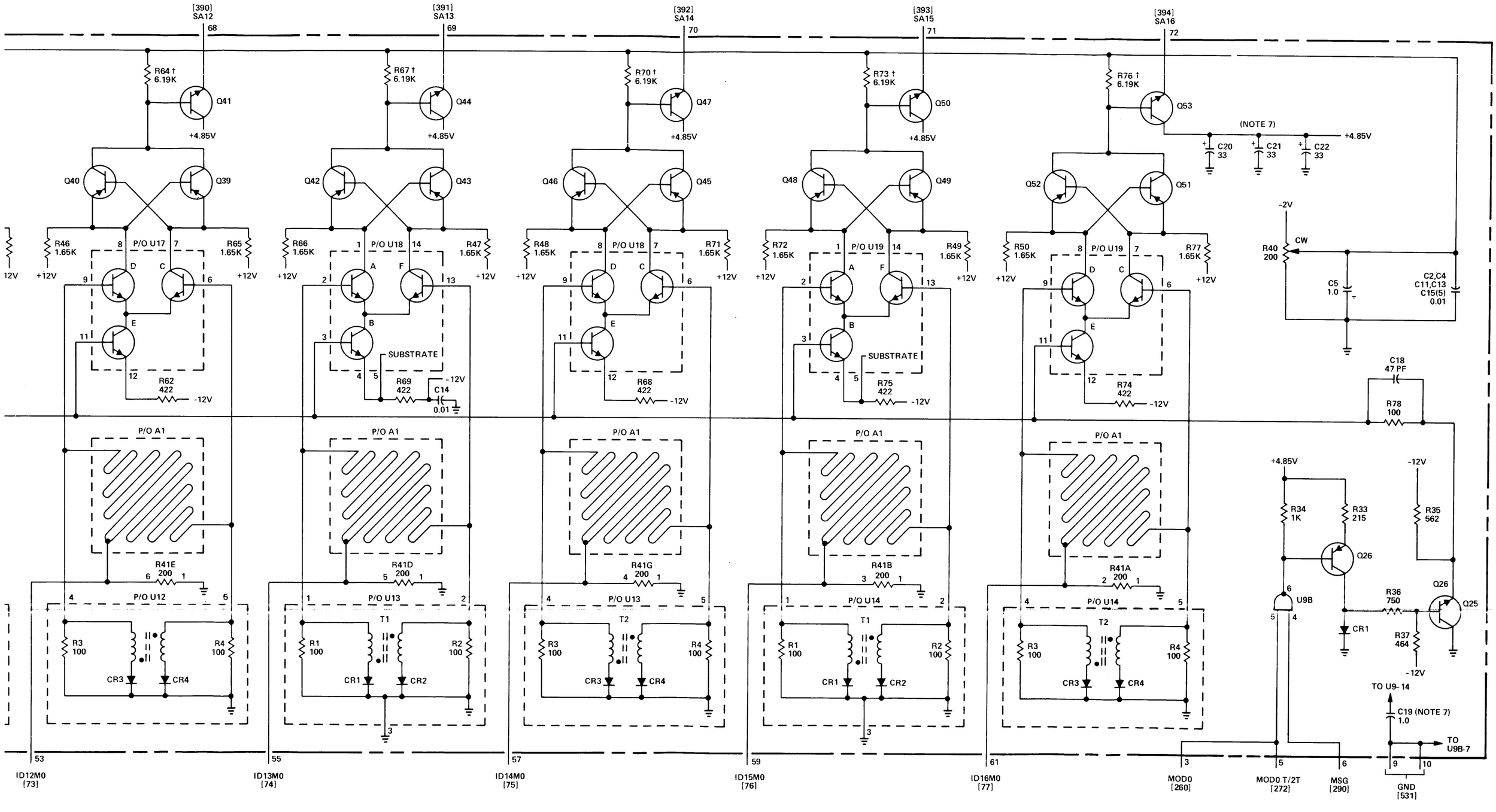


Figure 4-19. A103 Core Stack/Sense Amplifier Card (4K), Parts Location and Schematic Diagrams (Sheet 3 of 3)

(Information continues on next page)

REF. NO.	BACKPLANE LOCATION				
			* INDICATES SIGNAL SOURCE		
A103(8K)					
61	A103-25	A105-10*			
62	A103-27	A105-7*			
63	A103-29	A105-8*			
64	A103-31	A105-9*			
65	A103-33	A105-37*			
66	A103-35	A105-32*			
67	A103-37	A105-33*			
68	A103-41	A105-34*			
69	A103-43	A105-31*			
70	A103-45	A105-46*			
71	A103-49	A105-49*			
72	A103-51	A105-50*			
73	A103-53	A105-61*			
74	A103-55	A105-69*			
75	A103-57	A105-70*			
76	A103-59	A105-71*			
77	A103-61	A105-15*			
78	A103-26	A105-14*			
79	A103-28	A105-11*			
80	A103-30	A105-12*			
81	A103-32	A105-13*			
82	A103-34	A105-38*			
83	A103-36	A105-43*			
84	A103-38	A105-41*			
85	A103-42	A105-42*			
86	A103-44	A105-72*			
87	A103-46	A105-68*			
88	A103-50	A105-66*			
89	A103-52	A105-67*			
90	A103-54	A105-65*			
91	A103-56	A105-62*			
92	A103-58	A105-63*			
93	A103-60	A105-64*			
94	A103-62	A105-16*			
260	A103-3	A107-68*			
261	A103-4	A107-63*			
272	A102-5*	A103-5*	A107-80	A110-5*	A111-5*
290	A102-6	A103-6	A107-83*	A110-6	A111-6
378	A102-15*	A103-15*	A107-13	A110-15*	A111-15*
379	A102-18*	A103-18*	A107-11	A110-18*	A111-18*
380	A102-17*	A103-17*	A107-7	A110-17*	A111-17*
381	A102-20*	A103-20*	A107-9	A110-20*	A111-20*
382	A102-19*	A103-19*	A107-17	A110-19*	A111-19*
383	A102-22*	A103-22*	A107-15	A110-22*	A111-22*
384	A102-21*	A103-21*	A107-19	A110-21*	A111-21*
385	A102-63*	A103-63*	A107-21	A110-63*	A111-63*
386	A102-64*	A103-64*	A107-31	A110-64*	A111-64*
387	A102-65*	A103-65*	A107-33	A110-65*	A111-65*
388	A102-66*	A103-66*	A107-35	A110-66*	A111-66*
389	A102-67*	A103-67*	A107-37	A110-67*	A111-67*
390	A102-68*	A103-68*	A107-41	A110-68*	A111-68*
391	A102-69*	A103-69*	A107-43	A110-69*	A111-69*
392	A102-70*	A103-70*	A107-45	A110-70*	A111-70*
393	A102-71*	A103-71*	A107-49	A110-71*	A111-71*
394	A102-72*	A103-72*	A107-71	A110-72*	A111-72*

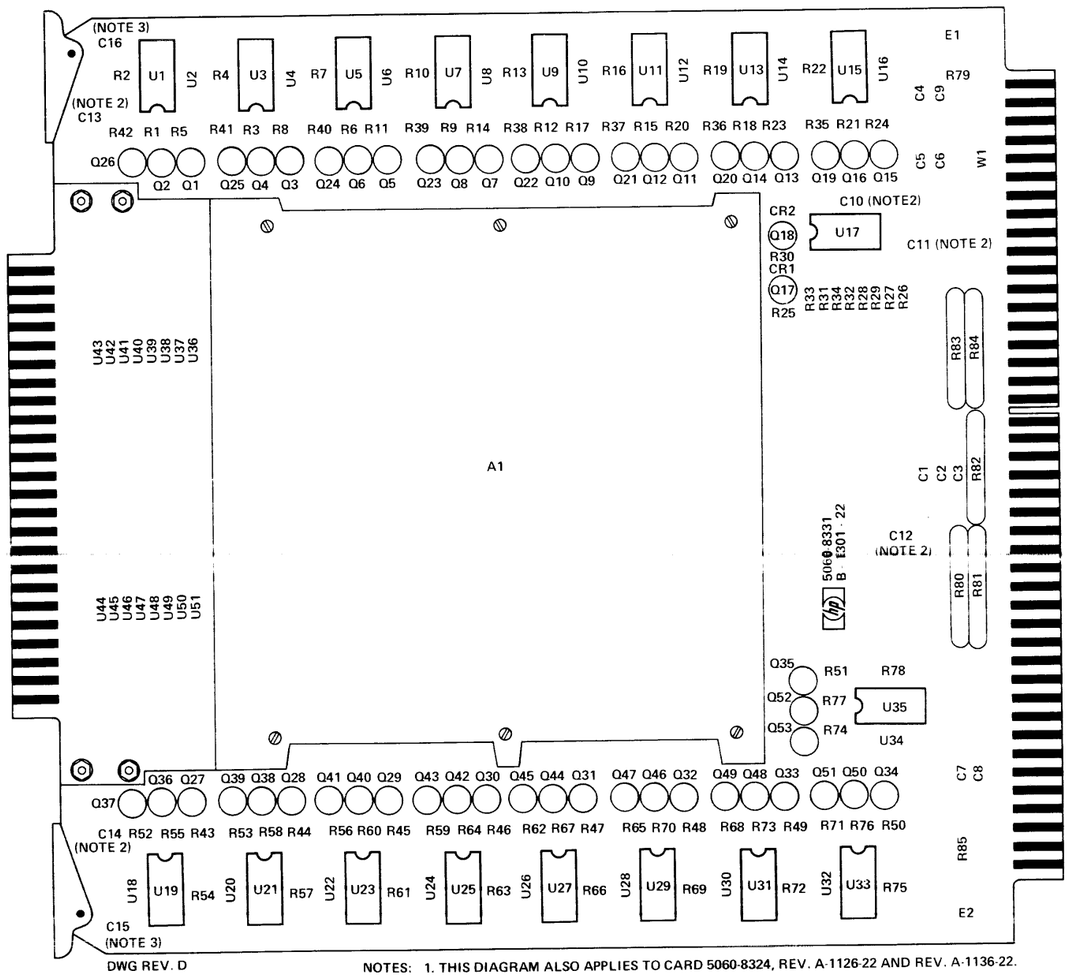
CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

NOTES:

1. THIS CARD MUST NOT BE REPAIRED IN THE FIELD. FIELD REMOVAL OR REPLACEMENT OF ANY COMPONENT VOIDS THE WARRANTY ON THE CARD.
2. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
3. ALL PIN NUMBERS REFER TO 86 PIN CONNECTOR UNLESS OTHERWISE INDICATED.
4. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
5. DIODES ARE MOUNTED WITH CATHODE END AWAY FROM CARD.
6. * INDICATES SELECTED RESISTOR. R26, R32 ARE SELECTED FROM 100, 110, 121, 130, 140, OR 150. R35 THRU R51 ARE SELECTED FROM 5.11K, 5.62K, 6.19K, 6.81K, 7.50K OR 8.25K.
7. E3 THRU E6 USED ONLY ON CARD 5060-8324, REV. 1136.
8. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
9. R79 IS NOT USED ON ALL CARDS. WHEN R79 IS NOT USED, VTH IS CONNECTED TO -2V AS SHOWN BY DOTTED LINE.
10. C15 AND C16 FIRST USED ON CARD REV. 1301.

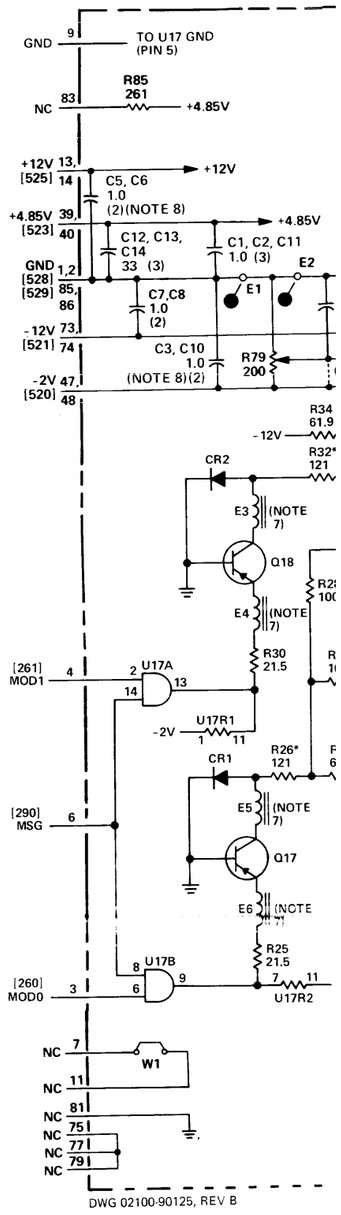


DWG REV. D

See table 4-17 for replaceable parts.

NOTES: 1. THIS DIAGRAM ALSO APPLIES TO CARD 5060-8324, REV. A-1126-22 AND REV. A-1136-22.
2. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
3. C15 AND C16 FIRST USED ON CARD 5060-8331, REV. A-1301-22.

CORE STACK/SENSE AMPLIFIER CARD
(5060-8324, REV. 1126, 1136) AND
(5060-8331, REV. 1208, 1301)



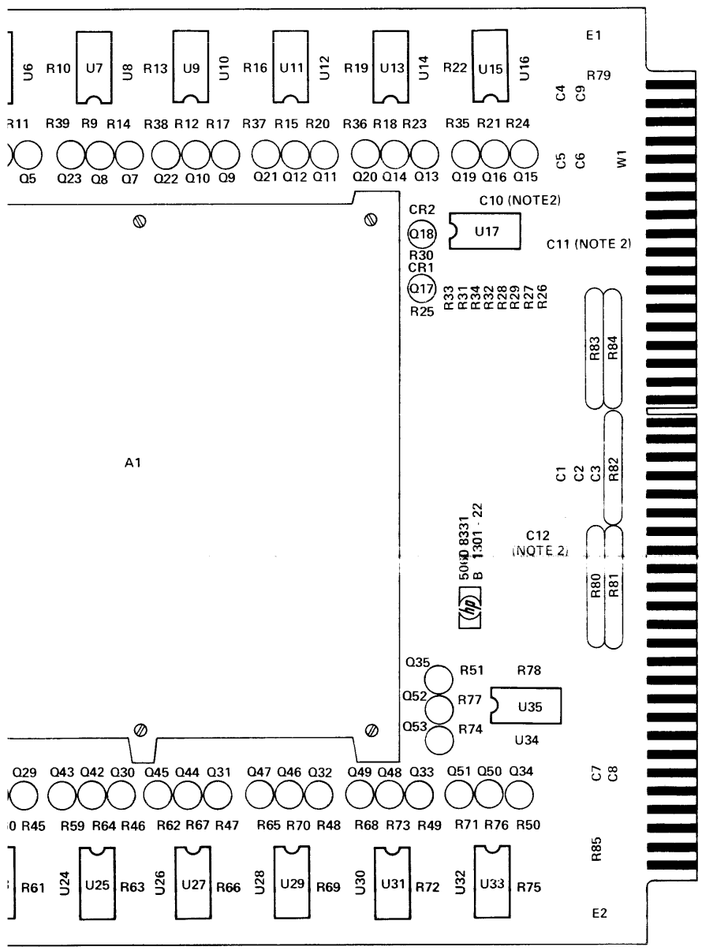
DWG 02100-90125, REV B

NOTES:

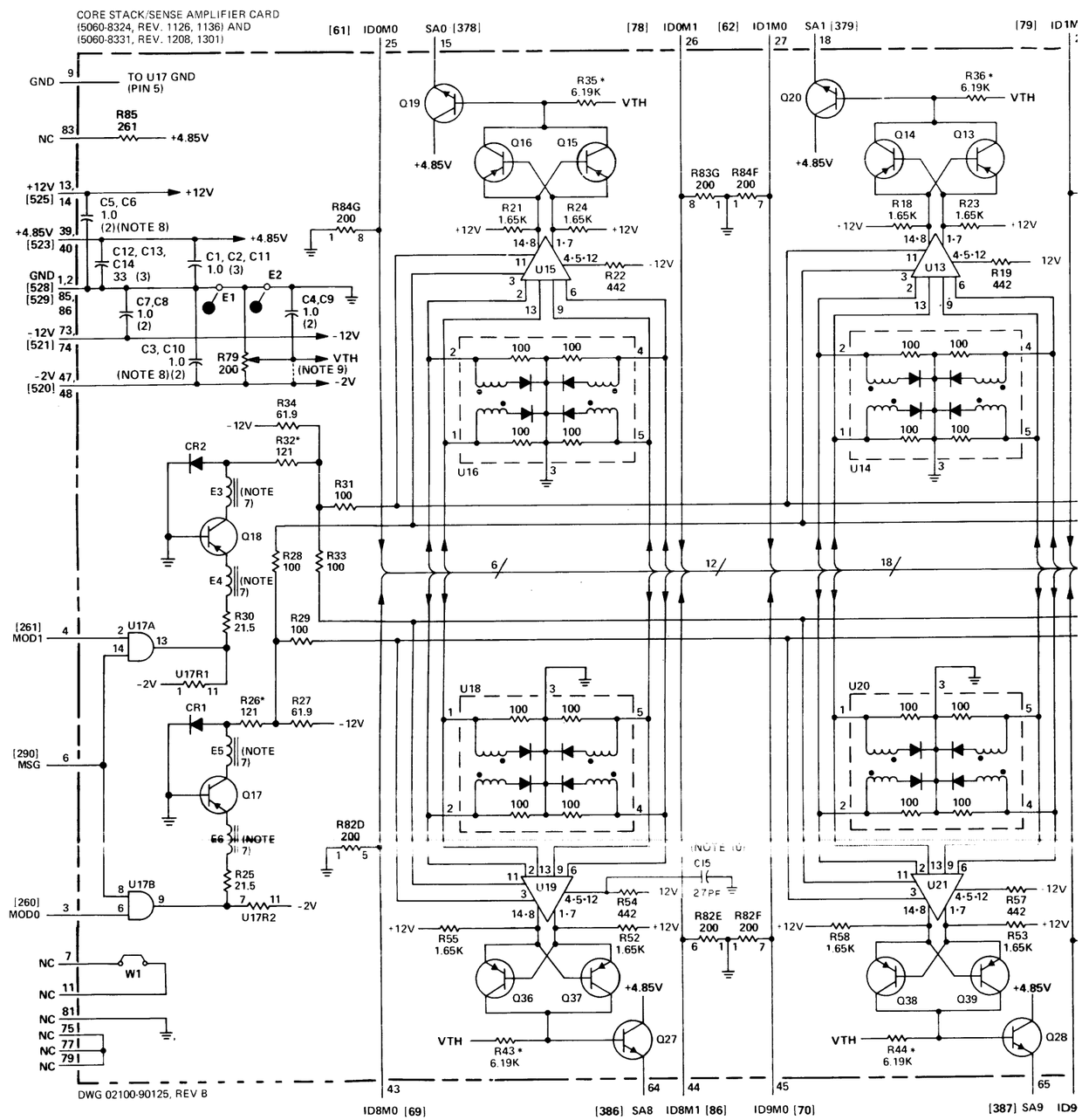
1. THIS CARD MUST NOT BE REPAIRED IN THE FIELD. FIELD REMOVAL OR REPLACEMENT OF ANY COMPONENT VOIDS THE WARRANTY ON THE CARD.
2. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
3. ALL PIN NUMBERS REFER TO 86 PIN CONNECTOR UNLESS OTHERWISE INDICATED.
4. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
5. DIODES ARE MOUNTED WITH CATHODE END AWAY FROM CARD.
6. * INDICATES SELECTED RESISTOR. R26, R32 ARE SELECTED FROM 100, 110, 121, 130, 140, OR 150. R35 THRU R51 ARE SELECTED FROM 5.11K, 5.62K, 6.19K, 6.81K, 7.50K OR 8.25K.
7. E3 THRU E6 USED ONLY ON CARD 5060-8324, REV. 1136.
8. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
9. R79 IS NOT USED ON ALL CARDS. WHEN R79 IS NOT USED, VTH IS CONNECTED TO -2V AS SHOWN BY DOTTED LINE.
10. C15 AND C16 FIRST USED ON CARD REV. 1301.

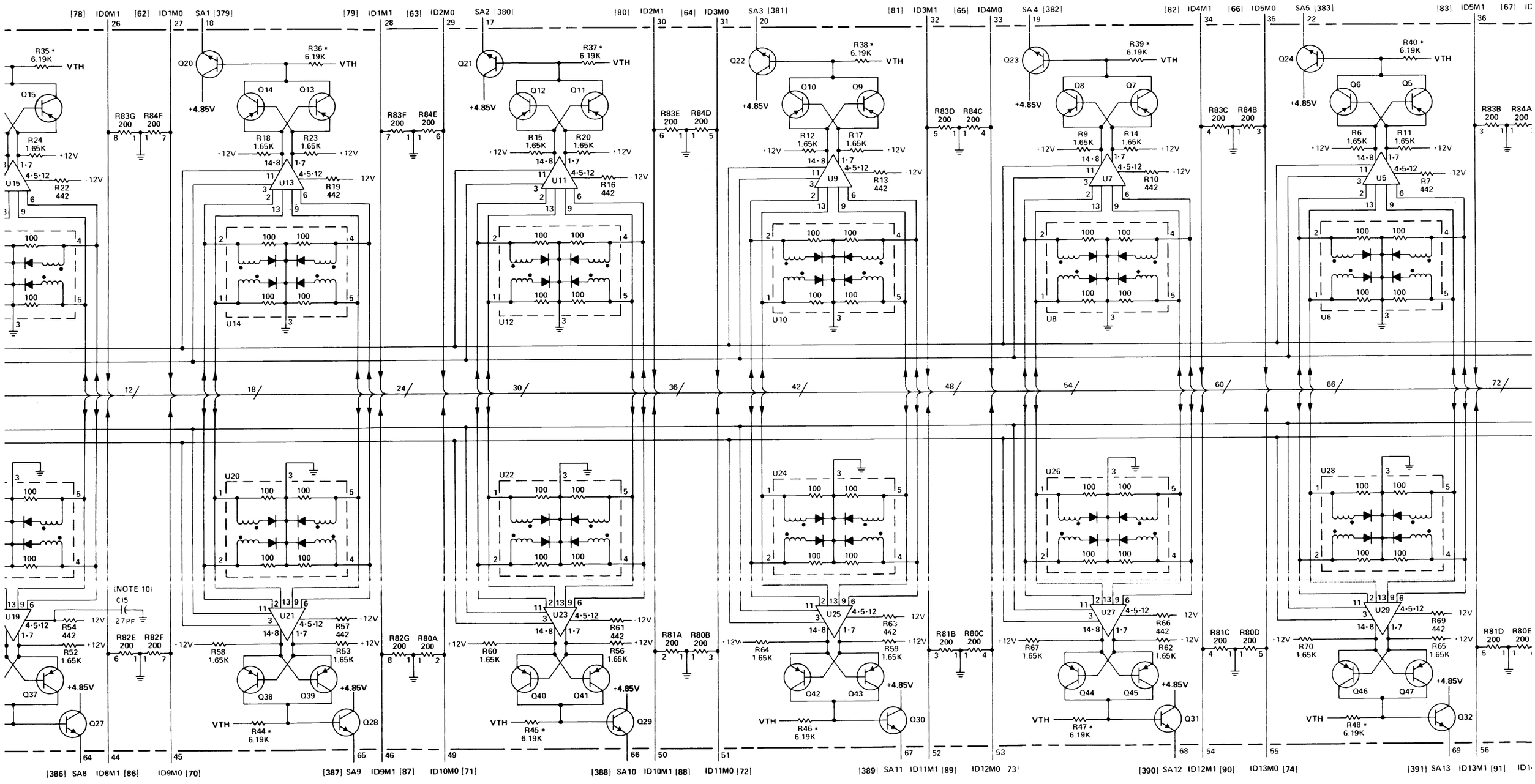
RY FOR REPAIR.
WILL VOID THE

CK A1, DO NOT
TACK.



NOTES: 1. THIS DIAGRAM ALSO APPLIES TO CARD 5060-8324, REV. A-1126-22 AND REV. A-1136-22.
2. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
3. C15 AND C16 FIRST USED ON CARD 5060-8331, REV. A-1301-22.




[78] ID0M1 [62] ID1M0 SA1 [379] [79] ID1M1 [63] ID2M0 SA2 [380] [80] ID2M1 [64] ID3M0 SA3 [381] [81] ID3M1 [65] ID4M0 SA4 [382] [82] ID4M1 [66] ID5M0 SA5 [383] [83] ID5M1 [67]
R35 * 6.19K
R36 * 6.19K
R37 * 6.19K
R38 * 6.19K
R39 * 6.19K
R40 * 6.19K
VTH
Q15
Q20
Q21
Q22
Q23
Q24
Q14
Q13
Q12
Q11
Q10
Q9
Q8
Q7
Q6
Q5
+4.85V
R24 1.65K
R18 1.65K
R23 1.65K
R15 1.65K
R20 1.65K
R12 1.65K
R17 1.65K
R9 1.65K
R14 1.65K
R6 1.65K
R11 1.65K
+12V
14·8
1·7
4·5·12
U15
U13
U11
U9
U7
U5
R22 442
R19 442
R16 442
R13 442
R10 442
R7 442
-12V
100
U14
U12
U10
U8
U6
R83G 200
R84F 200
R83F 200
R84E 200
R83E 200
R84D 200
R83D 200
R84C 200
R83C 200
R84B 200
R83B 200
R84A 200
12
18
24
30
36
42
48
54
60
66
72
[386] SA8 ID8M1 [86] ID9M0 [70]
[387] SA9 ID9M1 [87] ID10M0 [71]
[388] SA10 ID10M1 [88] ID11M0 [72]
[389] SA11 ID11M1 [89] ID12M0 73
[390] SA12 ID12M1 [90] ID13M0 [74]
[391] SA13 ID13M1 [91]
(NOTE 10)
C15
27PF
U19
U21
U23
U25
U27
U29
R54 442
R57 442
R61 442
R63 442
R66 442
R69 442
R52 1.65K
R53 1.65K
R56 1.65K
R59 1.65K
R62 1.65K
R65 1.65K
R58 1.65K
R60 1.65K
R64 1.65K
R67 1.65K
R70 1.65K
R82E 200
R82F 200
R82G 200
R80A 200
R81A 200
R80B 200
R81B 200
R80C 200
R81C 200
R80D 200
R81D 200
R80E 200
Q37
Q38
Q39
Q40
Q41
Q42
Q43
Q44
Q45
Q46
Q47
Q27
Q28
Q29
Q30
Q31
Q32
R44 * 6.19K
R45 * 6.19K
R46 * 6.19K
R47 * 6.19K
R48 * 6.19K
U20
U22
U24
U26
U28

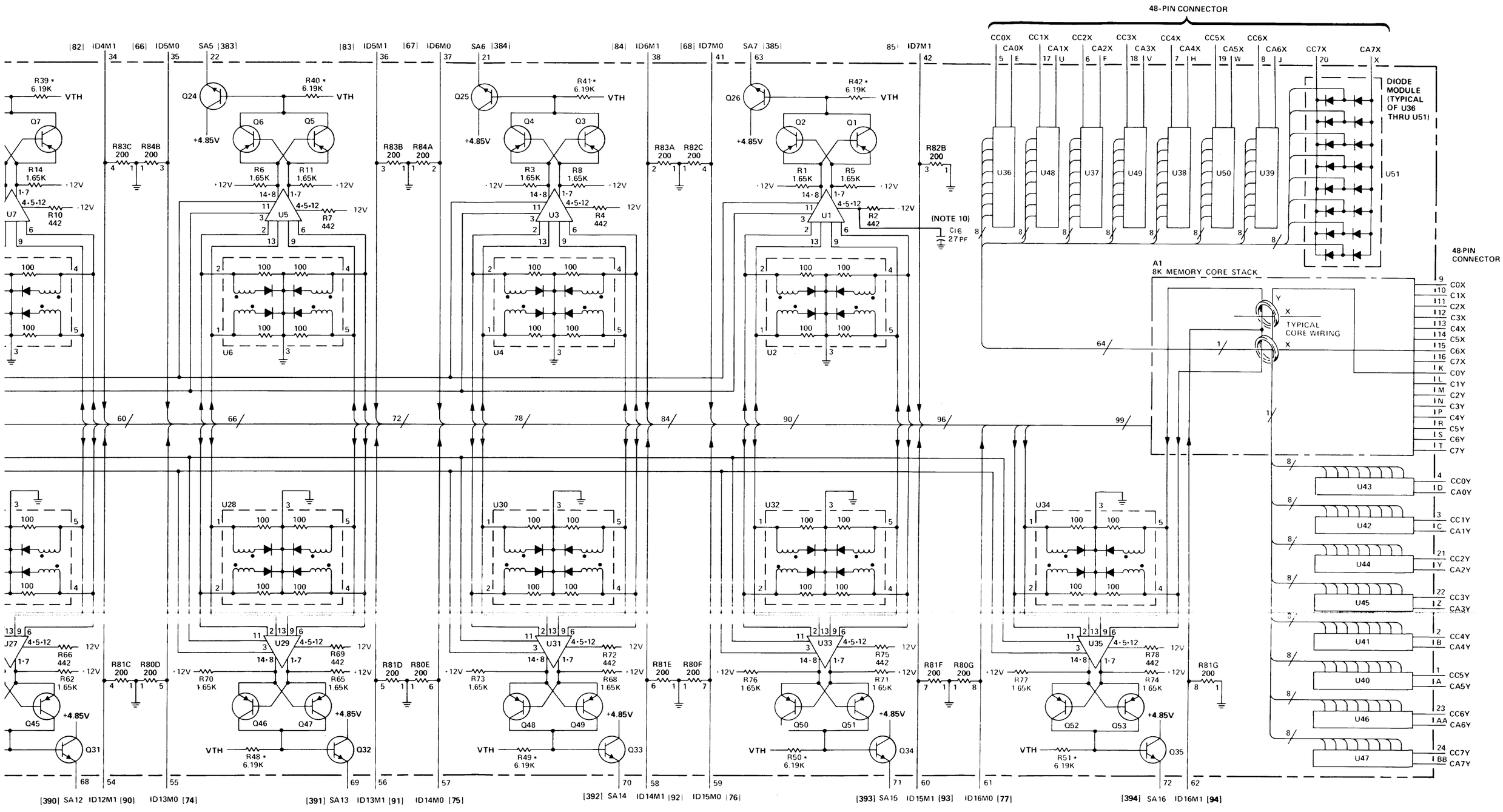
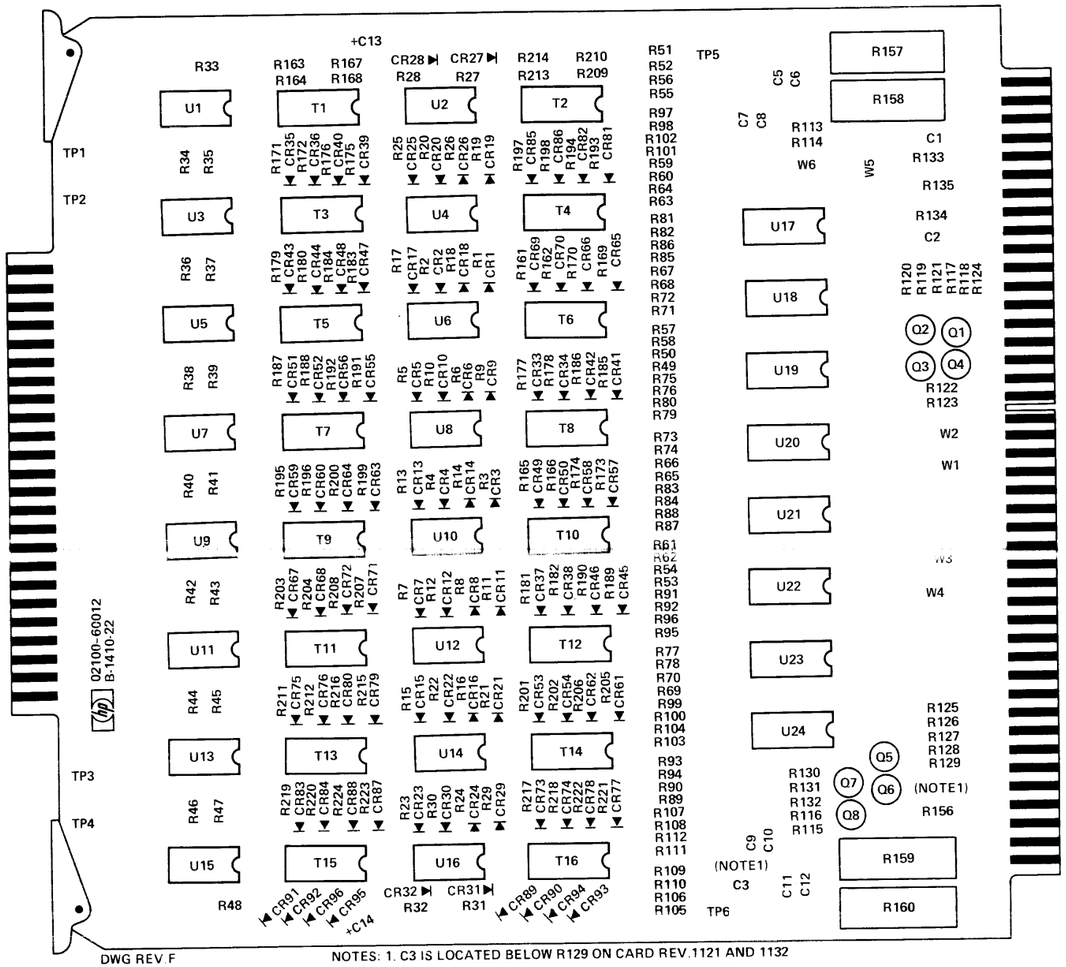


Figure 4-20. A103 Core Stack/Sense Amplifier Card (8K), Parts Location and Schematic Diagrams

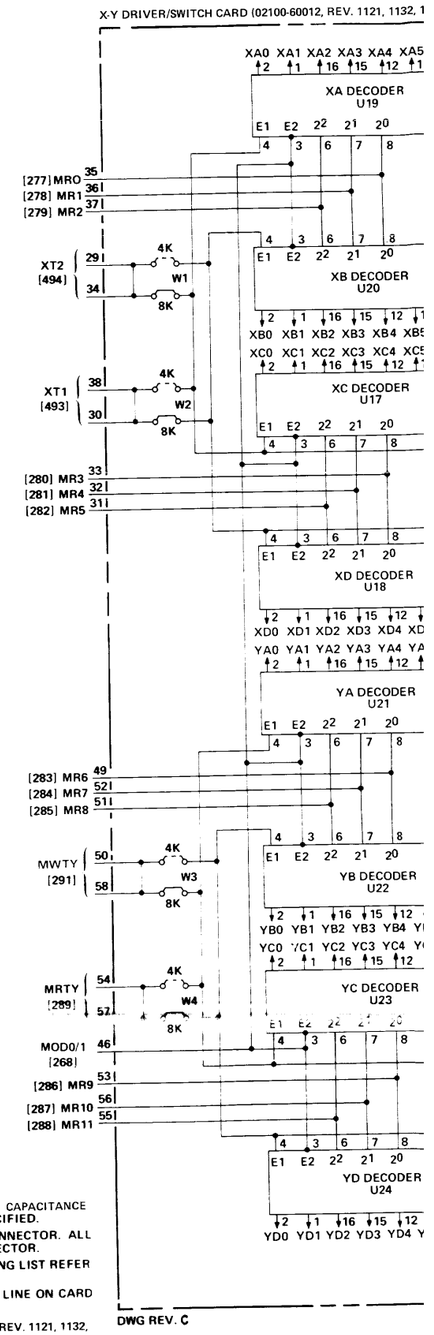
* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION				
A104					
268	A104-46	A107-59*			
277	A101-35	A104-35	A107-3*	A109-35	A112-35
278	A101-36	A104-36	A107-5*	A109-36	A112-36
279	A101-37	A104-37	A107-8*	A109-37	A112-37
280	A101-33	A104-33	A107-10*	A109-33	A112-33
281	A101-32	A104-32	A107-24*	A109-32	A112-32
282	A101-31	A104-31	A107-23*	A109-31	A112-31
283	A101-49	A104-49	A107-25*	A109-49	A112-49
284	A101-52	A104-52	A107-26*	A109-52	A112-52
285	A101-51	A104-51	A107-27*	A109-51	A112-51
286	A101-53	A104-53	A107-4*	A109-53	A112-53
287	A101-56	A104-56	A107-30*	A109-56	A112-56
288	A101-55	A104-55	A107-32*	A109-55	A112-55
289	A107-84*	A101-54,57	A104-54,57	A109-54,57	A112-54,57
291	A107-28*	A101-50,58	A104-50,58	A109-50,58	A112-50,58
305	A1-6	A7-8*	A24-67	A104-42	A107-70
	A10-66 THRU A23-66				
493	A107-65*	A101-30,38	A104-30,38	A109-30,38	A112-30,38
494	A107-64*	A101-29,34	A104-29,34	A109-29,34	A112-29,34



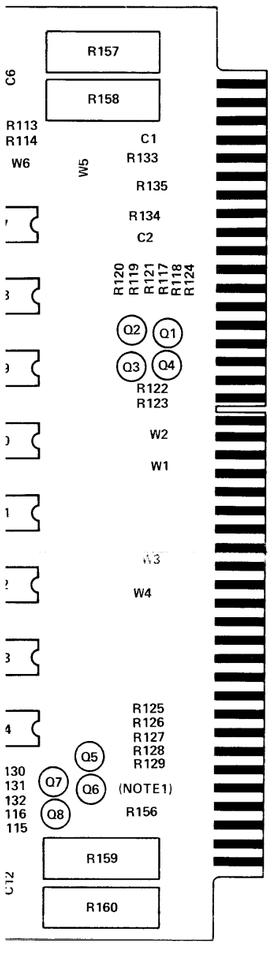
NOTES: 1. C3 IS LOCATED BELOW R129 ON CARD REV.1121 AND 1132
2. THIS DIAGRAM ALSO APPLIES TO CARD REV. 1152.

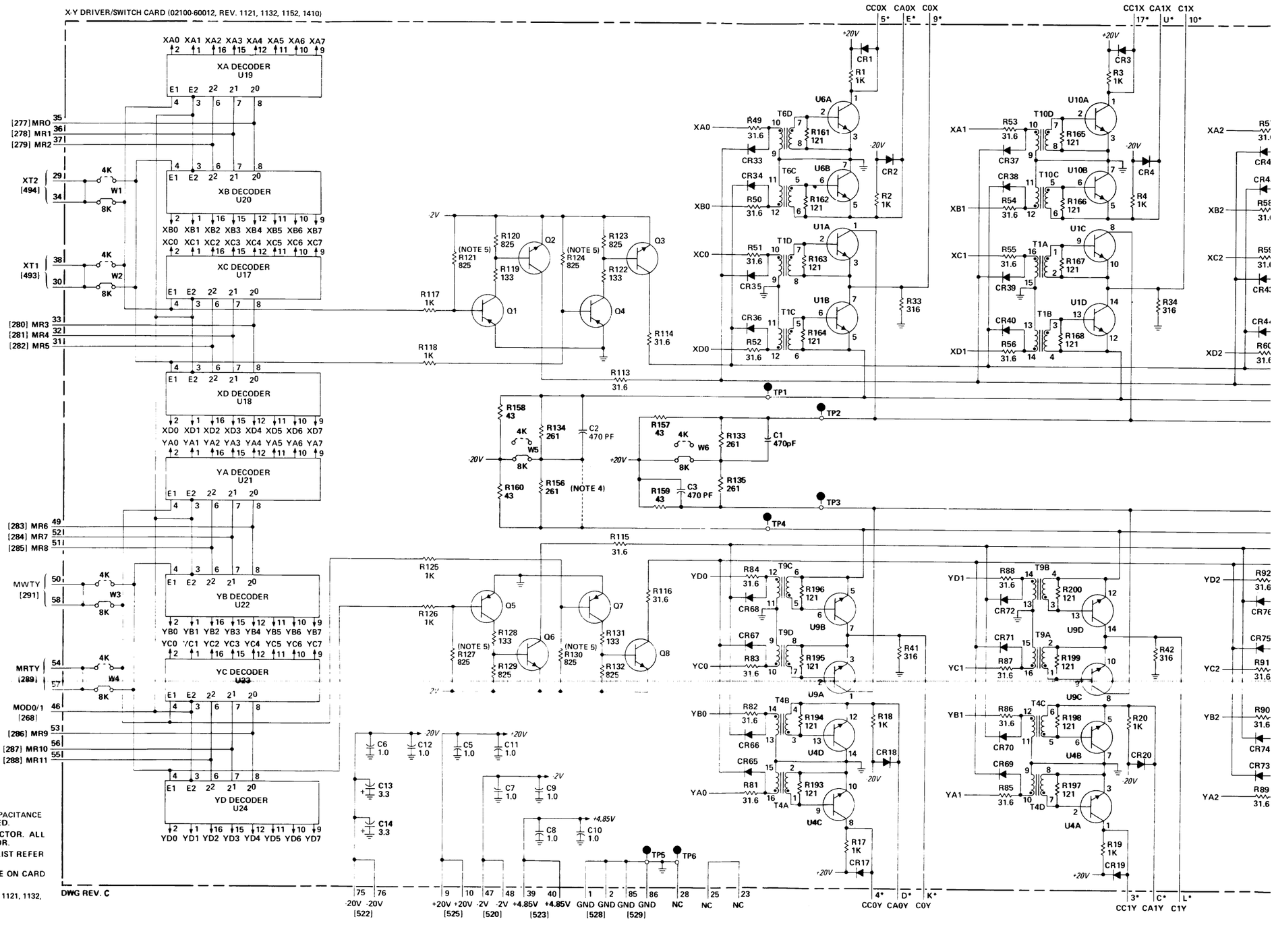
See Table 4-15 for replaceable parts.



NOTES:
1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. C3 WIRED IN POSITION SHOWN BY DASHED LINE ON CARD REV. 1132 AND 1121.
5. R121, R124, R127, AND R130 ARE 1.2K ON CARD REV. 1121, 1132, AND 1152.

SOURCE





NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. C3 WIRED IN POSITION SHOWN BY DASHED LINE ON CARD REV. 1132 AND 1121.
5. R121, R124, R127, AND R130 ARE 1.2K ON CARD REV. 1121, 1132, AND 1152.

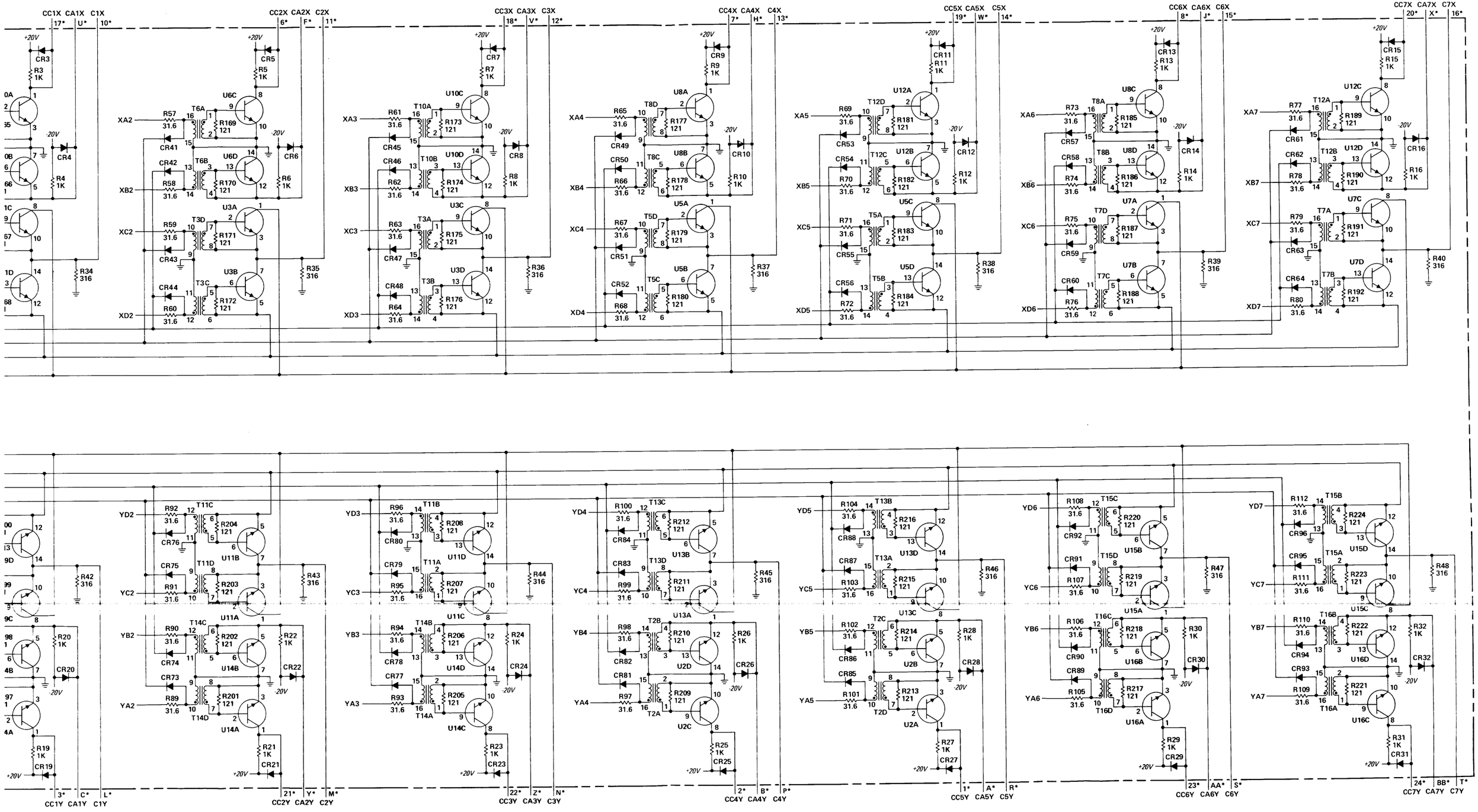


Figure 4-21. A104 X-Y Driver/Switch Card, Parts Location and Schematic Diagrams

Table 4-18. A105 Inhibit Driver Card (8K), Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A105	02100-60008	1	INHIBIT DRIVER CARD-8K	28480	02100-60008
A105C1	0160-0127	10	C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C2	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C3	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C4	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C7	0160-0128	3	C:FXD CER 2.2 UF 20% 25VDCW	56289	5C152C2S-CML
A105C8	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C9	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C10	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C14	0180-0116	1	C:FXD ELECT 6.8 UF 10% 35VDCW	56289	150D685X9035B2-DYS
A105C15	0180-0374	1	C:FXD TANT. 10 UF 10% 20VDCW	56289	150D106X9020B2-DYS
A105C16	0160-0128		C:FXD CER 2.2 UF 20% 25VDCW	56289	5C152C2S-CML
A105C17	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C18	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C19	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C23	0160-0128		C:FXD CER 2.2 UF 20% 25VDCW	56289	5C152C2S-CML
A105CR1	1901-0620	34	DIODE BREAKDOWN	28480	1901-0620
A105CR2	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR3	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR4	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR5	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR6	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR7	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR8	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR9	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR10	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR21	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR22	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR23	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR24	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR25	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR26	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR27	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR28	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR29	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR30	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR31	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR32	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR45	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR46	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR47	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR48	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR49	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR50	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR51	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR52	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR53	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR54	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR55	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105CR56	1901-0620		DIODE BREAKDOWN	28480	1901-0620
A105Q1	1854-0532	34	TSTR:SI NPN	02735	2N5262
A105Q2	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q3	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q4	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q5	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q11	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q12	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q13	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q14	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q15	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q21	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q22	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q23	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q24	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q25	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q26	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q33	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q34	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q35	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q36	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q37	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q38	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q45	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q46	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q47	1854-0532		TSTR:SI NPN	02735	2N5262

Table 4-18. A105 Inhibit Driver Card (8K), Replaceable Parts (Continued)

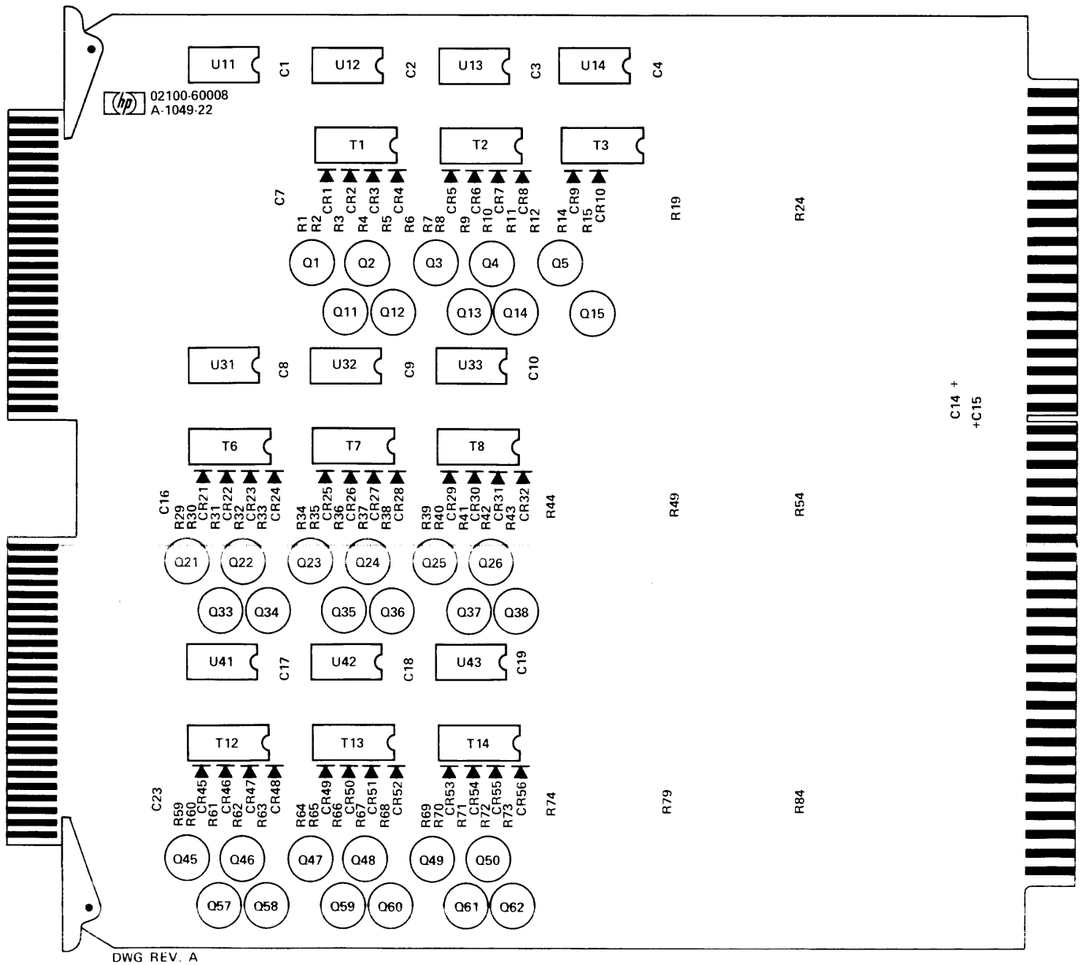
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A105Q48	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q49	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q50	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q57	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q58	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q59	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q60	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q61	1854-0532		TSTR:SI NPN	02735	2N5262
A105Q62	1854-0532		TSTR:SI NPN	02735	2N5262
A105R1	0757-0394	18	R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R2	0757-0403	34	R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R3	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R4	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R5	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R6	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R7	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R8	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R9	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R10	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R11	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R12	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R14	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R15	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R19	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R24	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R29	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R30	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R31	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R32	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R33	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R34	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R35	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R36	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R37	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R38	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R39	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R40	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R41	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R42	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R43	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R44	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R49	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R54	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R59	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R60	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R61	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R62	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R63	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R64	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R65	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R66	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R67	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R68	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R69	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R70	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R71	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R72	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R73	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R74	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R79	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R84	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105T1	9100-3180	9	TRANSFORMER	28480	9100-3180
A105T2	9100-3180		TRANSFORMER	28480	9100-3180
A105T3	9100-3180		TRANSFORMER	28480	9100-3180
A105T6	9100-3180		TRANSFORMER	28480	9100-3180
A105T7	9100-3180		TRANSFORMER	28480	9100-3180
A105T8	9100-3180		TRANSFORMER	28480	9100-3180
A105T12	9100-3180		TRANSFORMER	28480	9100-3180
A105T13	9100-3180		TRANSFORMER	28480	9100-3180
A105T14	9100-3180		TRANSFORMER	28480	9100-3180
A105U11	1820-0140	1	IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A105U12	1820-0621	9	IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U13	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U14	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U31	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N

Table 4-18. A105 Inhibit Driver Card (8K), Replaceable Parts (Continued)

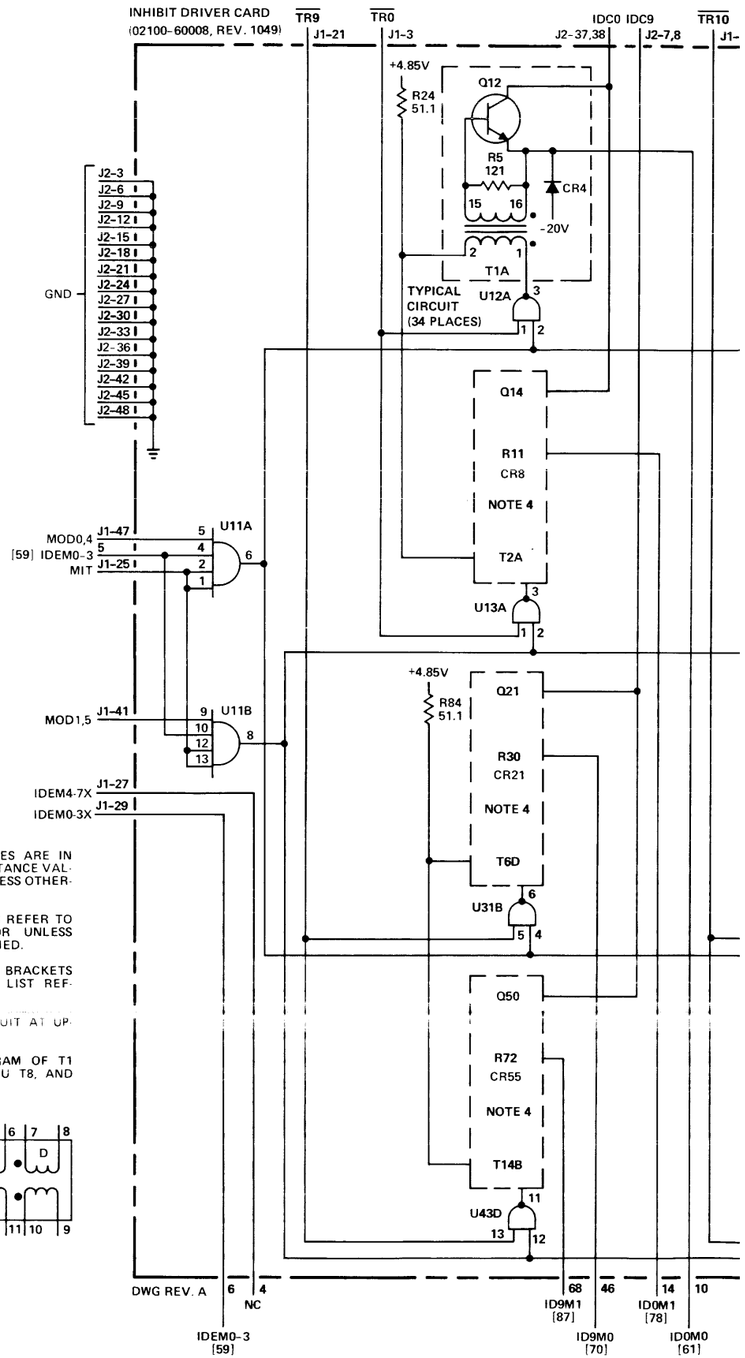
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A105U32	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U33	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U41	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U42	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U43	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N

* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION	
A105(8K)		
59	A105-5	A105-6
61	A103-25	A105-10*
62	A103-27	A105-7*
63	A103-29	A105-8*
64	A103-31	A105-9*
65	A103-33	A105-37*
66	A103-35	A105-32*
67	A103-37	A105-33*
68	A103-41	A105-34*
69	A103-43	A105-31*
70	A103-45	A105-46*
71	A103-49	A105-49*
72	A103-51	A105-50*
73	A103-53	A105-61*
74	A103-55	A105-69*
75	A103-57	A105-70*
76	A103-59	A105-71*
77	A103-61	A105-15*
78	A103-26	A105-14*
79	A103-28	A105-11*
80	A103-30	A105-12*
81	A103-32	A105-13*
82	A103-34	A105-38*
83	A103-36	A105-43*
84	A103-38	A105-41*
85	A103-42	A105-42*
86	A103-44	A105-72*
87	A103-46	A105-68*
88	A103-50	A105-66*
89	A103-52	A105-67*
90	A103-54	A105-65*
91	A103-56	A105-62*
92	A103-58	A105-63*
93	A103-60	A105-64*
94	A103-62	A105-16*

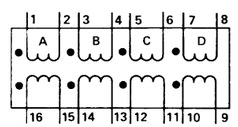


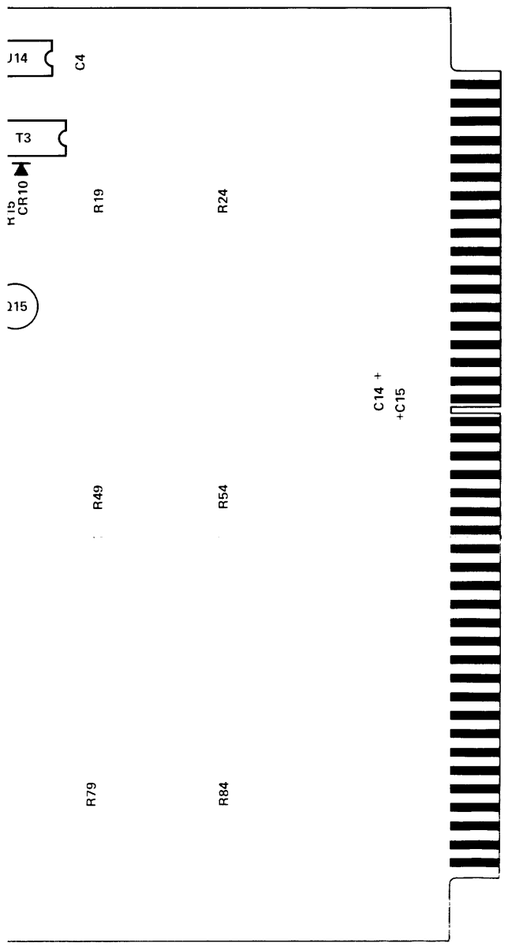
See table 4-18 for replaceable parts.

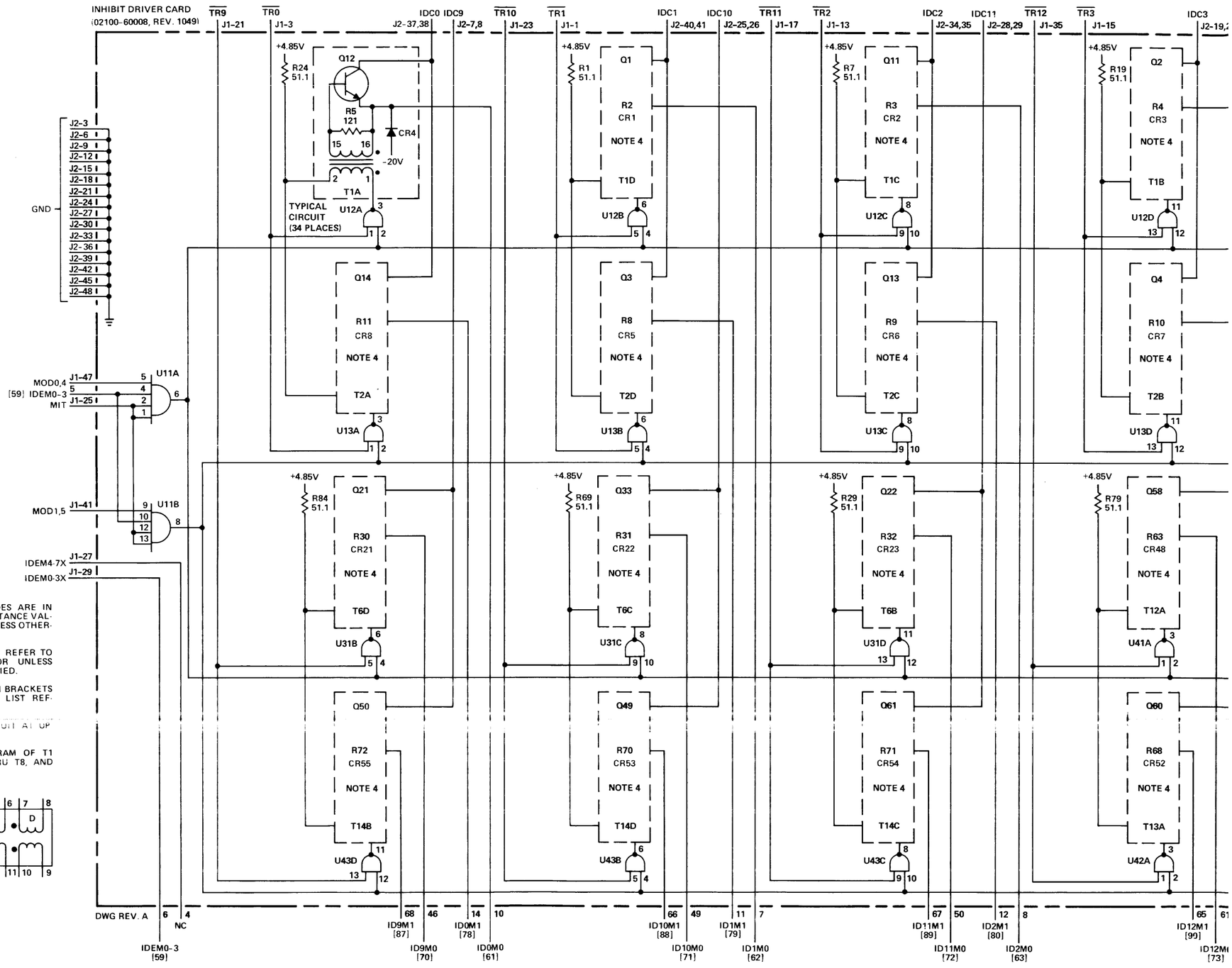


NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE SPECIFIED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. SEE TYPICAL CIRCUIT AT UPPER LEFT CORNER.
5. SCHEMATIC DIAGRAM OF T1 THRU T3, T6 THRU T8, AND T12 THRU T14.

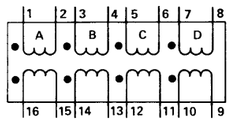






NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE SPECIFIED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. SEE TYPICAL CIRCUIT AT UPPER LEFT CORNER.
5. SCHEMATIC DIAGRAM OF T1 THRU T3, T6 THRU T8, AND T12 THRU T14.



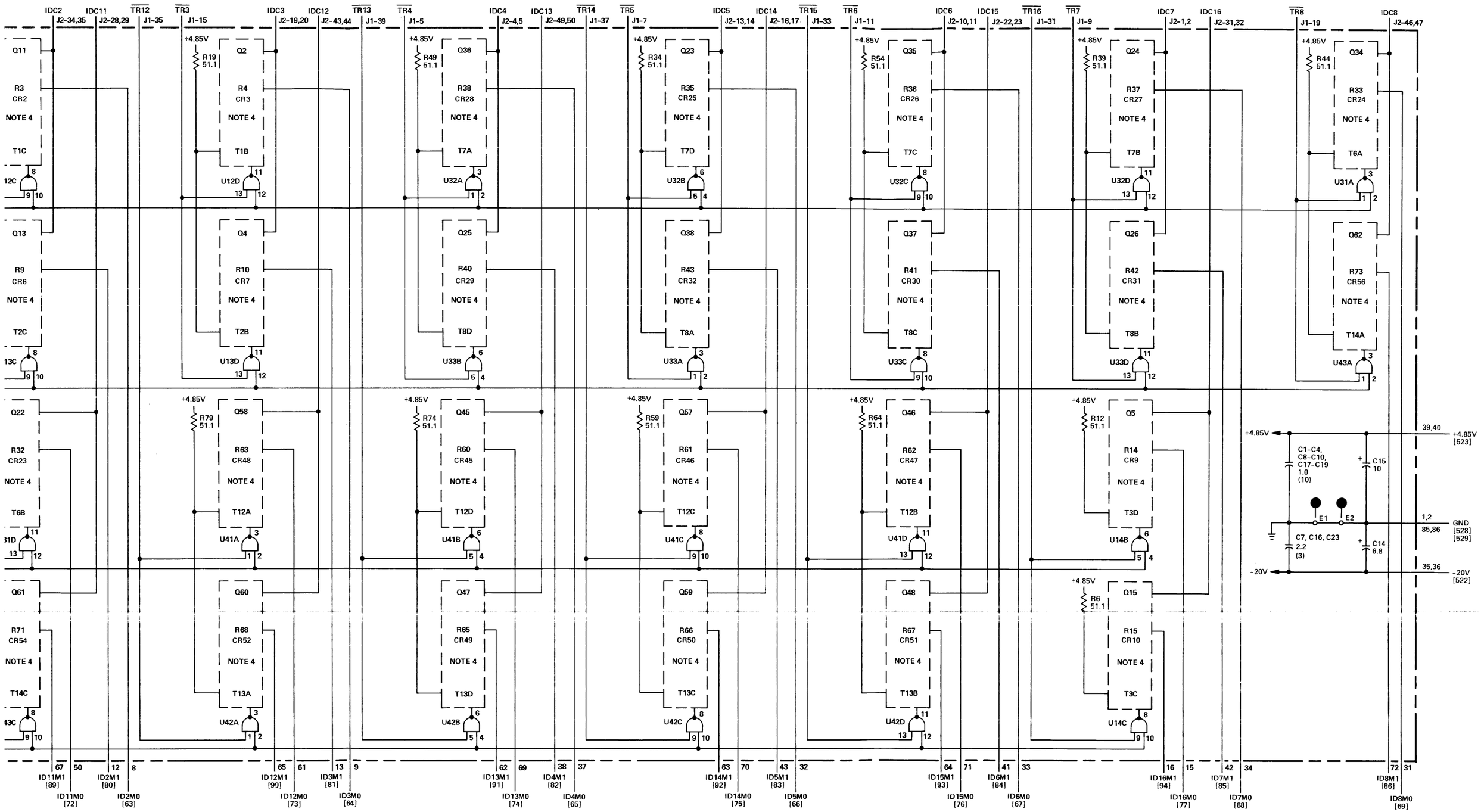


Figure 4-22. A105 Inhibit Driver Card (8K), Parts Location and Schematic Diagrams

Table 4-19. A105, A108 Inhibit Driver Card (16K), Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A105	02100-60009	2	INHIBIT DRIVER CARD - 16K	28480	02100-60009
A105C1	0160-0127	18	C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C2	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C3	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C4	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C5	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C6	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C7	0160-0128	3	C:FXD CER 2.2 UF 20% 25VDCW	56289	5C152C2S-CML
A105C8	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C9	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C10	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C11	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C12	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C13	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C14	0180-0116	1	C:FXD ELECT 6.8 UF 10% 35VDCW	56289	150D685X9035B2-DYS
A105C15	0180-0374	1	C:FXD TANT. 10 UF 10% 20VDCW	56289	150D106X9020B2-DYS
A105C16	0160-0128		C:FXD CER 2.2 UF 20% 25VDCW	56289	5C152C2S-CML
A105C17	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C18	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C19	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C20	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C21	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C22	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A105C23	0160-0128		C:FXD CER 2.2 UF 20% 25VDCW	56289	5C152C2S-CML
A105CR1 THRU A105CR68	1901-0620	68	DIODE BREAKDOWN	28480	1901-0620
A105Q1 THRU A105Q68	1854-0532	68	TSTR:SI NPN	02735	2N5262
A105R1	0757-0394	20	R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R2	0757-0403	68	R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R3	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R4	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R5	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R6	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R7	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R8	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R9	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R10	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R11	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R12	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R13	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R14	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R15	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R16	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R17	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R18	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R19	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R20	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R21	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R22	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R23	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R24	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R25	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R26	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R27	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R28	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R29	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R30	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R31	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R32	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R33	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R34	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R35	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R36	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R37	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R38	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R39	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R40	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R41	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R42	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R43	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R44	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R45	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403

Table 4-19. A105, A108 Inhibit Driver Card (16K), Replaceable Parts (Continued)

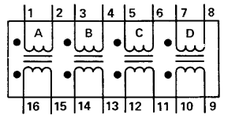
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A105R46	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R47	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R48	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R49	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R50	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R51	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R52	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R53	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R54	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R55	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R56	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R57	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R58	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R59	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R60	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R61	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R62	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R63	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R64	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R65	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R66	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R67	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R68	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R69	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R70	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R71	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R72	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R73	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R74	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R75	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R76	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R77	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R78	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R79	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R80	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R81	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R82	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R83	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R84	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
A105R85	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R86	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R87	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105R88	0757-0403		R:FXD MET FLM 121 OHM 1% 1/8W	28480	0757-0403
A105T1 THRU A105T17	9100-3180	17	TRANSFORMER	28480	9100-3180
A105U11	1820-0140	2	IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A105U12	1820-0621	17	IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U13	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U14	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U15	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U16	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U21	1820-0140		IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A105U31	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U32	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U33	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U34	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U35	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U36	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U41	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U42	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U43	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U44	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U45	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A105U46	1820-0621		IC:TTL QUAD 2-INPT NAND BUFFER W/OPEN C	01295	SN7438N
A108			SAME AS A105, USE PREFIX A108		

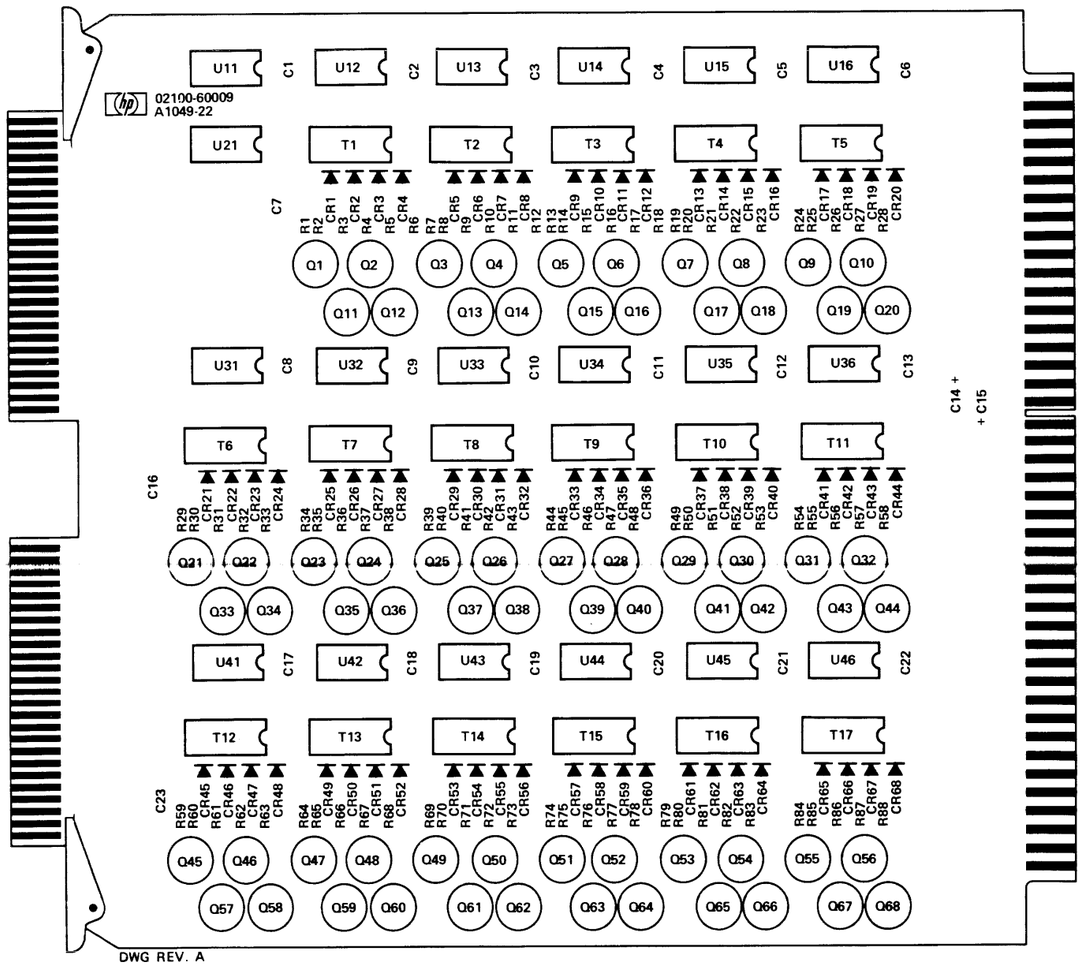
* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION	
A105(16K)		
59	A105-5	A105-6
61	A103-25	A105-10*
62	A103-27	A105-7*
63	A103-29	A105-8*
64	A103-31	A105-9*
65	A103-33	A105-37*
66	A103-35	A105-32*
67	A103-37	A105-33*
68	A103-41	A105-34*
69	A103-43	A105-31*
70	A103-45	A105-46*
71	A103-49	A105-49*
72	A103-51	A105-50*
73	A103-53	A105-61*
74	A103-55	A105-69*
75	A103-57	A105-70*
76	A103-59	A105-71*
77	A103-61	A105-15*
78	A103-26	A105-14*
79	A103-28	A105-11*
80	A103-30	A105-12*
81	A103-32	A105-13*
82	A103-34	A105-38*
83	A103-36	A105-43*
84	A103-38	A105-41*
85	A103-42	A105-42*
86	A103-44	A105-72*
87	A103-46	A105-68*
88	A103-50	A105-66*
89	A103-52	A105-67*
90	A103-54	A105-65*
91	A103-56	A105-62*
92	A103-58	A105-63*
93	A103-60	A105-64*
94	A103-62	A105-16*
95	A102-25	A105-26*
96	A102-27	A105-19*
97	A102-29	A105-25*
98	A102-31	A105-24*
99	A102-33	A105-53*
100	A102-35	A105-60*
101	A102-37	A105-59*
102	A102-41	A105-58*
103	A102-43	A105-52*
104	A102-45	A105-44*
105	A102-49	A105-51*
106	A102-51	A105-45*
107	A102-53	A105-76*
108	A102-55	A105-73*
109	A102-57	A105-74*
110	A102-59	A105-75*
111	A102-61	A105-17*
112	A102-26	A105-20*
113	A102-28	A105-23*
114	A102-30	A105-22*
115	A102-32	A105-21*
116	A102-34	A105-57*
117	A102-36	A105-54*
118	A102-38	A105-56*
119	A102-42	A105-55*
120	A102-44	A105-78*
121	A102-46	A105-79*
122	A102-50	A105-81*
123	A102-52	A105-80*
124	A102-54	A105-84*
125	A102-56	A105-77*
126	A102-58	A105-83*
127	A102-60	A105-82*
128	A102-62	A105-18*

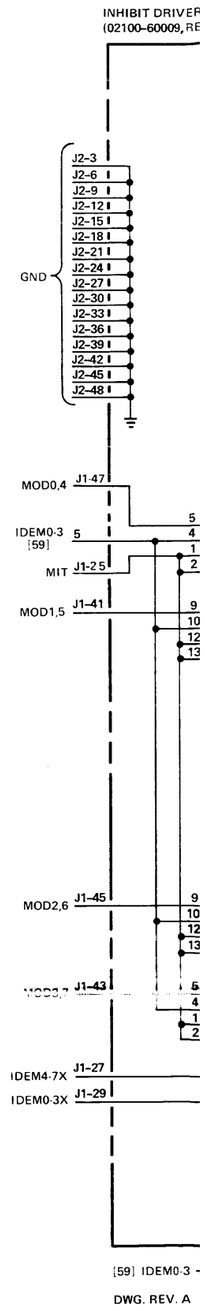
NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE SPECIFIED.
3. NUMBERS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. SEE TYPICAL CIRCUIT AT UPPER LEFT CORNER.
5. SCHEMATIC DIAGRAM OF T1 THRU T17.





See table 4-19 for replaceable parts.



INHIBIT DRIVER CARD
(02100-60009, REV. 1049)

TR0 J1-3 IDC0 J2-37,38
TR1 J1-1 IDC1 J2-40,41
TR2 J1-13 IDC2 J2-34,35
TR3 J1-15 IDC3 J2-19,20
TR4 J1-5 IDC4 J2-4,5
TR5 J1-7 IDC5 J2-13,14
TR6 J1-11 IDC6 J2-10,11
TR

+4.85V
R24 51.1
Q12
R5 121
CR4
-20V
T1A
U12A
Q1
R2
CR1
NOTE 4
T1D
U12B
R1 51.1
Q11
R3
CR2
T1C
U12C
R7 51.1
Q2
R4
CR3
T1B
U12D
R19 51.1
Q36
R38
CR28
T7A
U32A
R49 51.1
Q23
R35
CR25
T7D
U32B
R34 51.1
Q35
R36
CR26
T7C
U32C
R54 51.1

GND
J2-3
J2-6
J2-9
J2-12
J2-15
J2-18
J2-21
J2-24
J2-27
J2-30
J2-33
J2-36
J2-39
J2-42
J2-45
J2-48

MOD0,4 J1-47
IDEM0-3 [59]
MIT J1-25
MOD1,5 J1-41
U11A
U11B

Q14
R11
CR8
NOTE 4
T2A
U13A
Q3
R8
CR5
T2D
U13B
Q13
R9
CR6
T2C
U13C
Q4
R10
CR7
T2B
U13D
Q25
R40
CR29
T8D
U33B
Q38
R43
CR32
T8A
U33A
Q37
R41
CR30
T8C
U33C

Q18
R23
CR16
T4A
U15A
Q7
R20
CR13
T4D
U15B
Q17
R21
CR14
T4C
U15C
Q8
R22
CR15
T4B
U15D
Q29
R50
CR37
T10D
U35B
Q42
R53
CR40
T10A
U35A
Q41
R51
CR38
T10C
U35C

MOD2,6 J1-45
U21B

MOD3,7 J1-43
U21A

Q20
R28
CR20
T5A
U16A
Q9
R25
CR17
T5D
U16B
Q19
R26
CR18
T5C
U16C
Q10
R27
CR19
T5B
U16D
Q31
R55
CR41
T11D
U36B
Q44
R58
CR44
T11A
U36A
Q43
R56
CR42
T11C
U36C

IDEM4-7X J1-27
IDEM0-3X J1-29

[59] IDEM0-3
NC

DWG. REV. A

ID0M0 [61]
ID0M1 [78]
ID0M2 [95]
ID0M3 [112]
ID1M0 [62]
ID1M1 [79]
ID1M2 [96]
ID1M3 [113]
ID2M0 [63]
ID2M1 [80]
ID2M2 [97]
ID2M3 [114]
ID3M0 [64]
ID3M1 [81]
ID3M2 [98]
ID3M3 [115]
ID4M0 [65]
ID4M1 [82]
ID4M2 [99]
ID4M3 [116]
ID5M0 [66]
ID5M1 [83]
ID5M2 [100]
ID5M3 [117]

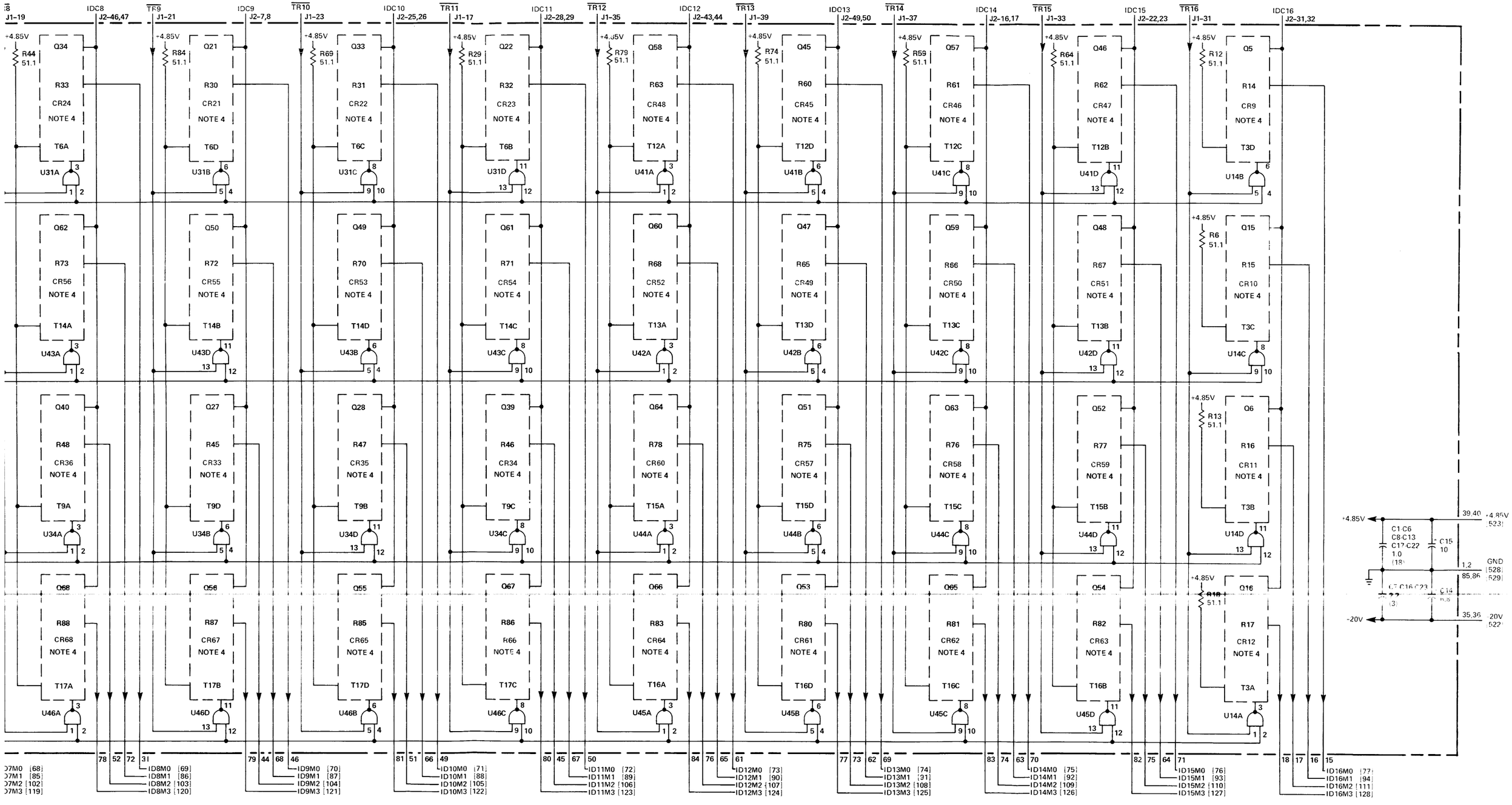


Figure 4-23. A105 Inhibit Driver Card (16K), Parts Location and Schematic Diagrams

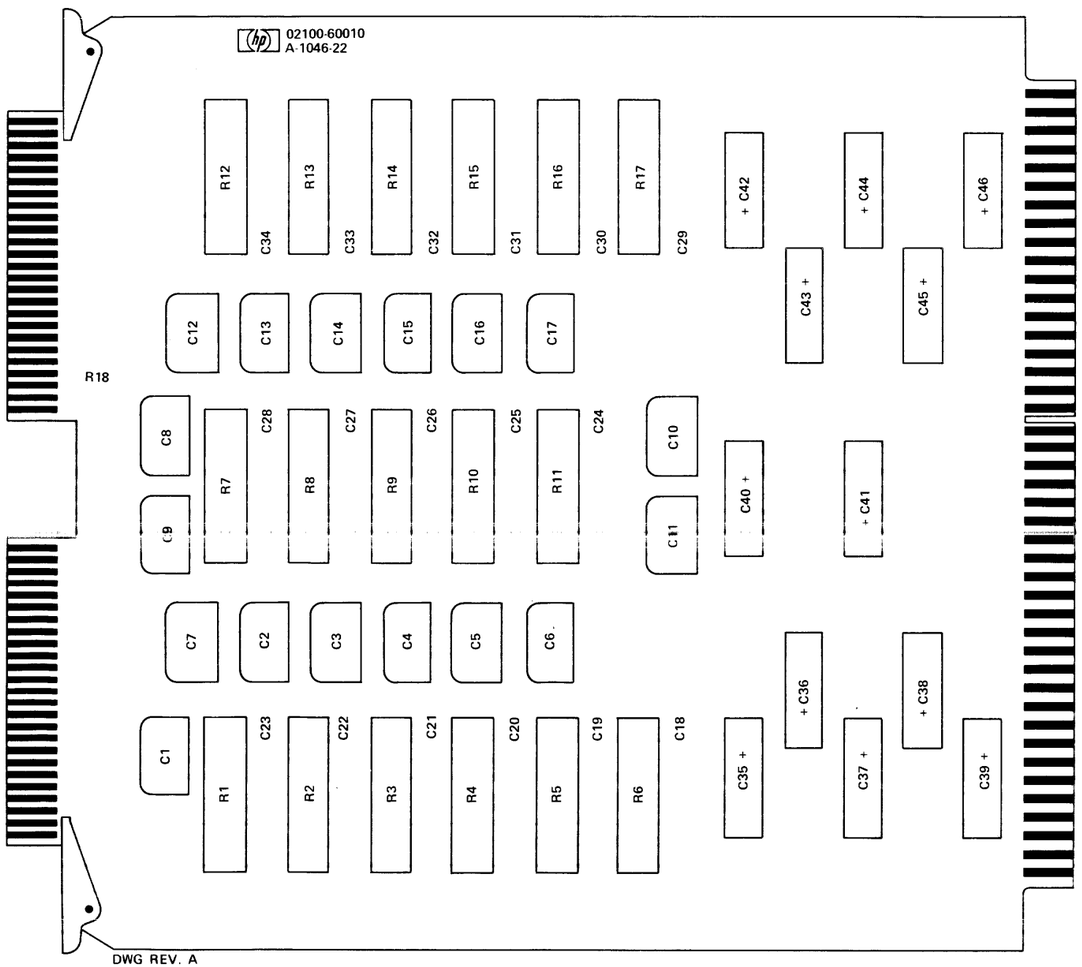
Table 4-20. A106 Inhibit Driver Load Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A106	02100-60010	1	INHIBIT DRIVER LOAD CARD	28480	02100-60010
A106C1 THRU A106C17	0160-3871	17	C:FXD MICA 2000 PF 5% 100VDCW	72136	RDM19F202JIS
A106C18 THRU A106C34	0160-3901	17	C:FXD CER 2.2 UF 20% 25VDCW	56289	5C120-CML
A106C35	0180-0094	12	C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C36	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C37	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C38	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C39	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C40	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C41	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C42	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C43	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C44	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C45	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106C46	0180-0094		C:FXD ELECT 100 UF +75-10% 25VDCW	56289	30D107G025DD2-DSM
A106R1 THRU A106R17	0811-2988	17	R:FXD WW 22 OHM 1% 7W	28480	0811-2988
A106R18	0811-2031	1	R:FXD WW 815 OHM 3% 1/4W	28480	0811-2031

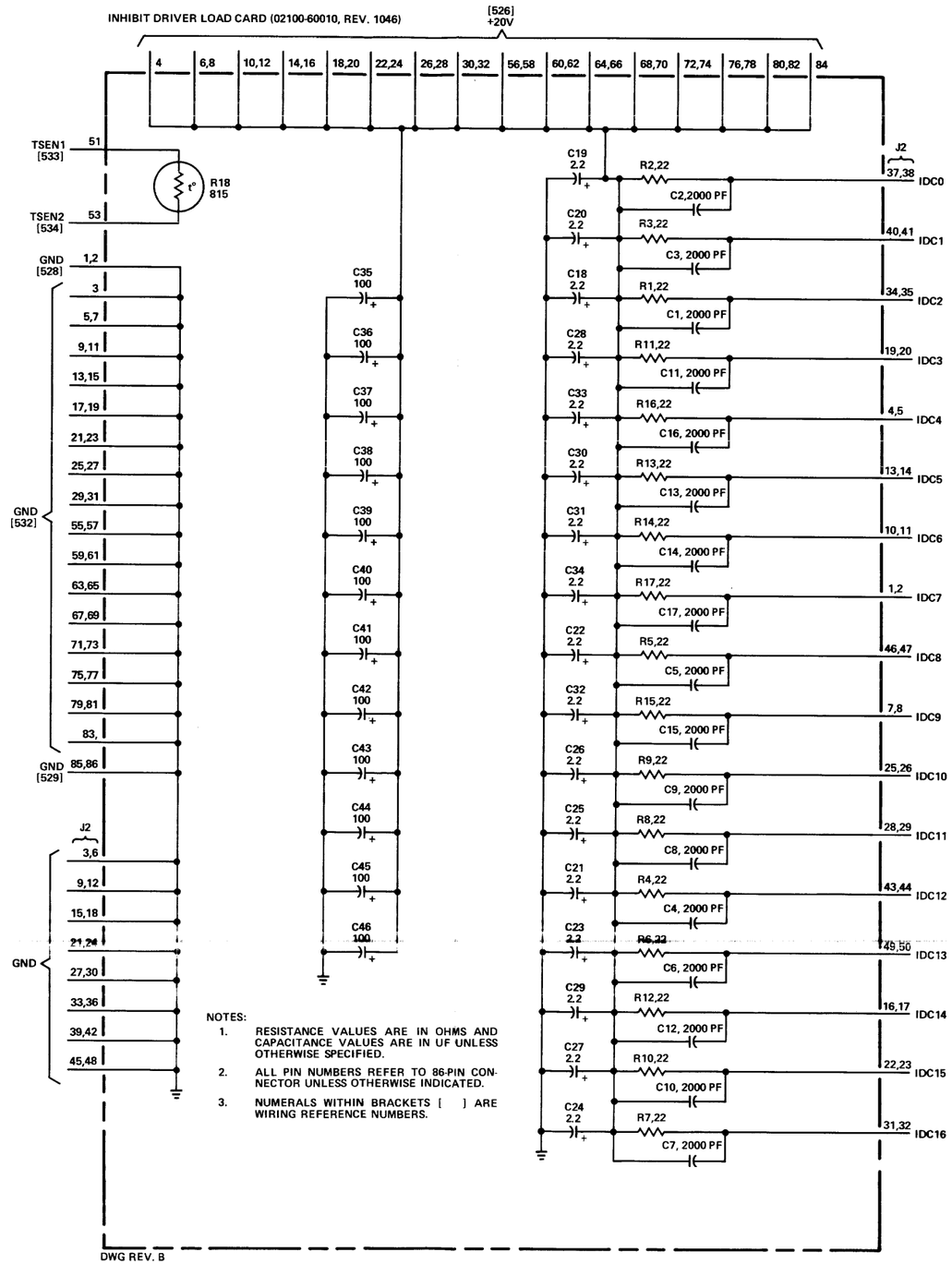
REF. NO. BACKPLANE LOCATION

* INDICATES SIGNAL SOURCE

A106
533 A25TB2-7 A106-51
534 A25TB2-9 A106-53



See table 4-20 for replaceable parts.



NOTES:
1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING REFERENCE NUMBERS.

Figure 4-24. A106 Inhibit Driver Load Card, Parts Location and Schematic Diagrams

Table 4-21. A107 Data Control Card, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A107	C2100-60011	1	DATA CONTROL CARD	28480	02100-60011
A107C1	0160-2055	17	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C2	C160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C3	0180-0197	6	C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A107C4	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A107C5	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C7	0160-0127	7	C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A107C8	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C9	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C10	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A107C11	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A107C12	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C13	0160-2199	2	C:FXD MICA 30 PF 5% 300VDCW	28480	0160-2199
A107C14	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C15	0160-2199		C:FXD MICA 30 PF 5% 300VDCW	28480	0160-2199
A107C16	0140-0196	1	C:FXD MICA 150 PF 5%	72136	RDM15F151J3C
A107C17	0140-0198	1	C:FXD MICA 200 PF 5%	72136	RDM15F201J3C
A107C19	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C20	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A107C21	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A107C22	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A107C23	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A107C24	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A107C25	0160-0127		C:FXD CER 1.0 UF 20% 25VDCW	56289	5C13CS-CML
A107C26	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C27	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A107C28	0180-0197		C:FXD ELECT 2.2 UF 10% 20VDCW	56289	150D225X9020A2-DYS
A107C29	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C30	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C31	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C32	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C33	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C34	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107C35	0140-0199	1	C:FXD MICA 240 PF 5%	28480	0140-0199
A107C36	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
A107CR1	1910-0016	5	DIODE:GERMANIUM 100MA/0.85V 60PIV	93332	D2361
A107CR2	1910-0016		DIODE:GERMANIUM 100MA/0.85V 60PIV	93332	D2361
A107CR3	1910-0016		DIODE:GERMANIUM 100MA/0.85V 60PIV	93332	D2361
A107CR4	1990-0326	1	DIODE:VISIBLE LIGHT EMITTER	28480	1990-0326
A107CR5	1910-0016		DIODE:GERMANIUM 100MA/0.85V 60PIV	93332	D2361
A107CR6	1910-0016		DIODE:GERMANIUM 100MA/0.85V 60PIV	93332	D2361
A107CR7	5080-0059	7	PIN:DIODE	28480	5080-0059
A107CR8	5080-0059		PIN:DIODE	28480	5080-0059
A107CR9	5080-0059		PIN:DIODE	28480	5080-0059
A107CR10	5080-0059		PIN:DIODE	28480	5080-0059
A107CR11	5080-0059		PIN:DIODE	28480	5080-0059
A107CR12	5080-0059		PIN:DIODE	28480	5080-0059
A107CR13	5080-0059		PIN:DIODE	28480	5080-0059
A107DL1	1810-0064	1	DELAY LINE:	01961	GG4
A107E1 THRU A107E9	0360-0294	9	TERMINAL:SOLDER POINT	28480	0360-0294
A107Q2	1854-0019	7	TSTR:SI NPN	28480	1854-0019
A107Q3	1854-0019		TSTR:SI NPN	28480	1854-0019
A107Q4	1854-0019		TSTR:SI NPN	28480	1854-0019
A107Q5	1854-0019		TSTR:SI NPN	28480	1854-0019
A107Q6	1854-0019		TSTR:SI NPN	28480	1854-0019
A107Q7	1854-0019		TSTR:SI NPN	28480	1854-0019
A107Q8	1854-0019		TSTR:SI NPN	28480	1854-0019
A107R3	0698-0082	21	R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R4	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R7	0698-3444	17	R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R8	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R9	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R10	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R11	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R12	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R13	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R17(NOTE 2)	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R17(NOTE 3)	0698-3442	1	R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A107R18	0757-0280	13	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R19	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280

NOTES: 2. Used on card Rev. 1132.
3. First used on card Rev. 1312.

Table 4-21. A107 Data Control Card, Replaceable Parts (Continued)

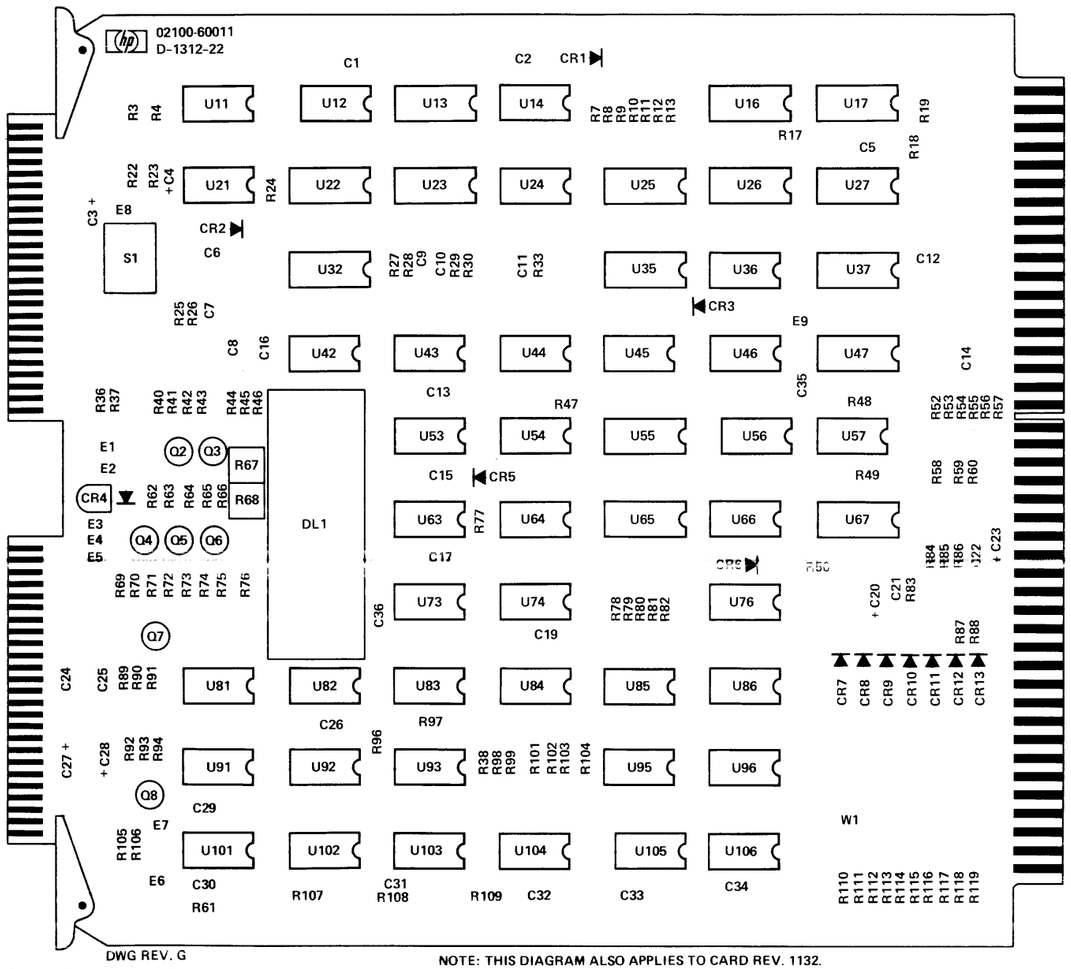
Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A107R22	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R23	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R24	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R25	0698-3443	1	R:FXD MET FLM 287 OHM 1% 1/8W	28480	0698-3443
A107R26	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R27	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R28	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R29	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R30	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R33	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R36	0757-0401	5	R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A107R37	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A107R38	C698-3442	3	R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A107R40	0698-3151	5	R:FXD MET FLM 2.87K OHM 1% 1/8W	28480	0698-3151
A107R41	0698-3157	5	R:FXD MET FLM 19.6K OHM 1% 1/8W	28480	0698-3157
A107R42	0698-3151		R:FXD MET FLM 2.87K OHM 1% 1/8W	28480	0698-3151
A107R43	0698-3157		R:FXD MET FLM 19.6K OHM 1% 1/8W	28480	0698-3157
A107R44	0757-0441	3	R:FXD MET FLM 8.25K OHM 1% 1/8W	28480	0757-0441
A107R45	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R46	0757-0441		R:FXD MET FLM 8.25K OHM 1% 1/8W	28480	0757-0441
A107R47	0757-0280		R:FXD MET FLM 1K CHM 1% 1/8W	28480	0757-0280
A107R48	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A107R49	0698-3446	2	R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A107R50	0698-3446		R:FXD MET FLM 383 OHM 1% 1/8W	28480	0698-3446
A107R52	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R53	C698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R54	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R55	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R56	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R57	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R58	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R59	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R60	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R61	0757-0284	1	R:FXD MET FLM 150 OHM 1% 1/8W	28480	0757-0284
A107R62	0698-0083	5	R:FXD MET FLM 1.96K OHM 1% 1/8W	28480	0698-0083
A107R63	0698-0083		R:FXD MET FLM 1.96K OHM 1% 1/8W	28480	0698-0083
A107R64	0698-0083		R:FXD MET FLM 1.96K OHM 1% 1/8W	28480	0698-0083
A107R65	0698-0083		R:FXD MET FLM 1.96K OHM 1% 1/8W	28480	0698-0083
A107R66	0698-3151		R:FXD MET FLM 2.87K OHM 1% 1/8W	28480	0698-3151
A107R67	2100-1738	2	R:VAR FLM 10K OHM 10% LIN 1/2W	28480	2100-1738
A107R68	2100-1738		R:VAR FLM 10K OHM 10% LIN 1/2W	28480	2100-1738
A107R69	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A107R70	C698-3157		R:FXD MET FLM 19.6K OHM 1% 1/8W	28480	0698-3157
A107R71	0698-3151		R:FXD MET FLM 2.87K OHM 1% 1/8W	28480	0698-3151
A107R72	C698-3157		R:FXD MET FLM 19.6K OHM 1% 1/8W	28480	0698-3157
A107R73	0698-3151		R:FXD MET FLM 2.87K OHM 1% 1/8W	28480	0698-3151
A107R74	C698-3157		R:FXD MET FLM 19.6K OHM 1% 1/8W	28480	0698-3157
A107R75	0698-0083		R:FXD MET FLM 1.96K OHM 1% 1/8W	28480	0698-0083
A107R76	C698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R77	0757-0441		R:FXD MET FLM 8.25K OHM 1% 1/8W	28480	0757-0441
A107R78	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R79	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R80	C698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R81	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R82	C698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R83	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R84	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R85	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R86	0698-3444		R:FXD MET FLM 316 OHM 1% 1/8W	28480	0698-3444
A107R87	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R88	C698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R89	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R90	0757-0316	1	R:FXD MET FLM 42.2 OHM 1% 1/8W	28480	0757-0316
A107R91	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
A107R92	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R93	0757-0274	2	R:FXD MET FLM 1.21K OHM 1% 1/8W	28480	0757-0274
A107R94	0757-0274		R:FXD MET FLM 1.21K OHM 1% 1/8W	28480	0757-0274
A107R96	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A107R97	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R98	0757-0416	4	R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A107R99	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A107R101	0698-3442		R:FXD MET FLM 237 OHM 1% 1/8W	28480	0698-3442
A107R102	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
A107R103	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A107R104	C698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082

Table 4-21. A107 Data Control Card, Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A107R105	0698-3438	1	R:FXD MET FLM 147 OHM 1% 1/8W	28480	0698-3438
A107R106	0698-3445	9	R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R107	0757-0416		R:FXD MET FLM 511 OHM 1% 1/8W	28480	0757-0416
A107R108	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R109	0698-3132	2	R:FXD FLM 261 OHM 1% 1/8W	28480	0698-3132
A107R110	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R111	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R112	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R113	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R114	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R115	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R116	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R117	0698-3445		R:FXD MET FLM 348 OHM 1% 1/8W	28480	0698-3445
A107R118	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
A107R119	0698-3132		R:FXD FLM 261 OHM 1% 1/8W	28480	0698-3132
A107S1	3101-1213	1	SWITCH:TOGGLE DPST-DB SUB-MINIATURE	81640	T8001
A107U11	1820-0971	8	IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A107U12	1820-0435	2	IC:TTL 8-BIT ODD/EVEN GEN./CHECKER	01295	SN74180N
A107U13	1820-0301	4	IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A107U14	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A107U16	1820-0485	3	IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A107U17	1820-0233	4	IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A107U21	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A107U22	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A107U23	1820-0616	4	IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A107U24	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A107U25	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A107U26	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A107U27	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A107U32	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A107U35	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A107U36	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A107U37	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A107U42	1820-0140	1	IC:TTL DUAL 4-INPT AND BUFFER	04713	MC3026P
A107U43	1820-0207	3	IC:TTL MONOSTABLE MULTIVIBRATOR	28480	1820-0207
A107U44	1820-0424	2	IC:TTL HS HEX INVERTER	04713	SN74H04N
A107U45	1820-0376	1	IC:TTL DUAL 4-INPT NAND POWER GATE	01295	SN74H40N
A107U46	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A107U47	1820-0233		IC:TTL SYNUP-ON 4-BIT BINARY COUNTER	01295	SN74193N
A107U53	1820-0207		IC:TTL MONOSTABLE MULTIVIBRATOR	28480	1820-0207
A107U54	1820-0966	1	IC:CTL DUAL 2-INPT AND 2W AND/OR GATE	14433	MIC 966
A107U55	1820-0301		IC:TTL QUAD BI-STABLE D-LATCH	01295	SN7475N
A107U56	1820-0435		IC:TTL 8-BIT ODD/EVEN GEN./CHECKER	01295	SN74180N
A107U57	1820-0205	3	IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A107U63	1820-0207		IC:TTL MONOSTABLE MULTIVIBRATOR	28480	1820-0207
A107U64	1820-0328	1	IC:TTL QUAD 2-INPT NOR GATE	04713	SN7402N
A107U65	1820-0616		IC:TTL 4-BIT 2-INPT MULTIPLEXER	07263	U78932259X
A107U66	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A107U67	1820-0485		IC:CTL HEX LEVEL RESTORER	07263	U6B981649X
A107U73	1820-0372	1	IC:TTL TRIPLE 3-INPT AND GATE	28480	1820-0372
A107U74(NOTE 1)	1820-0451	3	IC:TTL DUAL J-K F/F	04713	MC3062P
A107U76	1820-0187	2	IC:CTL DUAL 2-INPT NOR GATE	07263	U6A985249X
A107U81	1820-0370	2	IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A107U82	1820-0141	2	IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A107U83	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A107U84	1820-0186	2	IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A107U85	1820-0971		IC:CTL DUAL 2W-2-INPT AND/OR GATE	07263	U6A997179X
A107U86	1820-0187		IC:CTL DUAL 2-INPT NOR GATE	07263	U6A985249X
A107U91	1820-0371	2	IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A107U92	1820-0371		IC:TTL HS TRIPLE 3-INPT NAND GATE	01295	SN74H10N
A107U93	1820-0424		IC:TTL HS HEX INVERTER	04713	SN74H04N
A107U95	1820-0141		IC:TTL QUAD 2-INPT AND GATE	04713	MC3001P
A107U96	1820-0482	1	IC:CTL 1 OF 8 DECODER	07263	U6B983849X
A107U101	1820-0370		IC:TTL HS QUAD 2-INPT NAND GATE	01295	SN74H00N
A107U102(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A107U103	1820-0619	1	IC:TTL HS DUAL 4-INPT NAND GATE(OPEN C)	01295	SN74H22N
A107U104	1820-0186		IC:CTL DUAL 2-INPT AND GATE	07263	U6A985649X
A107U105(NOTE 1)	1820-0451		IC:TTL DUAL J-K F/F	04713	MC3062P
A107U106	1820-0205		IC:TTL QUAD 2-INPT OR GATE	28480	1820-0205
A107W1	5080-0058	1	CONDUCTOR ASSY	28480	5080-0058

NOTES: 1. Part no. 1820-0695 used on some cards; the two parts are interchangeable.

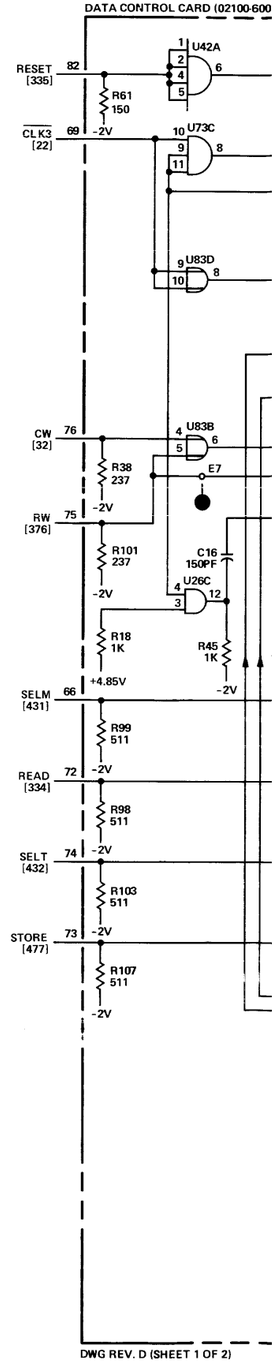
REF. NO.	BACKPLANE LOCATION * INDICATES SIGNAL SOURCE					
A107						
22	A1-78*	A3-81	A7-56	A8-42	A9-76	A24-64
	A107-69					
32	A6-73*	A9-36*	A24-55*	A107-76		
35	A3-25	A24-76	A107-81*			
256	A8-76	A107-78*				
258	A3-29	A24-78	A107-77*			
272	A102-5*	A103-5*	A107-80	A110-5*	A111-5*	
289	A107-84*	A101-54,57	A104-54,57	A109-54,57	A112-54,57	
290	A102-6	A103-6	A107-83*	A110-6	A111-6	
291	A107-28*	A101-50,58	A104-50,58	A109-50,58	A112-50,58	
334	A1-54*	A3-28*	A4-27	A9-31*	A24-77*	A107-72
335	A1-8*	A2-70	A4-30	A6-9	A7-20	A8-75
	A107-82					
376	A6-74*	A9-34*	A24-57*	A107-75		
394	A102-72*	A103-72*	A107-71	A110-72*	A111-72*	
431	A1-53*	A3-22*	A8-60	A9-35*	A24-42*	A107-66
432	A3-30*	A4-59*	A9-41*	A107-74		
477	A3-53*	A9-38*	A24-73	A107-73		
493	A107-65*	A101-30,38	A104-30,38	A109-30,38	A112-30,38	
494	A107-64*	A101-29,34	A104-29,34	A109-29,34	A112-29,34	



DWG REV. G

NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. 1132.

See table 4-21 for replaceable parts.



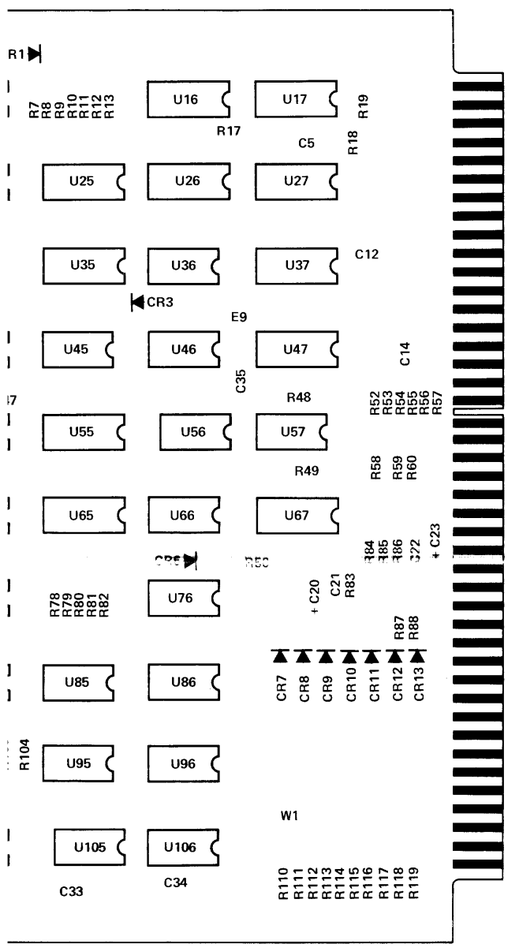
DWG REV. D (SHEET 1 OF 2)

FF DEFINITIONS

DLP	=	DELAY PULSE
DR	=	DATA READY
DRT	=	DATA READY TIME
MB	=	MEMORY BUSY
MRTY	=	MEMORY READ TIME Y DRIVE LINE
MRTX	=	MEMORY READ TIME X DRIVE LINE
MSG	=	MEMORY SENSE GATE
MST	=	MEMORY STROBE TIME
PB	=	PARITY BIT

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. PIN 5 OF U11, U14, U21, U24, U36, U46, U54, U66 AND U85 IS NORMAL GROUND CONNECTION AND IS NOT SHOWN ELSEWHERE ON THIS DIAGRAM.
5. R17 IS 464 OHMS ON CARD REV. 1132.



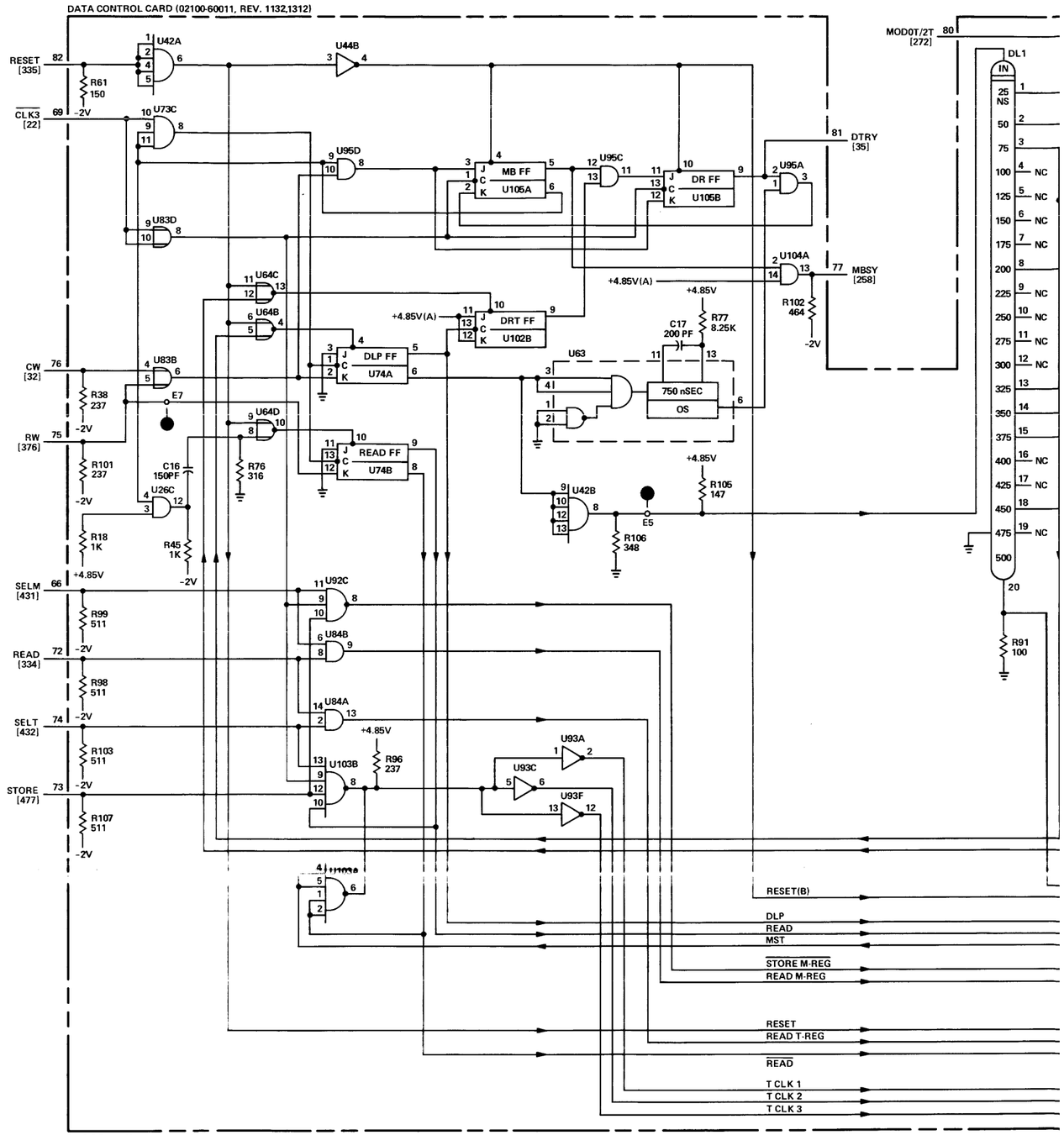
AM ALSO APPLIES TO CARD REV. 1132.

FF DEFINITIONS

DLP = DELAY PULSE
DR = DATA READY
DRT = DATA READY TIME
MB = MEMORY BUSY
MRTY = MEMORY READ TIME Y DRIVE LINE
MRTX = MEMORY READ TIME X DRIVE LINE
MSG = MEMORY SENSE GATE
MST = MEMORY STROBE TIME
PB = PARITY BIT

NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE INDICATED.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. PIN 5 OF U11, U14, U21, U24, U36, U46, U54, U66 AND U85 IS NORMAL GROUND CONNECTION AND IS NOT SHOWN ELSEWHERE ON THIS DIAGRAM.
5. R17 IS 464 OHMS ON CARD REV. 1132.



DWG REV. D (SHEET 1 OF 2)

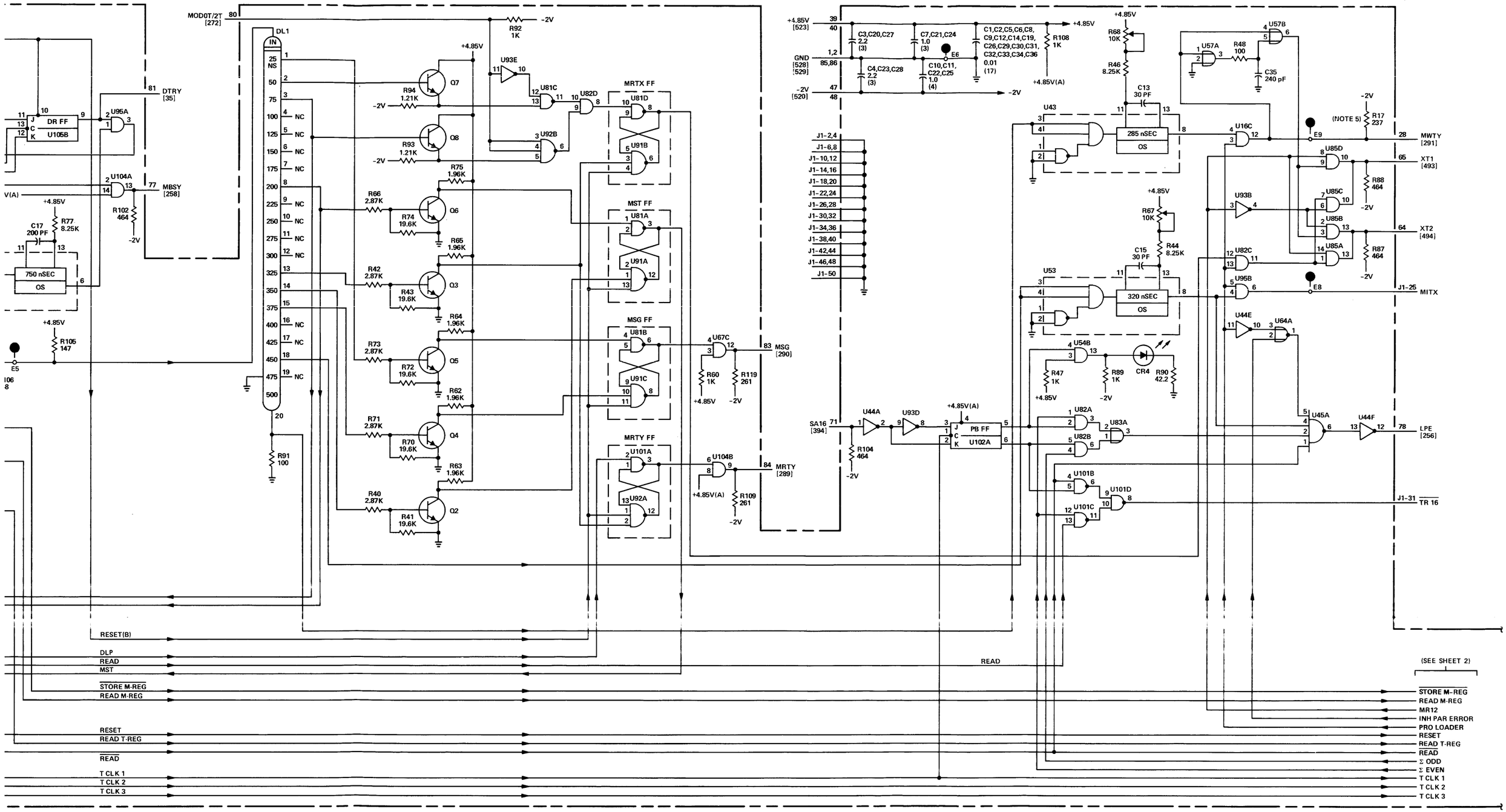
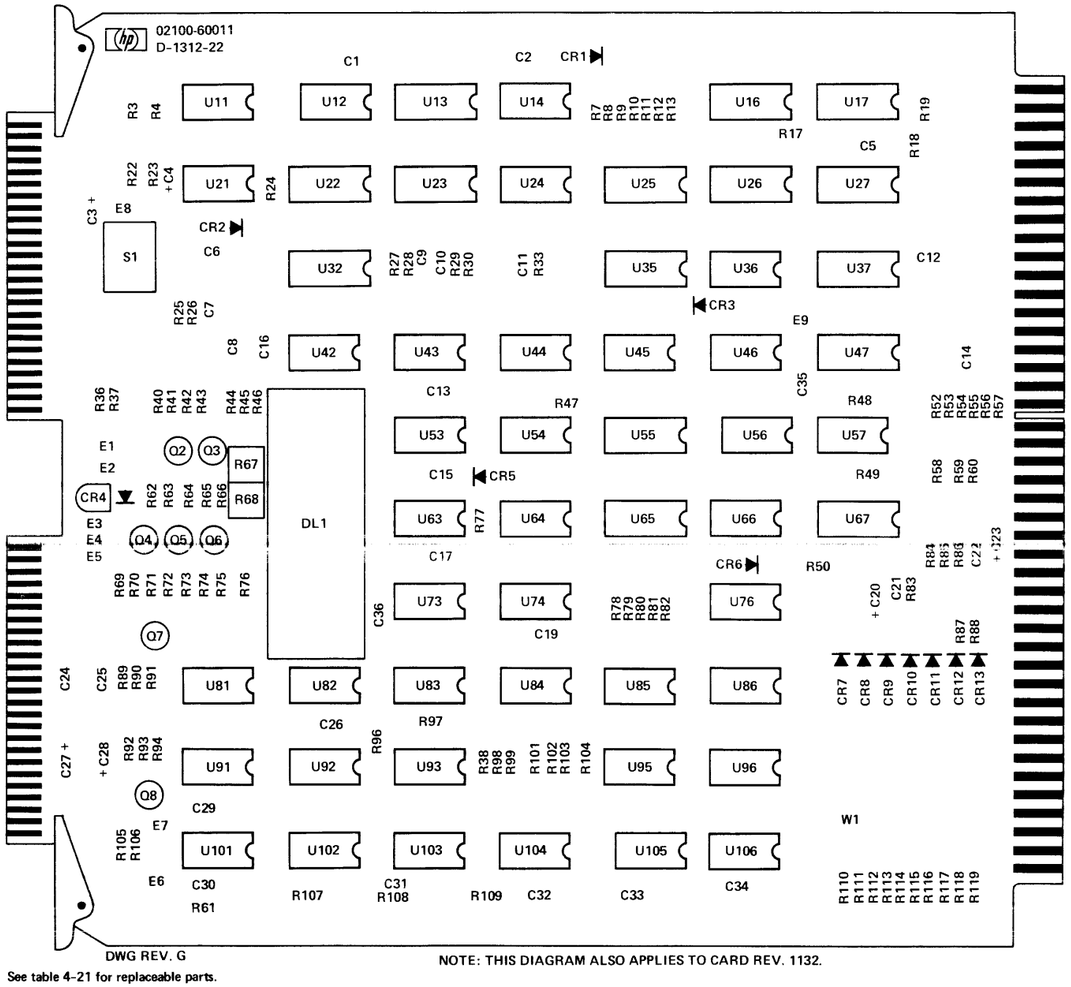


Figure 4-25. A107 Data Control Card, Parts Location and Schematic Diagrams (Sheet 1 of 2)

(Information continues on next page)

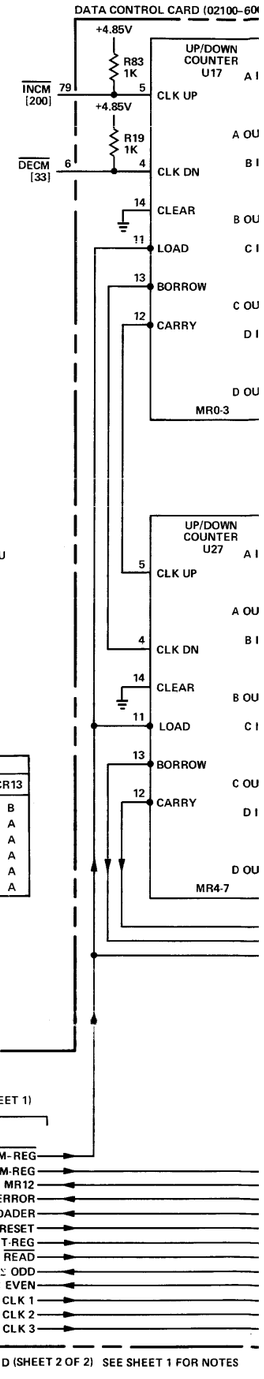
REF. NO.	BACKPLANE LOCATION					
	* INDICATES SIGNAL SOURCE					
A107						
33	A1-42	A24-60*	A107-6			
200	A1-37	A24-33*	A107-79			
260	A103-3	A107-68*				
261	A103-4	A107-63*				
262	A102-3	A107-55*				
263	A102-4	A107-56*				
264	A107-57*	A110-3				
265	A107-58*	A110-4				
266	A107-54*	A111-3				
267	A107-53*	A111-4				
268	A104-46	A107-59*				
269	A101-46	A107-60*				
270	A107-62*	A109-46				
271	A107-61*	A112-46				
277	A101-35	A104-35	A107-3*	A109-35	A112-35	
278	A101-36	A104-36	A107-5*	A109-36	A112-36	
279	A101-37	A104-37	A107-8*	A109-37	A112-37	
280	A101-33	A104-33	A107-10*	A109-33	A112-33	
281	A101-32	A104-32	A107-24*	A109-32	A112-32	
282	A101-31	A104-31	A107-23*	A109-31	A112-31	
283	A101-49	A104-49	A107-25*	A109-49	A112-49	
284	A101-52	A104-52	A107-26*	A109-52	A112-52	
285	A101-51	A104-51	A107-27*	A109-51	A112-51	
286	A101-53	A104-53	A107-4*	A109-53	A112-53	
287	A101-56	A104-56	A107-30*	A109-56	A112-56	
288	A101-55	A104-55	A107-32*	A109-55	A112-55	
305	A1-6	A7-8*	A24-67	A104-42	A107-70	
	A10-66 THRU A23-66					
378	A102-15*	A103-15*	A107-13	A110-15*	A111-15*	
379	A102-18*	A103-18*	A107-11	A110-18*	A111-18*	
380	A102-17*	A103-17*	A107-7	A110-17*	A111-17*	
381	A102-20*	A103-20*	A107-9	A110-20*	A111-20*	
382	A102-19*	A103-19*	A107-17	A110-19*	A111-19*	
383	A102-22*	A103-22*	A107-15	A110-22*	A111-22*	
384	A102-21*	A103-21*	A107-19	A110-21*	A111-21*	
385	A102-63*	A103-63*	A107-21	A110-63*	A111-63*	
386	A102-64*	A103-64*	A107-31	A110-64*	A111-64*	
387	A102-65*	A103-65*	A107-33	A110-65*	A111-65*	
388	A102-66*	A103-66*	A107-35	A110-66*	A111-66*	
389	A102-67*	A103-67*	A107-37	A110-67*	A111-67*	
390	A102-68*	A103-68*	A107-41	A110-68*	A111-68*	
391	A102-69*	A103-69*	A107-43	A110-69*	A111-69*	
392	A102-70*	A103-70*	A107-45	A110-70*	A111-70*	
393	A102-71*	A103-71*	A107-49	A110-71*	A111-71*	
396	A2-46*	A5-78*	A6-32	A7-62*	A8-3*	A9-16*
	A107-16					
397	A2-44*	A5-80*	A6-60	A7-61*	A8-4*	A9-14*
	A107-18					
398	A2-29*	A5-76*	A6-61	A7-60*	A8-5*	A9-18*
	A107-12					
399	A2-30*	A5-59*	A6-33	A7-59*	A8-6*	A9-13*
	A107-14					
400	A2-19*	A5-52*	A6-65	A7-64*	A8-7*	A9-12*
	A107-29					
401	A2-20*	A5-51*	A6-64	A7-57*	A8-8*	A9-10*
	A107-38					
402	A2-12*	A5-49*	A6-67	A8-9*	A9-20*	A107-20
403	A2-9*	A5-43*	A6-66	A8-24*	A9-11*	A107-22
404	A2-53*	A5-31*	A6-52	A8-14*	A9-5*	A107-44
405	A2-54*	A5-32*	A6-51	A8-18*	A9-3*	A107-46
406	A2-43*	A5-29*	A6-54	A8-19*	A9-9*	A107-34
407	A2-49*	A5-30*	A6-53	A8-20*	A9-7*	A107-36
408	A2-31*	A5-10*	A6-38	A8-21*	A9-8*	A107-51
409	A2-21*	A5-8*	A6-37	A8-22*	A9-4*	A107-42
410	A2-10*	A5-6*	A6-42	A8-23*	A9-6*	A107-50
411	A1-14	A2-11*	A4-75	A5-4*	A6-41	A8-33*
	A9-84*	A107-52				
495	A24-9*	A107-67				



DWG REV. G

NOTE: THIS DIAGRAM ALSO APPLIES TO CARD REV. 1132.

See table 4-21 for replaceable parts.



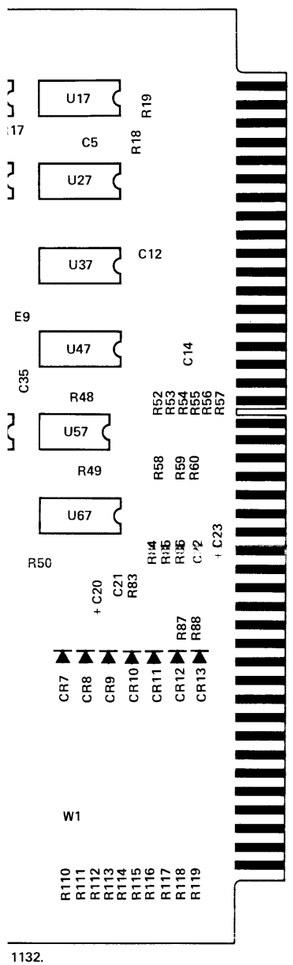
FF DEFINITIONS

TR0 THRU TR15 = TRANSFER REGISTER BIT 0 THRU TRANSFER REGISTER BIT 15.

TABLE 1

MEMORY SIZE	DIODE POSITIONS						
	CR7	CR8	CR9	CR10	CR11	CR12	CR13
4K	B	B	B	B	B	B	B
8K	B	B	B	B	B	B	A
12K	B	B	B	B	B	A	A
16K	B	B	B	B	A	A	A
24K	B	B	A	A	A	A	A
32K	A	A	A	A	A	A	A

DWG REV. D (SHEET 2 OF 2) SEE SHEET 1 FOR NOTES



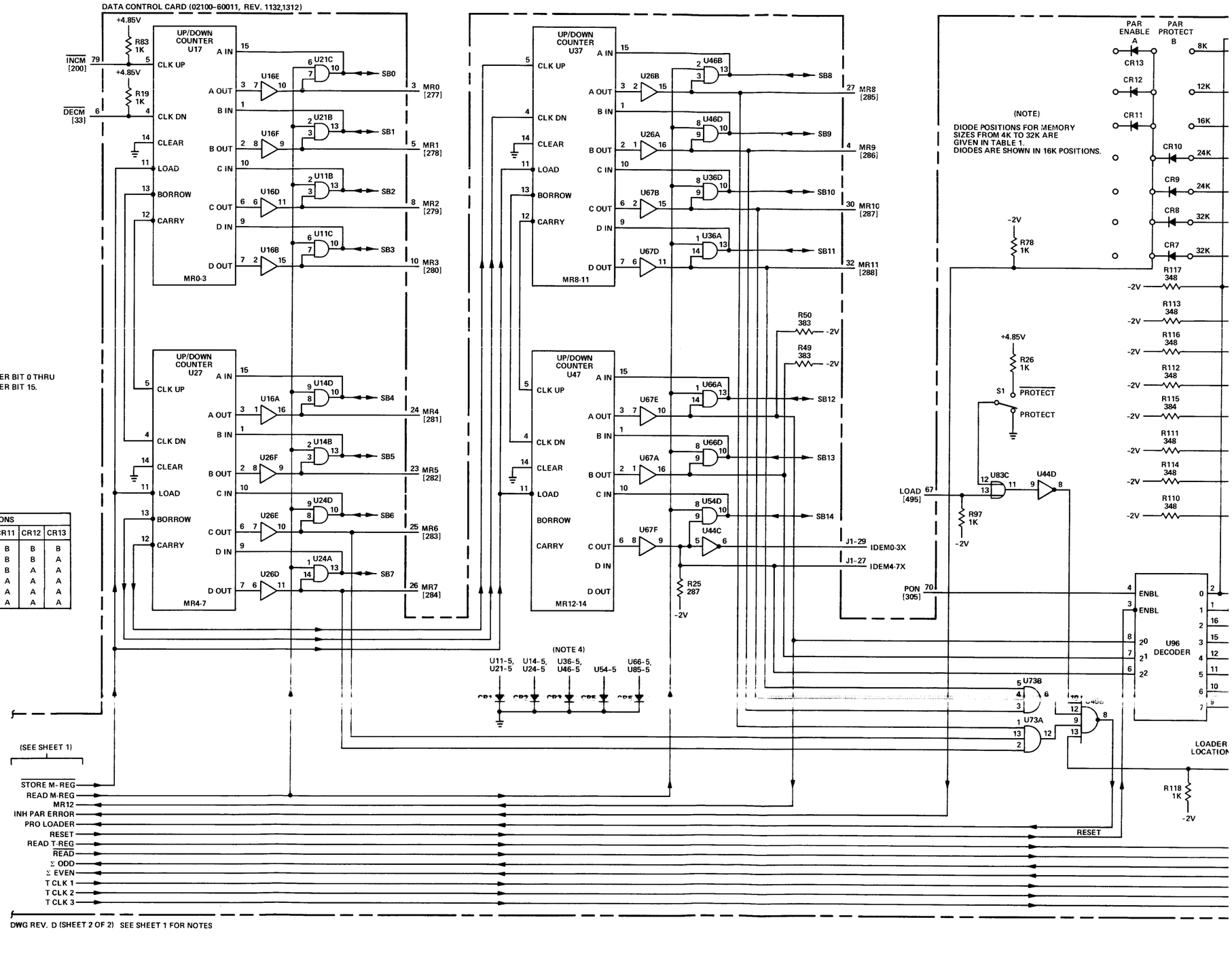
FF DEFINITIONS

TR0 THRU TR15 = TRANSFER REGISTER BIT 0 THRU TRANSFER REGISTER BIT 15.

TABLE 1

MEMORY SIZE	DIODE POSITIONS						
	CR7	CR8	CR9	CR10	CR11	CR12	CR13
4K	B	B	B	B	B	B	B
8K	B	B	B	B	B	B	A
12K	B	B	B	B	B	A	A
16K	B	B	B	B	A	A	A
24K	B	B	A	A	A	A	A
32K	A	A	A	A	A	A	A

DATA CONTROL CARD (02100-60011, REV. 1132,1312)



DWG REV. D (SHEET 2 OF 2) SEE SHEET 1 FOR NOTES

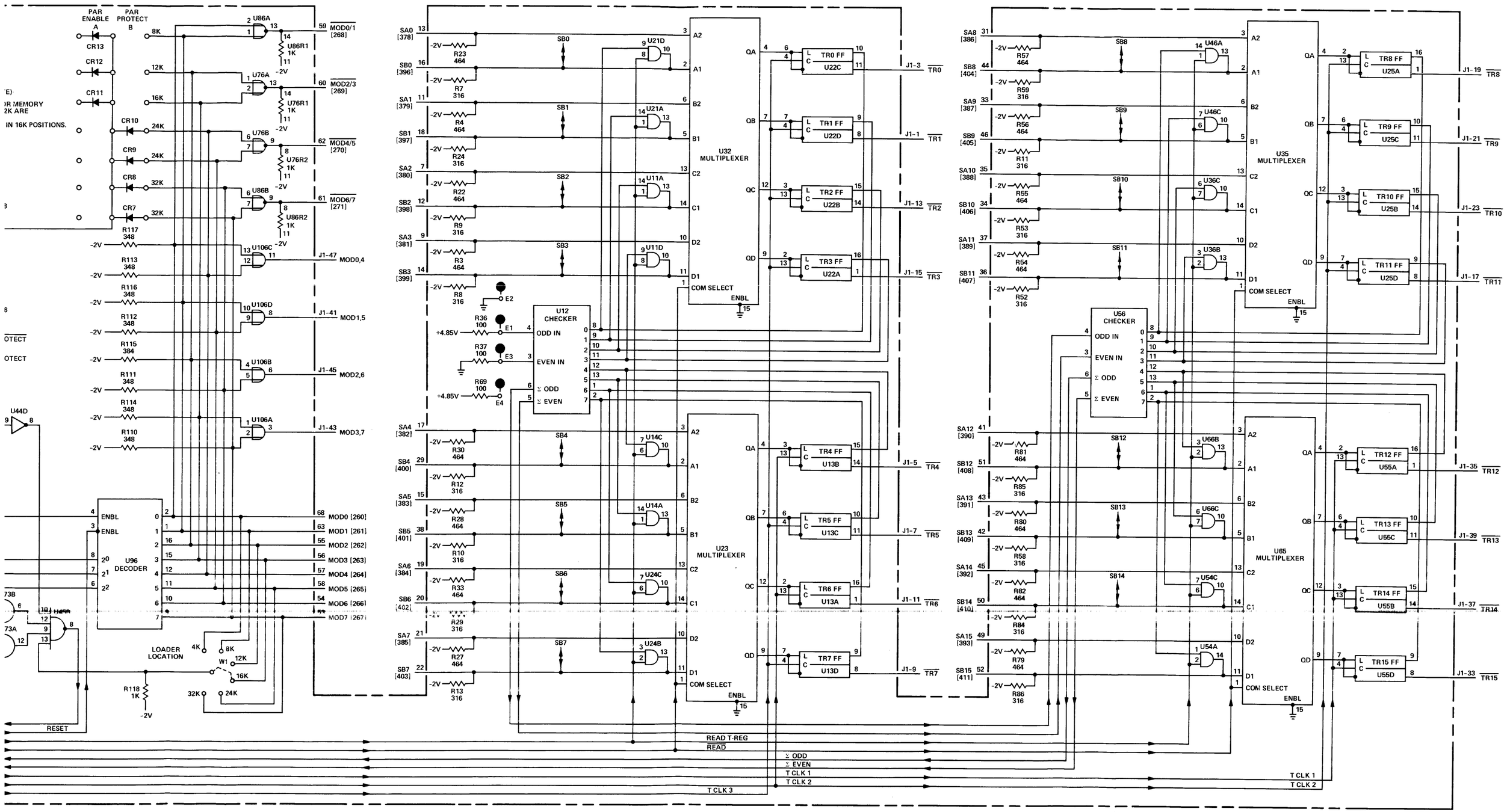


Figure 4-25. A107 Data Control Card, Parts Location and Schematic Diagrams (Sheet 2 of 2)

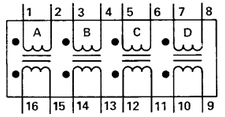
(Information continues on next page)

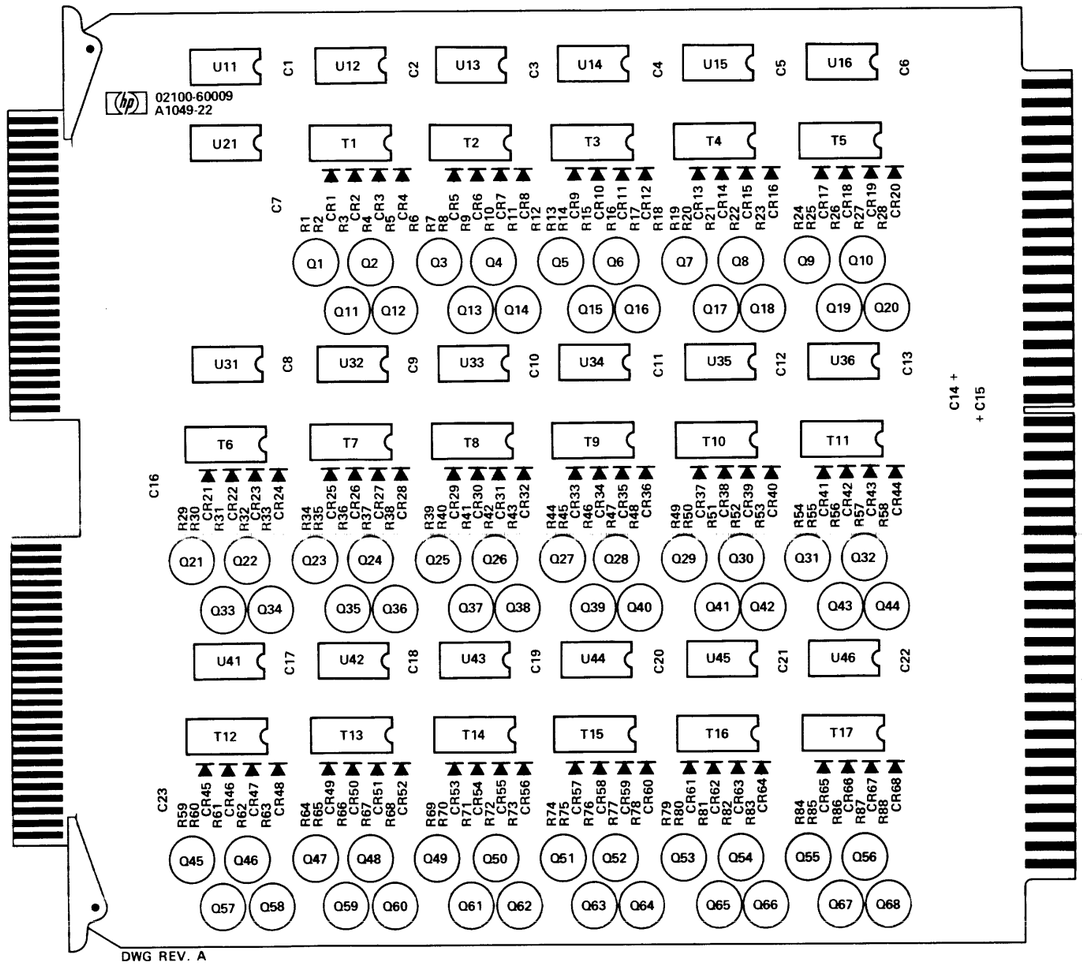
* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION	
A108 (16K)		
60	A108-4	A108-5
129	A108-10*	A110-25
130	A108-7*	A110-27
131	A108-8*	A110-29
132	A108-9*	A110-31
133	A108-37*	A110-33
134	A108-32*	A110-35
135	A108-33*	A110-37
136	A108-34*	A110-41
137	A108-31*	A110-43
138	A108-46*	A110-45
139	A108-49*	A110-49
140	A108-50*	A110-51
141	A108-61*	A110-53
142	A108-69*	A110-55
143	A108-70*	A110-57
144	A108-71*	A110-59
145	A108-15*	A110-61
146	A108-14*	A110-26
147	A108-11*	A110-28
148	A108-12*	A110-30
149	A108-13*	A110-32
150	A108-38*	A110-34
151	A108-43*	A110-36
152	A108-41*	A110-38
153	A108-42*	A110-42
154	A108-72*	A110-44
155	A108-68*	A110-46
156	A108-66*	A110-50
157	A108-67*	A110-52
158	A108-65*	A110-54
159	A108-62*	A110-56
160	A108-63*	A110-58
161	A108-64*	A110-60
162	A108-16*	A110-62
163	A108-26*	A111-25
164	A108-19*	A111-27
165	A108-25*	A111-29
166	A108-24*	A111-31
167	A108-53*	A111-33
168	A108-60*	A111-35
169	A108-59*	A111-37
170	A108-58*	A111-41
171	A108-52*	A111-43
172	A108-44*	A111-45
173	A108-51*	A111-49
174	A108-45*	A111-51
175	A108-76*	A111-53
176	A108-73*	A111-55
177	A108-74*	A111-57
178	A108-75*	A111-59
179	A108-17*	A111-61
180	A108-20*	A111-26
181	A108-23*	A111-28
182	A108-22*	A111-30
183	A108-21*	A111-32
184	A108-57*	A111-34
185	A108-54*	A111-36
186	A108-56*	A111-38
187	A108-55*	A111-42
188	A108-78*	A111-44
189	A108-79*	A111-46
190	A108-81*	A111-50
191	A108-80*	A111-52
192	A108-84*	A111-54
193	A108-77*	A111-56
194	A108-83*	A111-58
195	A108-82*	A111-60
196	A108-18*	A111-62

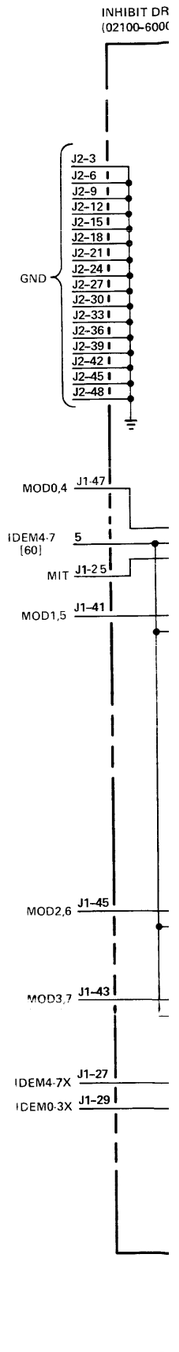
NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. ALL PIN NUMBERS REFER TO 86-PIN CONNECTOR UNLESS OTHERWISE SPECIFIED.
3. NUMBERS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. SEE TYPICAL CIRCUIT AT UPPER LEFT CORNER.
5. SCHEMATIC DIAGRAM OF T1 THRU T17.





See table 4-19 for replaceable parts.



INHIBIT DRIVER CARD
(02100-60009, REV. 1049)

TR0 J1-3 | IDC0 J2-37,38 | TR1 J1-1 | IDC1 J2-40,41 | TR2 J1-13 | IDC2 J2-34,35 | TR3 J1-15 | IDC3 J2-19,20 | TR4 J1-5 | IDC4 J2-4,5 | TR5 J1-7 | IDC5 J2-13,14 | TR6 J1-11 | IDC6 J2-10,11 | TI

GND: J2-3, J2-6, J2-9, J2-12, J2-15, J2-18, J2-21, J2-24, J2-27, J2-30, J2-33, J2-36, J2-39, J2-42, J2-45, J2-48

MOD0,4 J1-47
IDEM4-7 [60]
MIT J1-25
MOD1,5 J1-41
MOD2,6 J1-45
MOD3,7 J1-43
IDEM4-7X J1-27
IDEM0-3X J1-29

U11A, U11B, U21B, U21A

+4.85V

R24 51.1	Q12	R5 121	CR4	T1A	U12A		
R1 51.1	Q1	R2	CR1	NOTE 4	T1D	U12B	
R7 51.1	Q11	R3	CR2	NOTE 4	T1C	U12C	
R19 51.1	Q2	R4	CR3	NOTE 4	T1B	U12D	
R49 51.1	Q36	R38	CR28	NOTE 4	T7A	U32A	
R34 51.1	Q23	R35	CR25	NOTE 4	T7D	U32B	
R54 51.1	Q35	R36	CR26	NOTE 4	T7C	U32C	
	Q14	R11	CR8	NOTE 4	T2A	U13A	
	Q3	R8	CR5	NOTE 4	T2D	U13B	
	Q13	R9	CR6	NOTE 4	T2C	U13C	
	Q4	R10	CR7	NOTE 4	T2B	U13D	
	Q25	R40	CR29	NOTE 4	T8D	U33B	
	Q38	R43	CR32	NOTE 4	T8A	U33A	
	Q37	R41	CR30	NOTE 4	T8C	U33C	
	Q18	R23	CR16	NOTE 4	T4A	U15A	
	Q7	R20	CR13	NOTE 4	T4D	U15B	
	Q17	R21	CR14	NOTE 4	T4C	U15C	
	Q8	R22	CR15	NOTE 4	T4B	U15D	
	Q29	R50	CR37	NOTE 4	T10D	U35B	
	Q42	R53	CR40	NOTE 4	T10A	U35A	
	Q41	R51	CR38	NOTE 4	T10C	U35C	
	Q20	R28	CR20	NOTE 4	T5A	U16A	
	Q9	R25	CR17	NOTE 4	T5D	U16B	
	Q19	R26	CR18	NOTE 4	T5C	U16C	
	Q10	R27	CR19	NOTE 4	T5B	U16D	
	Q31	R55	CR41	NOTE 4	T11D	U36B	
	Q44	R58	CR44	NOTE 4	T11A	U36A	
	Q43	R56	CR42	NOTE 4	T11C	U36C	

-20V

NC
IDEM4-7 [60]

20	ID0M4 [129]	23	ID1M4 [130]	22	ID2M4 [131]	21	ID3M4 [132]
26	ID0M5 [146]	19	ID1M5 [147]	25	ID2M5 [148]	24	ID3M5 [149]
14	ID0M6 [163]	11	ID1M6 [164]	12	ID2M6 [165]	13	ID3M6 [166]
10	ID0M7 [180]	7	ID1M7 [181]	8	ID2M7 [182]	9	ID3M7 [183]

57	ID4M4 [133]	54	ID5M4 [134]	56			
53	ID4M5 [150]	60	ID5M5 [151]	59			
38	ID4M6 [167]	43	ID5M6 [168]	41			
37	ID4M7 [184]	32	ID5M7 [185]	33			

DWG. REV. A

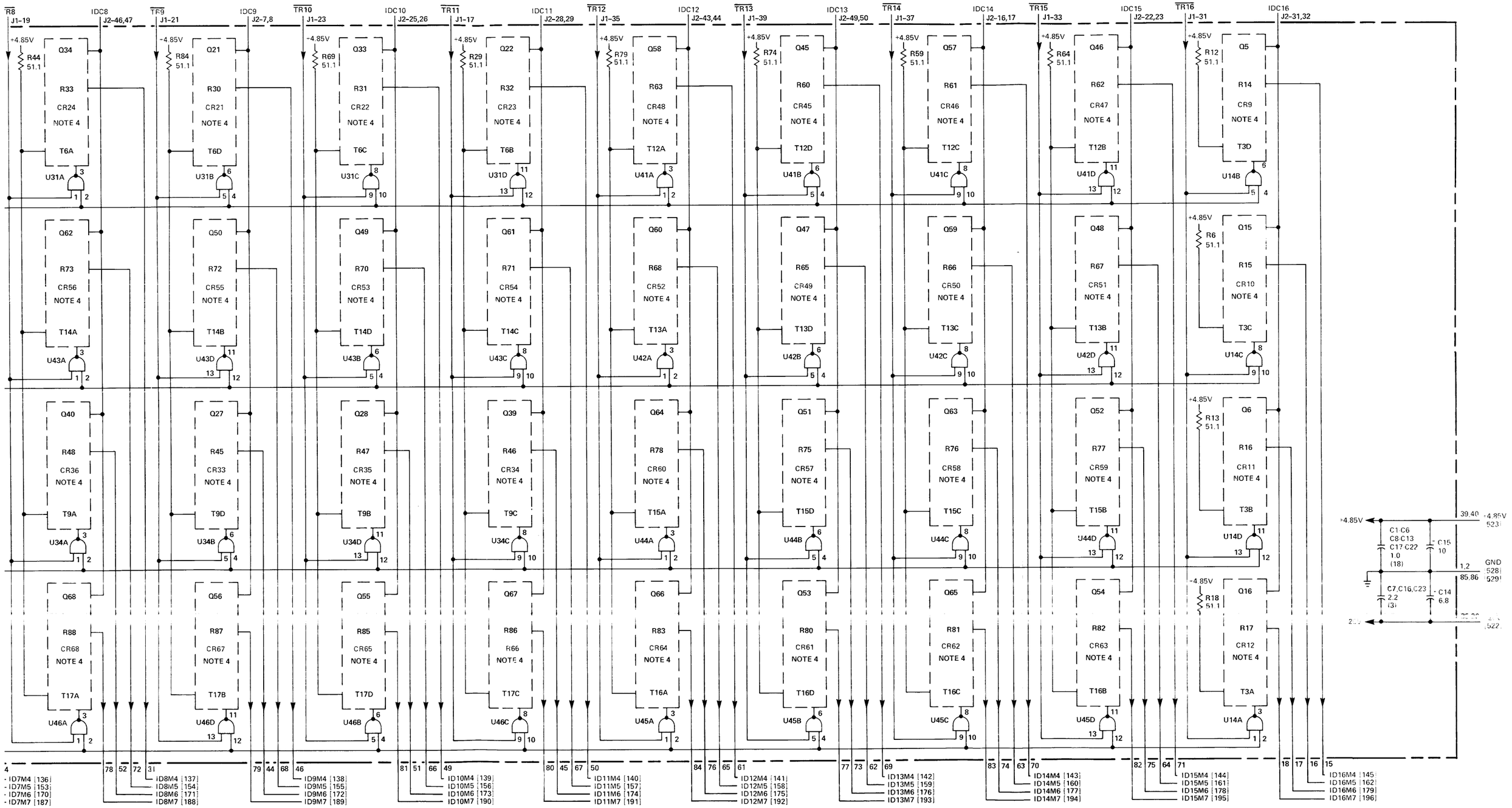
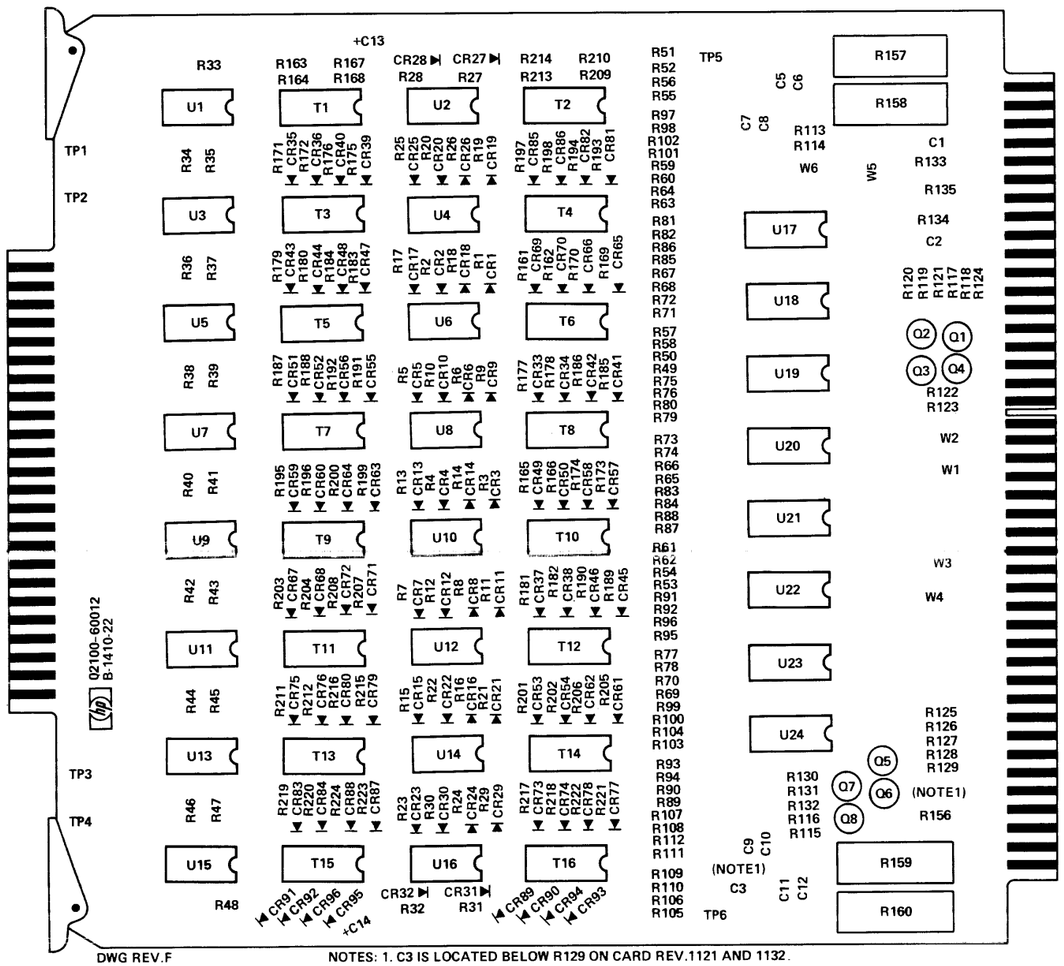


Figure 4-26. A108 Inhibit Driver Card (16K), Parts Location and Schematic Diagrams

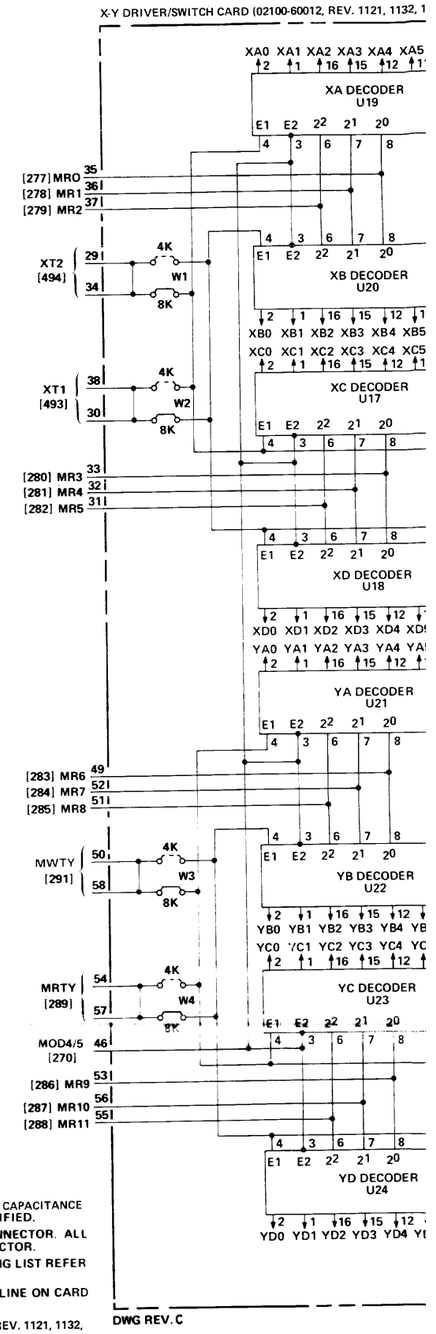
* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION				
A109					
270	A107-62*	A109-46			
277	A101-35	A104-35	A107-3*	A109-35	A112-35
278	A101-36	A104-36	A107-5*	A109-36	A112-36
279	A101-37	A104-37	A107-8*	A109-37	A112-37
280	A101-33	A104-33	A107-10*	A109-33	A112-33
281	A101-32	A104-32	A107-24*	A109-32	A112-32
282	A101-31	A104-31	A107-23*	A109-31	A112-31
283	A101-49	A104-49	A107-25*	A109-49	A112-49
284	A101-52	A104-52	A107-26*	A109-52	A112-52
285	A101-51	A104-51	A107-27*	A109-51	A112-51
286	A101-53	A104-53	A107-4*	A109-53	A112-53
287	A101-56	A104-56	A107-30*	A109-56	A112-56
288	A101-55	A104-55	A107-32*	A109-55	A112-55
289	A107-84*	A101-54,57	A104-54,57	A109-54,57	A112-54,57
291	A107-28*	A101-50,58	A104-50,58	A109-50,58	A112-50,58
493	A107-65*	A101-30,38	A104-30,38	A109-30,38	A112-30,38
494	A107-64*	A101-29,34	A104-29,34	A109-29,34	A112-29,34



NOTES: 1. C3 IS LOCATED BELOW R129 ON CARD REV.1121 AND 1132.
2. THIS DIAGRAM ALSO APPLIES TO CARD REV. 1152.

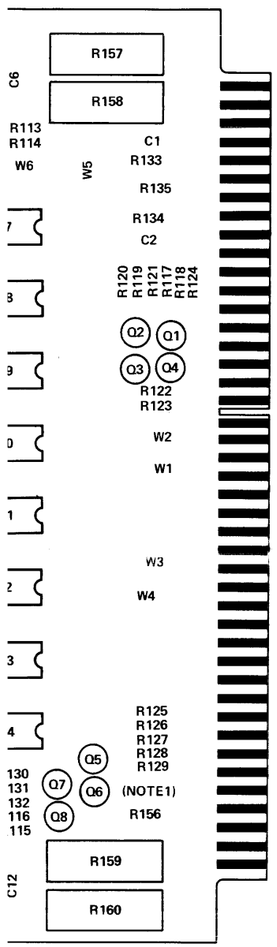
See Table 4-15 for replaceable parts.

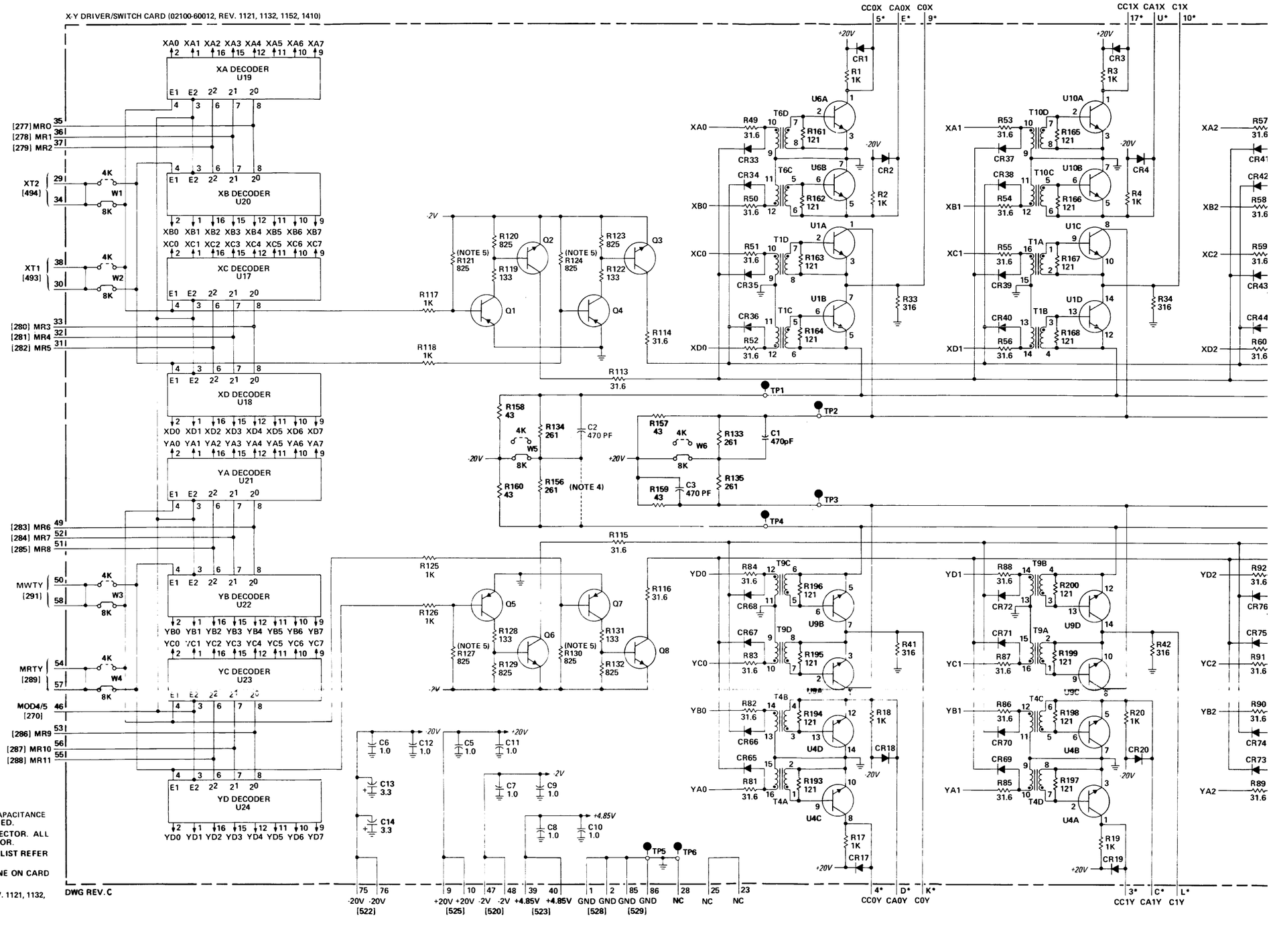


NOTES:
1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. C3 WIRED IN POSITION SHOWN BY DASHED LINE ON CARD REV. 1132 AND 1121.
5. R121, R124, R127, AND R130 ARE 1.2K ON CARD REV. 1121, 1132, AND 1152.

SOURCE

X-Y DRIVER/SWITCH CARD (02100-60012, REV. 1121, 1132, 1152, 1410)





NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. C3 WIRED IN POSITION SHOWN BY DASHED LINE ON CARD REV. 1132 AND 1121.
5. R121, R124, R127, AND R130 ARE 1.2K ON CARD REV. 1121, 1132, AND 1152.

DWG REV. C

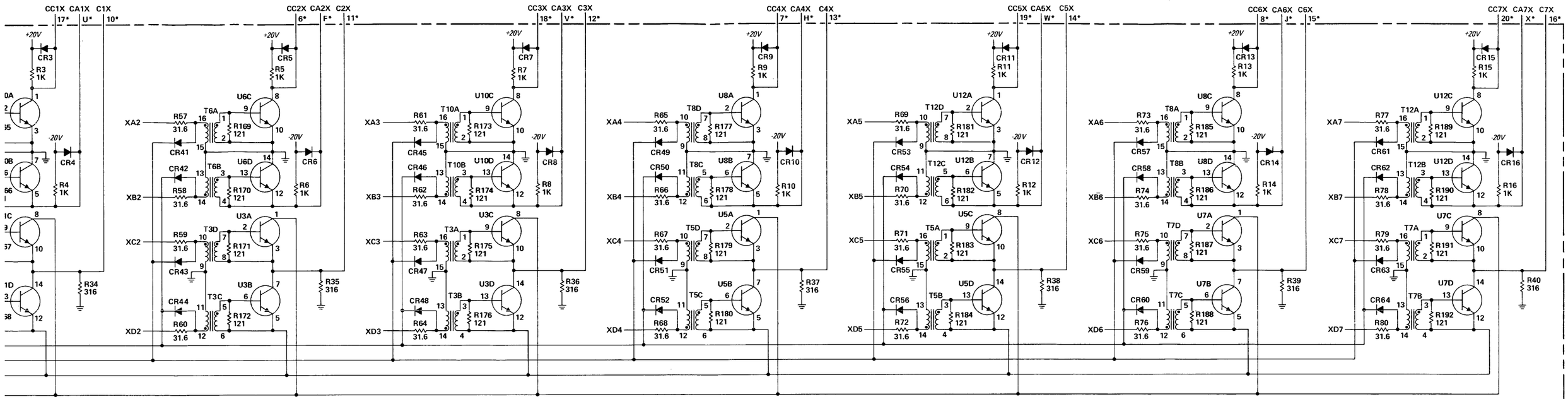


Figure 4-27. A109 X-Y Driver/Switch Card, Parts Location and Schematic Diagrams

(Information continues on next page)

REF. NO.	BACKPLANE LOCATION				* INDICATES SIGNAL SOURCE
A110					
129	A108-10*	A110-25			
130	A108-7*	A110-27			
131	A108-8*	A110-29			
132	A108-9*	A110-31			
133	A108-37*	A110-33			
134	A108-32*	A110-35			
135	A108-33*	A110-37			
136	A108-34*	A110-41			
137	A108-31*	A110-43			
138	A108-46*	A110-45			
139	A108-49*	A110-49			
140	A108-50*	A110-51			
141	A108-61*	A110-53			
142	A108-69*	A110-55			
143	A108-70*	A110-57			
144	A108-71*	A110-59			
145	A108-15*	A110-61			
146	A108-14*	A110-26			
147	A108-11*	A110-28			
148	A108-12*	A110-30			
149	A108-13*	A110-32			
150	A108-38*	A110-34			
151	A108-43*	A110-36			
152	A108-41*	A110-38			
153	A108-42*	A110-42			
154	A108-72*	A110-44			
155	A108-68*	A110-46			
156	A108-66*	A110-50			
157	A108-67*	A110-52			
158	A108-65*	A110-54			
159	A108-62*	A110-56			
160	A108-63*	A110-58			
161	A108-64*	A110-60			
162	A108-16*	A110-62			
264	A107-57*	A110-3			
265	A107-58*	A110-4			
272	A102-5*	A103-5*	A107-80	A110-5*	A111-5*
290	A102-6	A103-6	A107-83*	A110-6	A111-6
378	A102-15*	A103-15*	A107-13	A110-15*	A111-15*
379	A102-18*	A103-18*	A107-11	A110-18*	A111-18*
380	A102-17*	A103-17*	A107-7	A110-17*	A111-17*
381	A102-20*	A103-20*	A107-9	A110-20*	A111-20*
382	A102-19*	A103-19*	A107-17	A110-19*	A111-19*
383	A102-22*	A103-22*	A107-15	A110-22*	A111-22*
384	A102-21*	A103-21*	A107-19	A110-21*	A111-21*
385	A102-63*	A103-63*	A107-21	A110-63*	A111-63*
386	A102-64*	A103-64*	A107-31	A110-64*	A111-64*
387	A102-65*	A103-65*	A107-33	A110-65*	A111-65*
388	A102-66*	A103-66*	A107-35	A110-66*	A111-66*
389	A102-67*	A103-67*	A107-37	A110-67*	A111-67*
390	A102-68*	A103-68*	A107-41	A110-68*	A111-68*
391	A102-69*	A103-69*	A107-43	A110-69*	A111-69*
392	A102-70*	A103-70*	A107-45	A110-70*	A111-70*
393	A102-71*	A103-71*	A107-49	A110-71*	A111-71*
394	A102-72*	A103-72*	A107-71	A110-72*	A111-72*

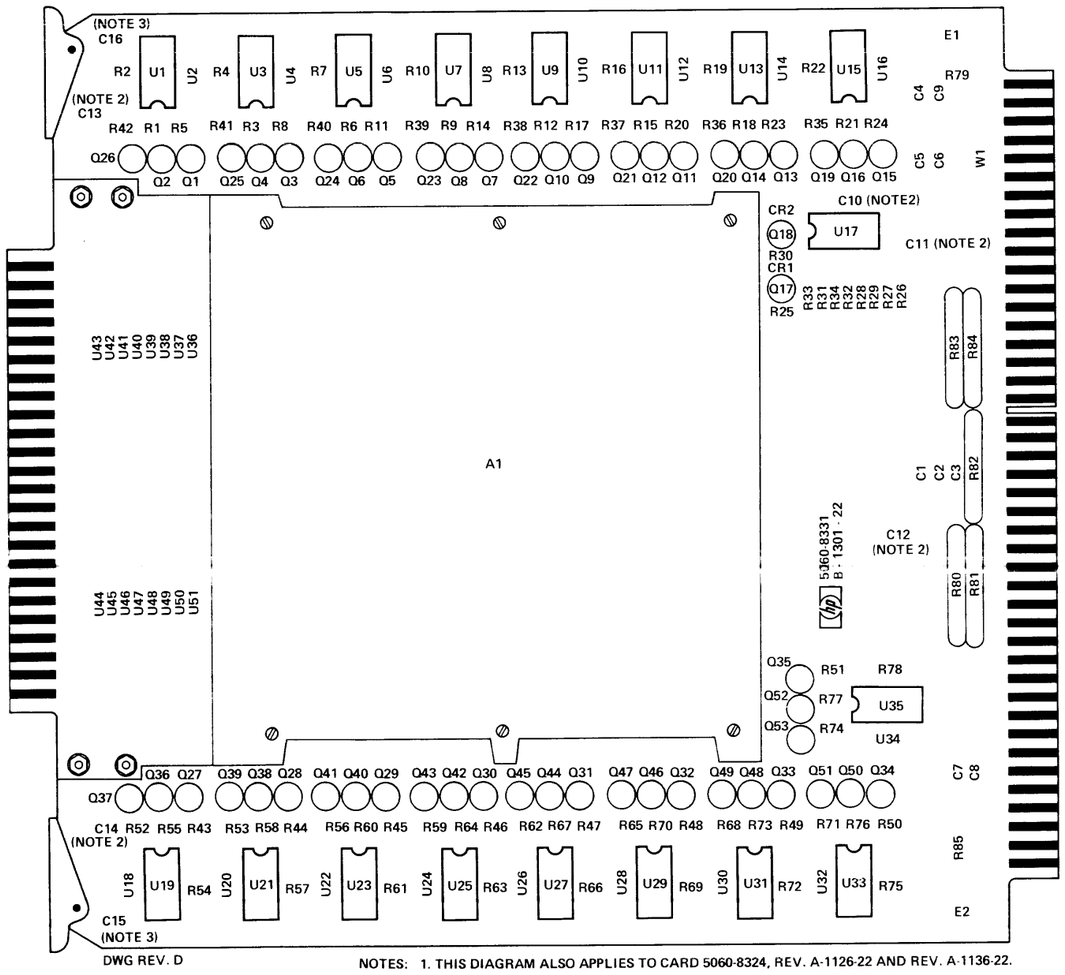
CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

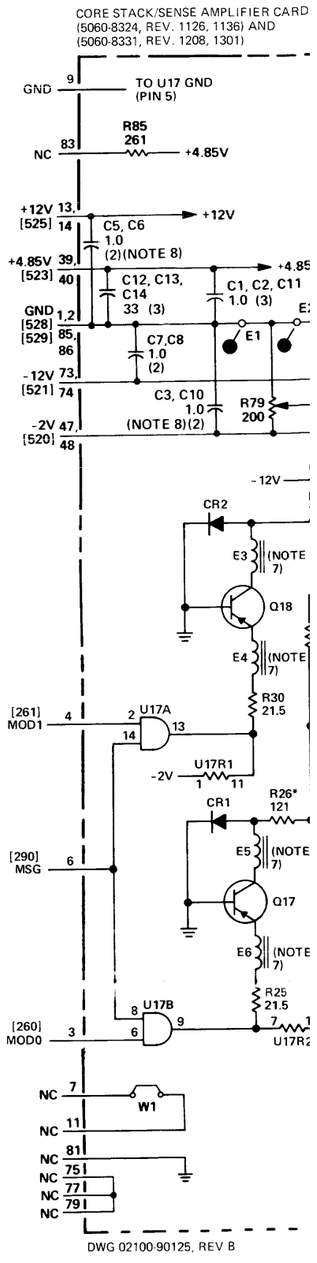
NOTES:

1. THIS CARD MUST NOT BE REPAIRED IN THE FIELD. FIELD REMOVAL OR REPLACEMENT OF ANY COMPONENT VOIDS THE WARRANTY ON THE CARD.
2. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
3. ALL PIN NUMBERS REFER TO 86 PIN CONNECTOR UNLESS OTHERWISE INDICATED.
4. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
5. DIODES ARE MOUNTED WITH CATHODE END AWAY FROM CARD.
6. * INDICATES SELECTED RESISTOR. R26, R32 ARE SELECTED FROM 100, 110, 121, 130, 140, OR 150. R35 THRU R51 ARE SELECTED FROM 5.11K, 5.62K, 6.19K, 6.81K, 7.50K OR 8.25K.
7. E3 THRU E6 USED ONLY ON CARD 5060-8324, REV. 1136.
8. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
9. R79 IS NOT USED ON ALL CARDS. WHEN R79 IS NOT USED, VTH IS CONNECTED TO -2V AS SHOWN BY DOTTED LINE.
10. C15 AND C16 FIRST USED ON CARD REV. 1301.



See table 4-17 for replaceable parts.

NOTES: 1. THIS DIAGRAM ALSO APPLIES TO CARD 5060-8324, REV. A-1126-22 AND REV. A-1136-22.
2. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
3. C15 AND C16 FIRST USED ON CARD 5060-8331, REV. A-1301-22.



CORE STACK/SENSE AMPLIFIER CARD
(5060-8324, REV. 1126, 1136) AND
(5060-8331, REV. 1208, 1301)

[129] ID0M4 SA0 [378] [146] ID0M5 [130] ID1M4 SA1 [379] [147] ID1M5 [131] ID2M4 SA2 [380] [148] ID2M5 [132] ID3M4 SA3 [381] [149] ID3M5

GND 9 — TO U17 GND (PIN 5)

NC 83 — R85 261 — +4.85V

+12V 13, [525] 14 — +12V

+4.85V 39, [523] 40 — +4.85V

GND 1,2, [528] [529] 85, 86

-12V 73, [521] 74 — -12V

-2V 47, [520] 48 — -2V

C5, C6 1.0 (2)(NOTE 8)

C12, C13, C14 33 (3)

C1, C2, C11 1.0 (3)

C7,C8 1.0 (2)

C4,C9 1.0 (2)

E1, E2

C3, C10 1.0 (NOTE 8)(2)

R79 200 — VTH (NOTE 9)

R84G 200

R34 61.9 — -12V

R32* 121

CR2

E3 (NOTE 7)

Q18

E4 (NOTE 7)

R31 100

R28 100

R33 100

R30 21.5

R29 100

[261] MOD1 4 — 2 U17A — 14 13

U17R1 1 11 — -2V

R26* 121

CR1

R27 61.9 — -12V

[290] MSG 6

E5 (NOTE 7)

Q17

E6 (NOTE 7)

R82D 200

R25 21.5

[260] MOD0 3 — 8 U17B — 6 9

7 11 U17R2 — -2V

NC 7 — W1

NC 11

NC 81

NC 75

NC 77

NC 79

DWG 02100-90125, REV B

Q19 — R35* 6.19K — VTH — +4.85V

Q16 Q15

R21 1.65K — R24 1.65K — +12V

14·8 1·7 — U15 — 4·5·12 — R22 442 — -12V

11 3 2 13 6 9

2 100 100 4 — 1 100 100 5 — 3 — U16

R83G 200 — R84F 200

Q20 — R36* 6.19K — VTH — +4.85V

Q14 Q13

R18 1.65K — R23 1.65K — +12V

14·8 1·7 — U13 — 4·5·12 — R19 442 — 12V

U14

R83F 200 — R84E 200

Q21 — R37* 6.19K — VTH — +4.85V

Q12 Q11

R15 1.65K — R20 1.65K — +12V

14·8 1·7 — U11 — 4·5·12 — R16 442 — 12V

U12

R83E 200 — R84D 200

Q22 — R38* 6.19K — VTH — +4.85V

Q10 Q9

R12 1.65K — R17 1.65K — -12V

14·8 1·7 — U9 — 4·5·12 — R13 442 — 12V

U10

6/ 12/ 18/ 24/ 30/ 36/ 42/

U18 — U19 — R54 442 — 12V — R55 1.65K — R52 1.65K — +12V

(NOTE 10) C15 27PF

R82E 200 — R82F 200

Q36 Q37 — +4.85V — Q27 — VTH — R43* 6.19K

U20 — U21 — R57 442 — -12V — R58 1.65K — R53 1.65K — +12V

R82G 200 — R80A 200

Q38 Q39 — +4.85V — Q28 — VTH — R44* 6.19K

U22 — U23 — R61 442 — 12V — R60 1.65K — R56 1.65K — +12V

R81A 200 — R80B 200

Q40 Q41 — +4.85V — Q29 — VTH — R45* 6.19K

U24 — U25 — R63 442 — 12V — R64 1.65K — R59 1.65K — -12V

Q42 Q43 — +4.85V — Q30 — VTH — R46* 6.19K

43 64 44 45 65 46 49 66 50 51 67 52

ID8M4 [137] [386] SA8 ID8M5 [154] ID9M4 [138] [387] SA9 ID9M5 [155] ID10M4 [139] [388] SA10 ID10M5 [156] ID11M4 [140] [389] SA11 ID11M5

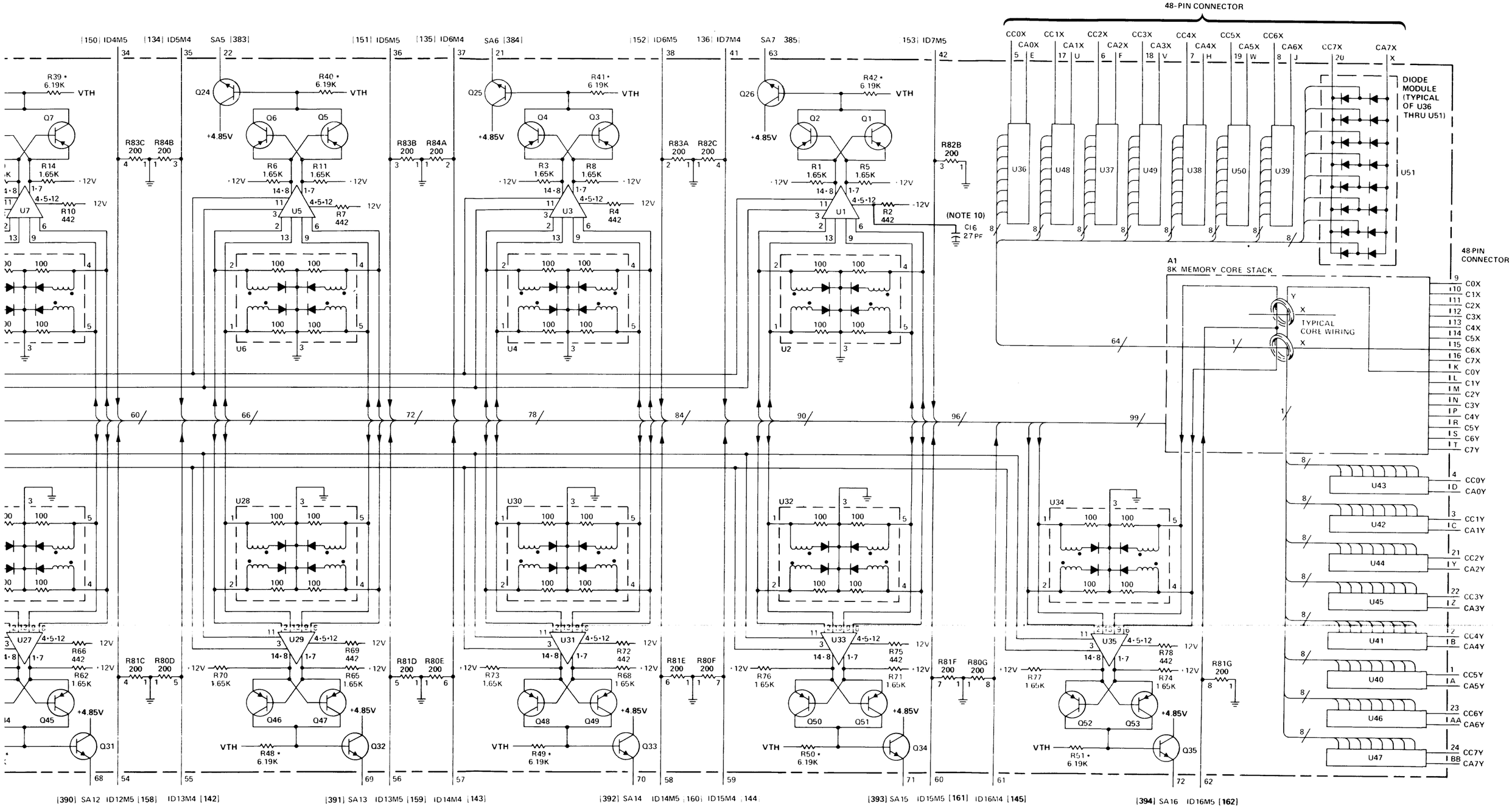


Figure 4-28. A110 Core Stack/Sense Amplifier Card (8K), Parts Location and Schematic Diagrams

(Information continues on next page)

REF. NO.	BACKPLANE LOCATION				
	* INDICATES SIGNAL SOURCE				
A111					
163	A108-26*	A111-25			
164	A108-19*	A111-27			
165	A108-25*	A111-29			
166	A108-24*	A111-31			
167	A108-53*	A111-33			
168	A108-60*	A111-35			
169	A108-59*	A111-37			
170	A108-58*	A111-41			
171	A108-52*	A111-43			
172	A108-44*	A111-45			
173	A108-51*	A111-49			
174	A108-45*	A111-51			
175	A108-76*	A111-53			
176	A108-73*	A111-55			
177	A108-74*	A111-57			
178	A108-75*	A111-59			
179	A108-17*	A111-61			
180	A108-20*	A111-26			
181	A108-23*	A111-28			
182	A108-22*	A111-30			
183	A108-21*	A111-32			
184	A108-57*	A111-34			
185	A108-54*	A111-36			
186	A108-56*	A111-38			
187	A108-55*	A111-42			
188	A108-78*	A111-44			
189	A108-79*	A111-46			
190	A108-81*	A111-50			
191	A108-80*	A111-52			
192	A108-84*	A111-54			
193	A108-77*	A111-56			
194	A108-83*	A111-58			
195	A108-82*	A111-60			
196	A108-18*	A111-62			
266	A107-54*	A111-3			
267	A107-53*	A111-4			
272	A102-5*	A103-5*	A107-80	A110-5*	A111-5*
290	A102-6	A103-6	A107-83*	A110-6	A111-6
378	A102-15*	A103-15*	A107-13	A110-15*	A111-15*
379	A102-18*	A103-18*	A107-11	A110-18*	A111-18*
380	A102-17*	A103-17*	A107-7	A110-17*	A111-17*
381	A102-20*	A103-20*	A107-9	A110-20*	A111-20*
382	A102-19*	A103-19*	A107-17	A110-19*	A111-19*
383	A102-22*	A103-22*	A107-15	A110-22*	A111-22*
384	A102-21*	A103-21*	A107-19	A110-21*	A111-21*
385	A102-63*	A103-63*	A107-21	A110-63*	A111-63*
386	A102-64*	A103-64*	A107-31	A110-64*	A111-64*
387	A102-65*	A103-65*	A107-33	A110-65*	A111-65*
388	A102-66*	A103-66*	A107-35	A110-66*	A111-66*
389	A102-67*	A103-67*	A107-37	A110-67*	A111-67*
390	A102-68*	A103-68*	A107-41	A110-68*	A111-68*
391	A102-69*	A103-69*	A107-43	A110-69*	A111-69*
392	A102-70*	A103-70*	A107-45	A110-70*	A111-70*
393	A102-71*	A103-71*	A107-49	A110-71*	A111-71*
394	A102-72*	A103-72*	A107-71	A110-72*	A111-72*

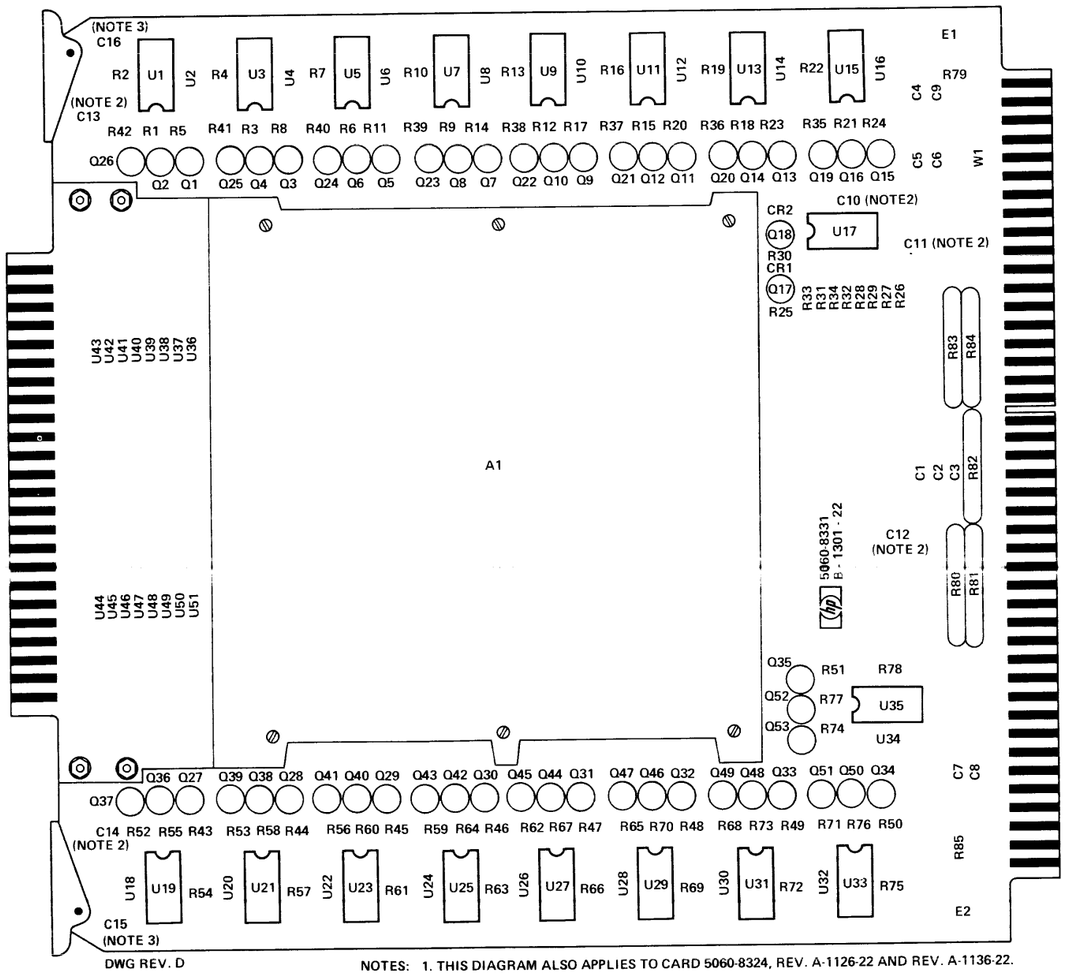
CAUTION

RETURN THIS CIRCUIT CARD TO THE FACTORY FOR REPAIR. FIELD REPLACEMENT OF ANY COMPONENT WILL VOID THE WARRANTY ON THE CARD.

TO AVOID BREAKING WIRES IN CORE STACK A1, DO NOT PRESS ON THE TOP OR BOTTOM OF THE STACK.

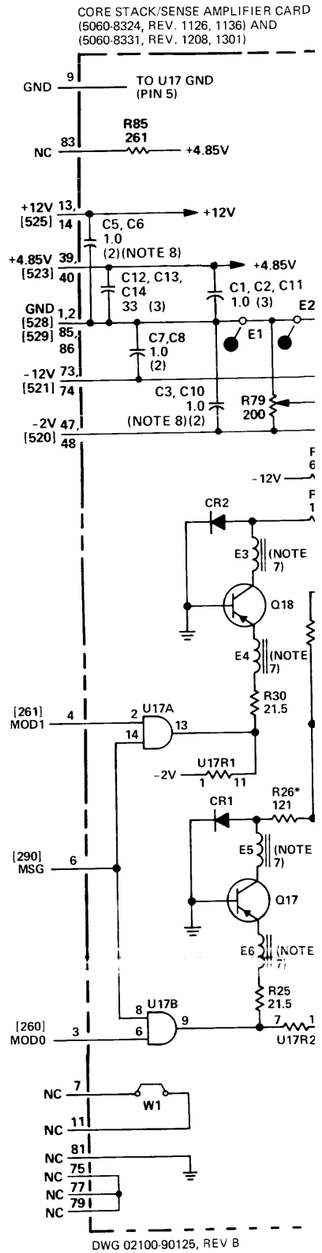
NOTES:

1. THIS CARD MUST NOT BE REPAIRED IN THE FIELD. FIELD REMOVAL OR REPLACEMENT OF ANY COMPONENT VOIDS THE WARRANTY ON THE CARD.
2. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
3. ALL PIN NUMBERS REFER TO 86 PIN CONNECTOR UNLESS OTHERWISE INDICATED.
4. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
5. DIODES ARE MOUNTED WITH CATHODE END AWAY FROM CARD.
6. * INDICATES SELECTED RESISTOR. R26, R32 ARE SELECTED FROM 100, 110, 121, 130, 140, OR 150. R35 THRU R51 ARE SELECTED FROM 5.11K, 5.62K, 6.19K, 6.81K, 7.50K OR 8.25K.
7. E3 THRU E6 USED ONLY ON CARD 5060-8324, REV. 1136.
8. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
9. R79 IS NOT USED ON ALL CARDS. WHEN R79 IS NOT USED, VTH IS CONNECTED TO -2V AS SHOWN BY DOTTED LINE.
10. C15 AND C16 FIRST USED ON CARD REV. 1301.



See table 4-17 for replaceable parts.

NOTES: 1. THIS DIAGRAM ALSO APPLIES TO CARD 5060-8324, REV. A-1126-22 AND REV. A-1136-22.
2. CAPACITORS C10, C11, C12, C13, AND C14 NOT USED ON CARD 5060-8324.
3. C15 AND C16 FIRST USED ON CARD 5060-8331, REV. A-1301-22.



CORE STACK/SENSE AMPLIFIER CARD
(5060-8324, REV. 1126, 1136) AND
(5060-8331, REV. 1208, 1301)

DWG 02100-90125, REV B

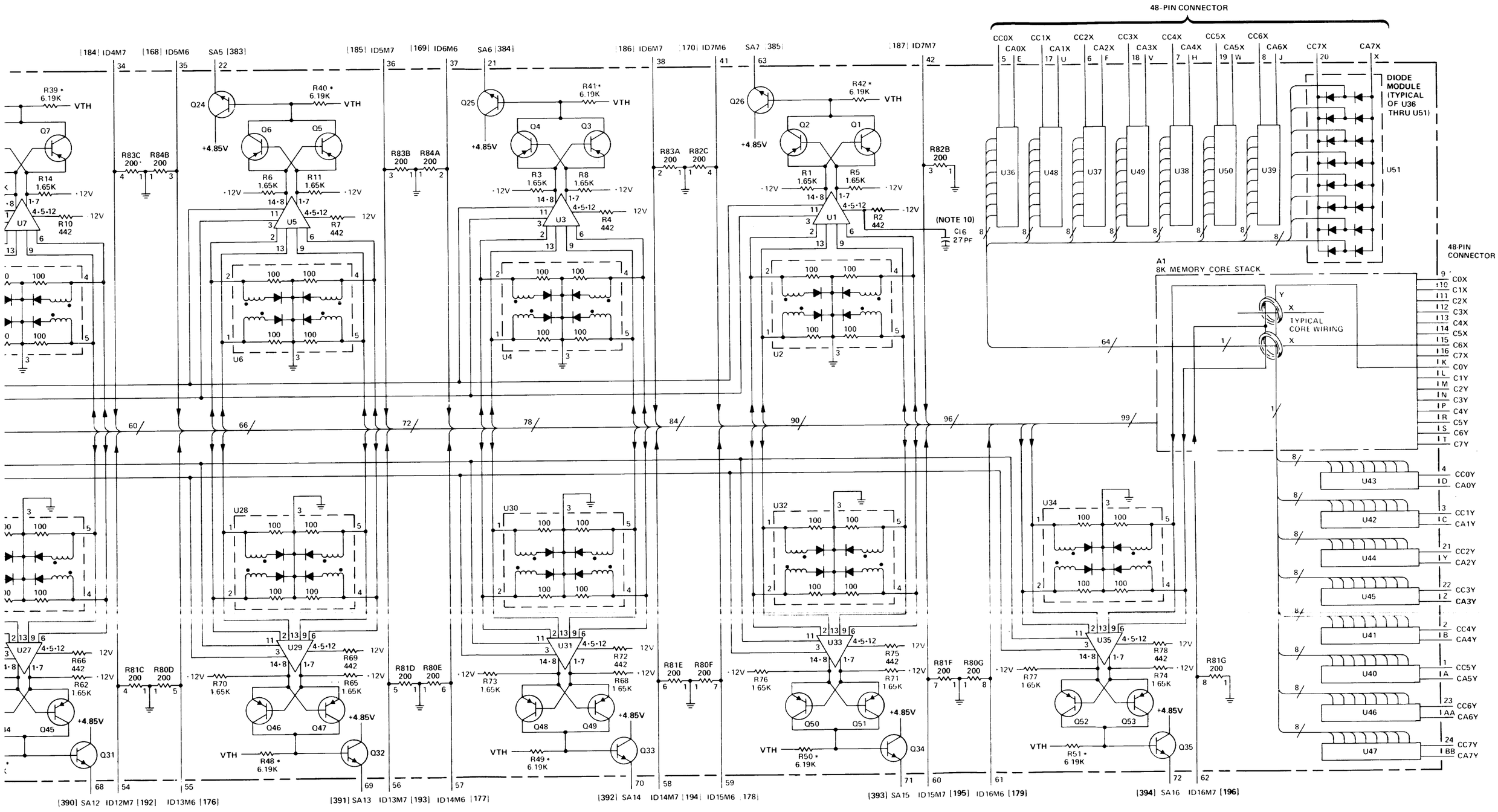
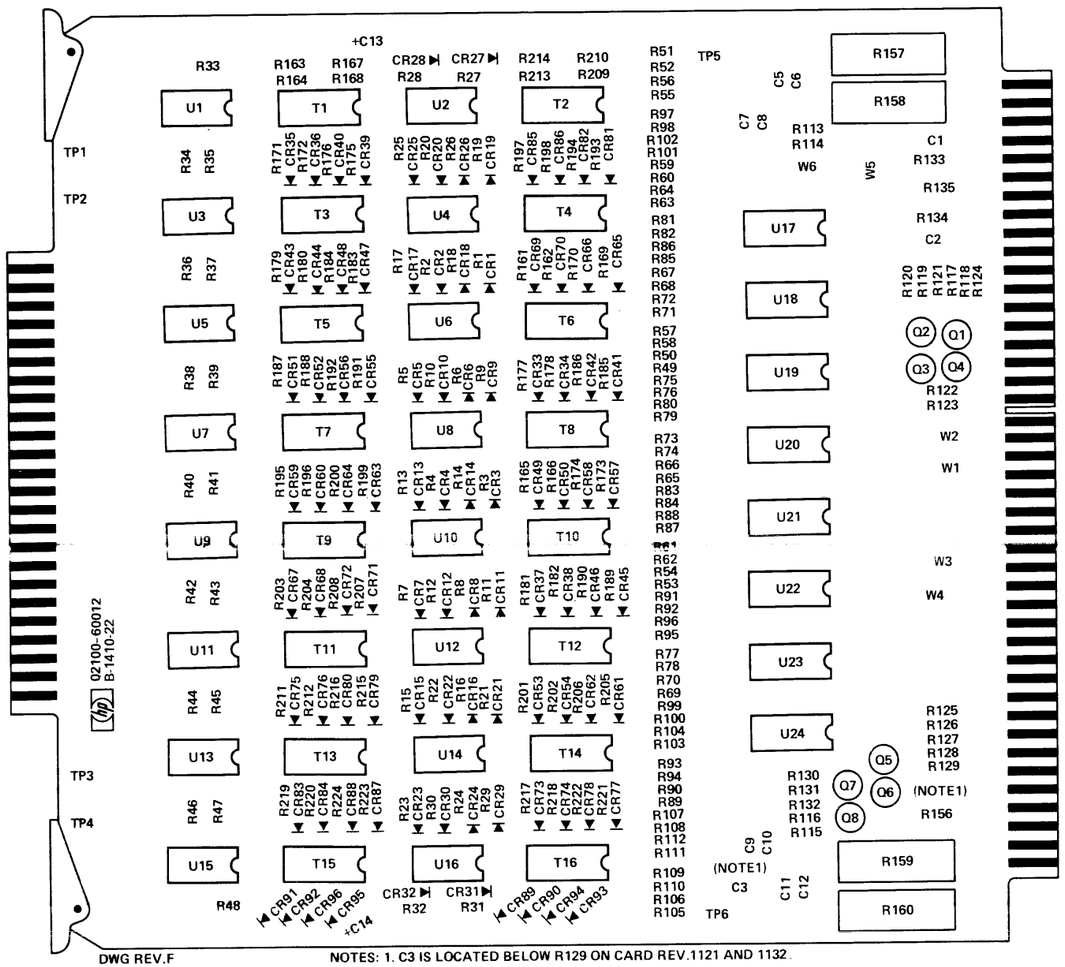


Figure 4-29. A111 Core Stack/Sense Amplifier Card (8K), Parts Location and Schematic Diagrams

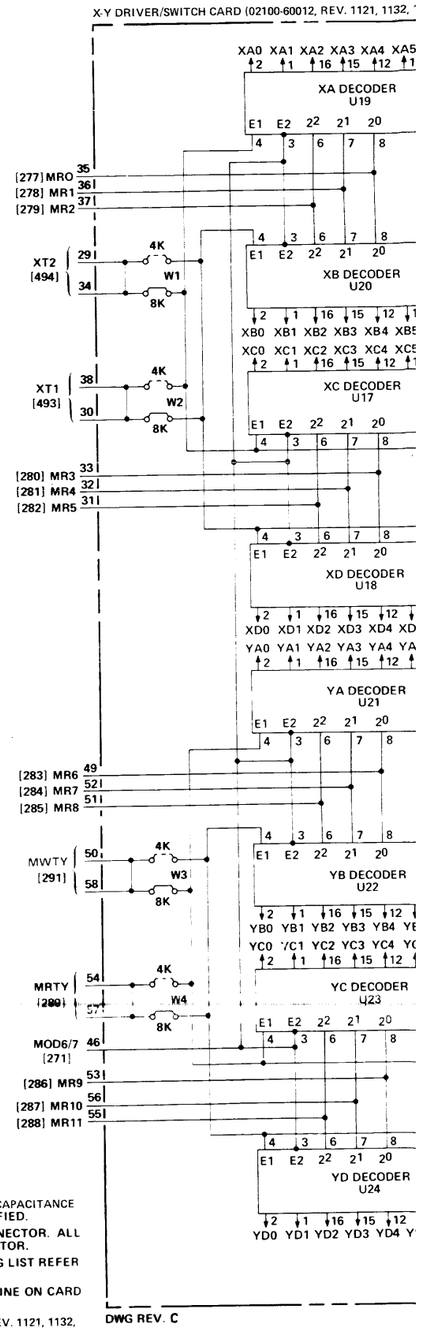
* INDICATES SIGNAL SOURCE

REF. NO.	BACKPLANE LOCATION				
A112					
271	A107-61*	A112-46			
277	A101-35	A104-35	A107-3*	A109-35	A112-35
278	A101-36	A104-36	A107-5*	A109-36	A112-36
279	A101-37	A104-37	A107-8*	A109-37	A112-37
280	A101-33	A104-33	A107-10*	A109-33	A112-33
281	A101-32	A104-32	A107-24*	A109-32	A112-32
282	A101-31	A104-31	A107-23*	A109-31	A112-31
283	A101-49	A104-49	A107-25*	A109-49	A112-49
284	A101-52	A104-52	A107-26*	A109-52	A112-52
285	A101-51	A104-51	A107-27*	A109-51	A112-51
286	A101-53	A104-53	A107-4*	A109-53	A112-53
287	A101-56	A104-56	A107-30*	A109-56	A112-56
288	A101-55	A104-55	A107-32*	A109-55	A112-55
289	A107-84*	A101-54,57	A104-54,57	A109-54,57	A112-54,57
291	A107-28*	A101-50,58	A104-50,58	A109-50,58	A112-50,58
493	A107-65*	A101-30,38	A104-30,38	A109-30,38	A112-30,38
494	A107-64*	A101-29,34	A104-29,34	A109-29,34	A112-29,34



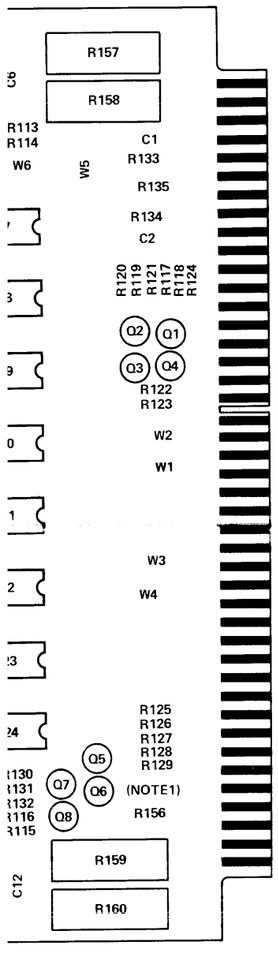
See Table 4-15 for replaceable parts.

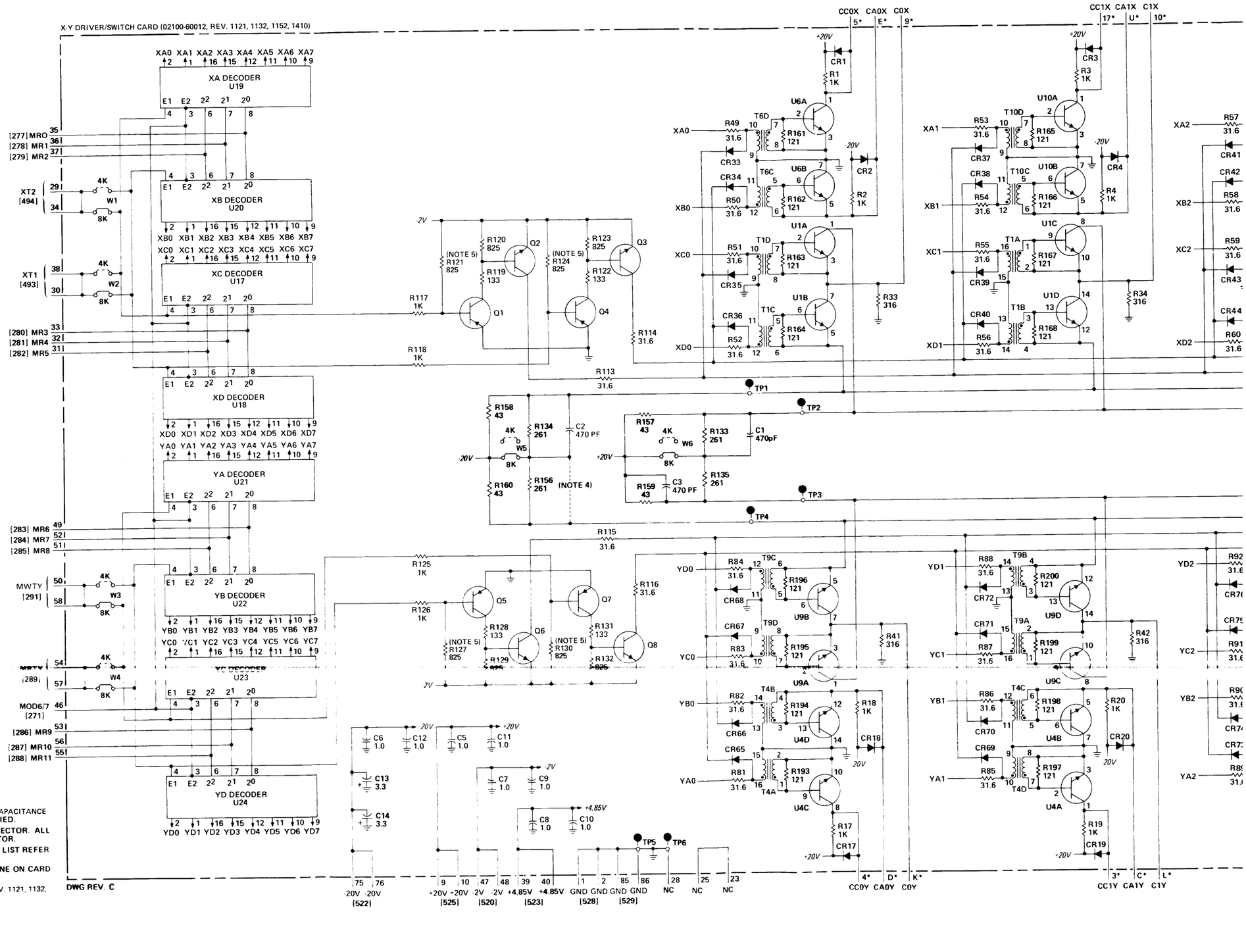
NOTES: 1. C3 IS LOCATED BELOW R129 ON CARD REV.1121 AND 1132.
2. THIS DIAGRAM ALSO APPLIES TO CARD REV. 1152.



NOTES:
1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. C3 WIRED IN POSITION SHOWN BY DASHED LINE ON CARD REV. 1132 AND 1121.
5. R121, R124, R127, AND R130 ARE 1.2K ON CARD REV. 1121, 1132, AND 1152.

SOURCE





NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN UF UNLESS OTHERWISE SPECIFIED.
2. * INDICATES PIN NUMBERS OF 48-PIN CONNECTOR. ALL OTHER PIN NUMBERS ARE FOR 86-PIN CONNECTOR.
3. NUMERALS WITHIN BRACKETS [ ] ARE WIRING LIST REFERENCE NUMBERS.
4. C3 WIRED IN POSITION SHOWN BY DASHED LINE ON CARD REV. 1132 AND 1121.
5. R121, R124, R127, AND R130 ARE 1.2K ON CARD REV. 1121, 1132, AND 1152.

DWG REV. C

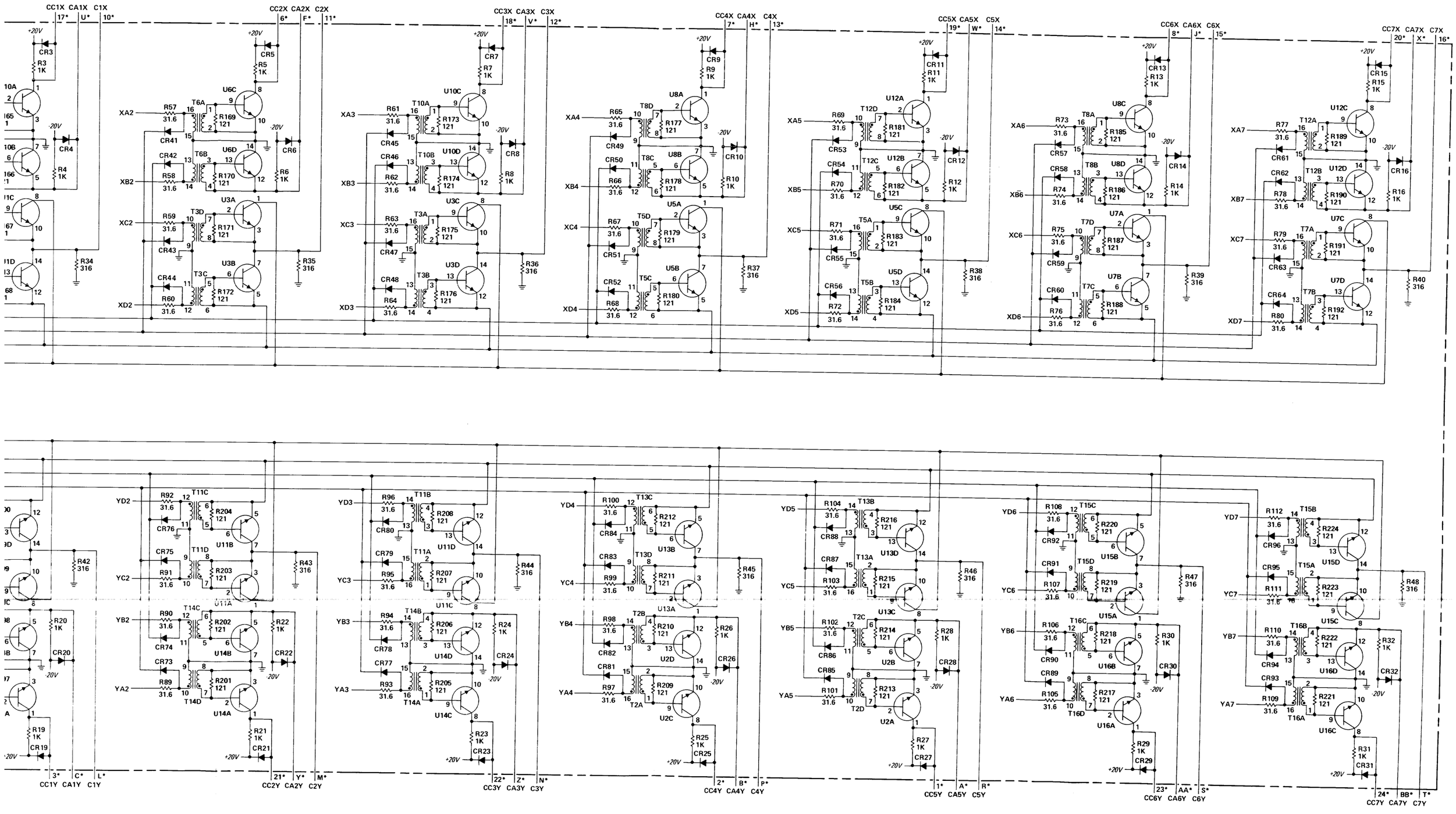
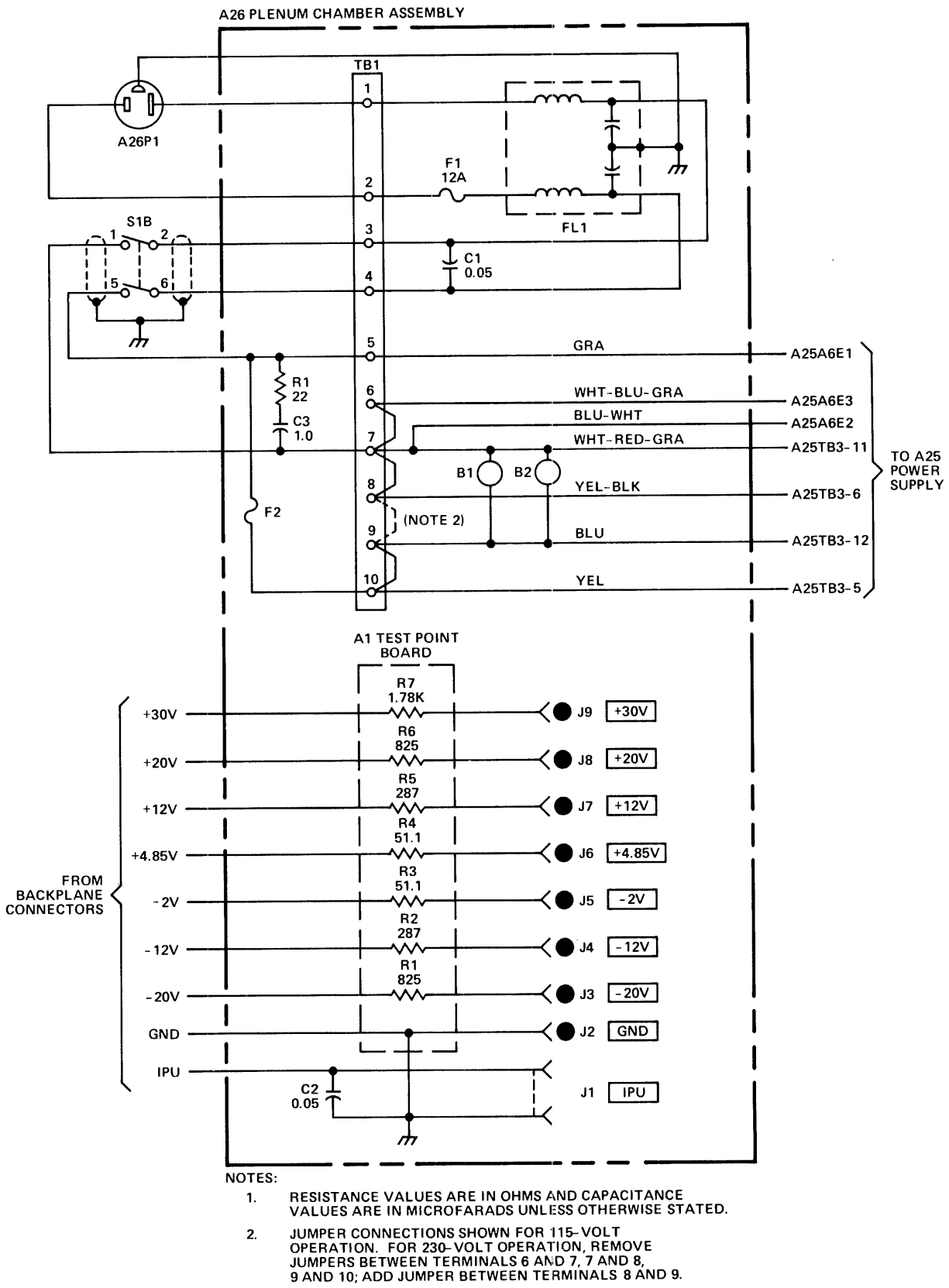


Figure 4-30. A112 X-Y Driver/Switch Card, Parts Location and Schematic Diagrams

Table 4-22. A26 Plenum Chamber, Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A26B1	3160-0224	2	FAN:TUBE AXIAL	28480	3160-0224
A26B2	3160-0224		FAN:TUBE AXIAL	28480	3160-0224
A26C1	0150-0096	1	C:FXD CER 0.05 UF +80-20% 100VDCW	91418	TA
A26C2	C160-0904	1	C:FXD CER 0.05 UF 20% 1000VDCW	56289	41C 169A4-CDH
A26C3	C160-0966	1	C:FXD PAPER 1 UF 10% 660VAC RMS	82047	49F 6541
A26FL1	9100-3317	1	FILTER:LINE 20A 50-400 HZ	05245	20B1-F1388
A26F1	2110-0249	1	FUSE:CARTRIDGE 12A 250V	75915	314012
A26F2	2110-0002	1	FUSE:CARTRIDGE 2 AMP 3 AG	75915	312.002
A26F1(Note 4)	2110-0451	1	FUSE:CARTRIDGE 6A 250V	75915	314006
A26F2(Note 4)	2110-0002	1	FUSE:CARTRIDGE 1A 250V	75915	312001
A26J1	1250-0118	1	CONNECTOR:BNC	24931	28JR 128-1
A26R1 (NOTE 1)	0698-3391	1	R:FXD MET FLM 21.5 OHM 1% 1/2W	28480	0698-3391
A26R1 (NOTE 2)	0698-3609	1	R:FXD MET OX 22 OHM 5% 2W	28480	0698-3609
A26R1 (NOTE 3)	0811-2988	1	R:FXD WW 22 OHM 1% 7W	28480	0811-2988
A26A1	02100-60050	1	TEST POINT BOARD ASSY	28480	02100-60050
A26A1R1	C757-0818	2	R:FXD MET FLM 825 OHM 1% 1/2W	28480	0757-0818
A26A1R2	0757-1092	2	R:FXD MET FLM 287 OHM 1% 1/2W	28480	0757-1092
A26A1R3	0757-1000	2	R:FXD MET FLM 51.1 OHM 1% 1/2W	28480	0757-1000
A26A1R4	C757-1000		R:FXD MET FLM 51.1 OHM 1% 1/2W	28480	0757-1000
A26A1R5	C757-1092		R:FXD MET FLM 287 OHM 1% 1/2W	28480	0757-1092
A26A1R6	0757-0818		R:FXD MET FLM 825 OHM 1% 1/2W	28480	0757-0818
A26A1R7	0698-0089	1	R:FXD MET FLM 1780 OHM 1% 1/2W	28480	0698-0089

NOTES:
1. Used on computers with serial numbers prefixed 1136 and 1140.
2. Used on computers with serial numbers prefixed 1145 and 1146.
3. Used on computers with serial numbers prefixed 1147 and higher.
4. Used for option 015.



NOTES:

1. RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN MICROFARADS UNLESS OTHERWISE STATED.
2. JUMPER CONNECTIONS SHOWN FOR 115-VOLT OPERATION. FOR 230-VOLT OPERATION, REMOVE JUMPERS BETWEEN TERMINALS 6 AND 7, 7 AND 8, 9 AND 10; ADD JUMPER BETWEEN TERMINALS 8 AND 9.

Figure 4-31. A26 Plenum Chamber Assembly, Schematic Diagram

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Iskra-Standard/Hewlett-Packard
Topniska 58/3
61000 **Ljubljana**
Tel: 314561 or 314927
Telex: 31300

SOCIALIST COUNTRIES PLEASE CONTACT:
Hewlett-Packard S.A.
7, rue du Bois-du-Lan
P.O. Box 349
CH-1217 Meyrin 1 **Geneva**
Switzerland
Tel: (022) 41 54 00
Cable: HEWPACKSA Geneva
Telex: 2 24 86

AFRICA, ASIA, AUSTRALIA

ANGOLA
Telectra
Empresa Técnica de Equipamentos Eléctricos, S.A.R.L.
R. Barbosa Rodrigues, 42-1°DT.°
Caixa Postal, 6487-**Luanda**
Tel: 35515/6
Cable: TELECTRA Luanda

AUSTRALIA
Hewlett-Packard Australia Pty. Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Tel: 89-6351, 89-6306
Telex: 31-024
Cable: HEWPARD Melbourne

Hewlett-Packard Australia Pty. Ltd.
31 Bridge Street
Pymble,
New South Wales, 2073
Tel: 449-6566
Telex: 21561
Cable: HEWPARD Sydney

Hewlett-Packard Australia Pty. Ltd.
97 Churchill Road
Prospect 5082
South Australia
Tel: 44 8151
Cable: HEWPARD Adelaide

Hewlett-Packard Australia Pty. Ltd.
141 Stirling Highway
Nedlands, W.A., 6009
Tel: 86 5455

Hewlett-Packard Australia Pty. Ltd.
121 Wollongong Street
Fyshwick, A.C.T., 2609
Tel: 95 3733

Hewlett-Packard Australia Pty. Ltd.
5th Floor
Teachers Union Building
495-499 Boundary Street
Spring Hill, 4000 Queensland
Tel: 29-1544
Telex: AA-42133

CEYLON
United Electricals Ltd.
P.O. Box 681
60, Park St.
Colombo 2
Tel: 26696
Cable: HOTPOINT Colombo

CYPRUS
Kypronics
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P.O. Box 1152
CY-**Nicosia**
Tel: 45628/29
Cable: KYPRONICS PANDEHIS

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Addis Ababa
Tel: 12285
Cable: ASACO Addisababa

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39th Floor
Connaught Road, Central
Hong Kong
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Telex: HX4766
Cable: SCHMIDTCO Hong Kong

INDIA
Blue Star Ltd.
Kasturi Buildings
Jamshedji Tata Rd.
Bombay 400 020
Tel: 29 50 21
Telex: 3751
Cable: BLUEFROST

Blue Star Ltd.
Sahas
414/2 Vir Savarkar Marg
Prabhadevi
Bombay 400 025
Tel: 45 78 87
Telex: 4093
Cable: FROSTBLUE

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Band Box House
Prabhadevi
Bombay 400 025
Tel: 45 73 01
Telex: 3751
Cable: BLUESTAR

Blue Star Ltd.
14/40 Civil Lines
Kampur 208 001
Tel: 6 88 82
Cable: BLUESTAR

Blue Star Ltd.
7 Hare Street
P.O. Box 506
Calcutta 700 001
Tel: 23-0131
Telex: 655
Cable: BLUESTAR

Blue Star Ltd.
Blue Star House.
34 Ring Road
Lajpat Nagar
New Delhi 110 024
Tel: 62 32 76
Telex: 2463
Cable: BLUESTAR

Blue Star Ltd.
Blue Star House
11/11A Magarath Road
Bangalore 560 025
Tel: 55668
Telex: 430
Cable: BLUESTAR

Blue Star Ltd.
Meeakshi Mandiran
xxx/1678 Mahatma Gandhi Rd.
Cochin 682 016 Kerala

Blue Star Ltd.
1-1-117/1
Sarojini Devi Road
Secunderabad 500 003
Tel: 7 63 91, 7 73 93
Cable: BLUEFROST
Telex: 459

Blue Star Ltd.
23/24 Second Line Beach
Madras 600 001
Tel: 23954
Telex: 379
Cable: BLUESTAR

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Nathraj Mansions
2nd Floor Bistupur
Jamshedpur 831 001
Tel: 38 04
Cable: BLUESTAR
Telex: 240

INDONESIA
BERCA Indonesia P.T.
P.O. Box 496
1st Floor JL. Cikini Raya 61
Jakarta
Tel: 56038, 40369, 49886
Telex: 2895 Jakarta

IRAN
Multi Corp International Ltd.
Avenue Soraya 130
P.O. Box 1212
IR-**Teheran**
Tel: 83 10 35-39
Cable: MULTICORP Tehran
Telex: 2893 mci tn

ISRAEL
Electronics & Engineering Div. of Motorola Israel Ltd.
17 Aminadav Street
Tel-Aviv
Tel: 36941 (3 lines)
Cable: BASTEL Tel-Aviv
Telex: 33569

JAPAN
Yokogawa-Hewlett-Packard Ltd.
Ohashi Building
1-59-1 Yoyogi
Shibuya-ku, **Tokyo**
Tel: 03-370-2281/92
Telex: 232-2024YHP
Cable: YHPMARKET TOK 23-724

Yokogawa-Hewlett-Packard Ltd.
Nisei Ibaragi Bldg.
2-2-8 Kasuga
Ibaragi-Shi
Osaka
Tel: (0726) 23-1641
Telex: 5332-385 YHP OSAKA

Yokogawa-Hewlett-Packard Ltd.
Nakamo Building
No. 24 Kamisasazima-cho
Nakamura-ku, **Nagoya** City
Tel: (052) 571-5171

Yokogawa-Hewlett-Packard Ltd.
Nitto Bldg.
2-4-2 Shinohara-Kita
Kohoku-ku
Yokohama 222
Tel: 045-432-1504
Telex: 382-3204 YHP YOK

Yokogawa-Hewlett-Packard Ltd.
Chuo Bldg.
Rm. 603 3,
2-Chome
IZUMI-CHO
Mito, 310
Tel: 0292-25-7470

KENYA
Technical Engineering Services
P.O. Box 18311
Nairobi, Kenya
Tel: 57726
Cable: PROTON

KOREA
American Trading Company Korea
I.P.O. Box 1103
Dae Kyung Bldg., 8th Floor
107 Sejong-Ro,
Chongro-Ku, **Seoul**
Tel: (4 lines) 73-8924-7
Cable: AMTRACO Seoul

KUWAIT
Al-Khaldiya Trading & Contracting Co.
Al Soor Street
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Kuwait
Tel: 42 99 10
Cable: VISCOUNT

LEBANON
Constantin E. Macridis
Clemenceau Street 34
P.O. Box 7213
RL-**Beirut**
Tel: 220846
Telex: 21114 Leb
Cable: ELECTRONUCLEAR Beirut

MALAYSIA
MECOMB Malaysia Ltd.
2 Lorong 13/6A
Section 13
Petaling Jaya, **Selangor**
Cable: MECOMB Kuala Lumpur

MOZAMBIQUE
A.N. Goncalves, Lta.
162, 1° Apt. 14 Av. D. Luis
Caixa Postal 107
Lourenco Marques
Tel: 27091, 27114
Telex: 6-203 Negon Mo
Cable: NEGON

NEW ZEALAND
Hewlett-Packard (N.Z.) Ltd.
94-96 Dixon Street
P.O. Box 9443
Courtenay Place,
Wellington
Tel: 59-559
Telex: 3898
Cable: HEWPACK Wellington

Hewlett-Packard (N.Z.) Ltd.
Pakuranga Professional Centre
267 Pakuranga Highway
Box 51092
Pakuranga
Tel: 569-651
Cable: HEWPACK, Auckland

NIGERIA
The Electronics Instrumentatiofns Ltd.
N6B/770 Oyo Road
Oluseun House
P.M.B. 5402
Ibadan
Tel: 22325
Cable: THETEIL Ibadan

The Electronics Instrumentations Ltd. (TEIL)
16th Floor Cocoa House
P.M.B. 5402
Ibadan
Tel: 22325
Cable: THETEIL Ibadan

PAKISTAN
Mushko & Company, Ltd.
Oosman Chambers
Abdullah Haroon Road
Karachi 3
Tel: 511027, 512927
Cable: COOPERATOR Karachi

Mushko & Company, Ltd.
388, Satellite Town
Rawalpindi
Tel: 41924
Cable: FEMUS Rawalpindi

PHILIPPINES
Electromex, Inc.
6th Floor, Amalgamated Development Corp. Bldg.
Ayala Avenue, Makati, Rizal
C.C.P.O. Box 1028
Makati, Rizal
Tel: 86-18-87, 87-76-77,
Cable: ELEMEX Manila

SINGAPORE
Mechanical & Combustion Engineering Company Pte., Ltd.
10/12, Jalan Kilang
Red Hill Industrial Estate
Singapore, 3
Tel: 647151 (7 lines)
Cable: MECOMB Singapore

Hewlett-Packard Singapore (Pte.) Ltd.
Blk. 2, 6th FLOOR, Jalan Bukit Merah
Redhill Industrial Estate
Alexandra P.O. Box 87.
Singapore 3
Tel: 633022
Telex: HPSG RS 21486
Cable: HEWPACK, Singapore

SOUTH AFRICA
Hewlett-Packard South Africa (Pty.), Ltd.
Hewlett-Packard House
Daphne Street, Wendywood
Sandton, Transvaal 2001
Tel: 802-1040
Telex: SA43-4782JH
Cable: HEWPACK

Hewlett-Packard South Africa (Pty.), Ltd.
Breecastle House
Bree Street
Cape Town
Tel: 2-6941/2/3
Cable: HEWPACK Cape Town
Telex: 0006 CT

Hewlett-Packard South Africa (Pty.), Ltd.
641 Ridge Road, Durban
P.O. Box 99
Overport, Natal
Tel: 88-6102
Telex: 567954
Cable: HEWPACK

TAIWAN
Hewlett-Packard Taiwan
39 Chung Shiao West Road
Sec. 1 Overseas Insurance Corp. Bldg. 7th Floor
Taipei
Tel: 389160,1,2, 375121, Ext. 240-249
Telex: TP824 HEWPACK
Cable: HEWPACK Taipei

Hewlett-Packard Taiwan
38, Po-Ai Lane, San Min Chu,
Kaohsiung
Tel: 297319

THAILAND
UNIMESA Co., Ltd.
Elsom Research Building
Bangjak Sukumvit Ave.
Bangkok
Tel: 932387, 930338
Cable: UNIMESA Bangkok

UGANDA
Uganda Tele-Electric Co., Ltd.
P.O. Box 4449
Kampala
Tel: 57279
Cable: COMCO Kampala

VIETNAM
Peninsular Trading Inc.
P.O. Box H-3
216 Hien-Vuong
Saigon
Tel: 20-805, 93398
Cable: PENTRA, SAIGON 242

ZAMBIA
R.J. Tilbury (Zambia) Ltd.
P.O. Box 2792
Lusaka
Zambia, Central Africa
Tel: 73793
Cable: ARJAYTEE, Lusaka

MEDITERRANEAN AND MIDDLE EAST COUNTRIES NOT SHOWN PLEASE CONTACT:
Hewlett-Packard S.A.
Mediterranean and Middle East Operations
35, Kolokotroni Street
Platia Kefallariou
GR-Kifissia-**Athens**
Telex: 21-6588
Cable: HEWPACKSA Athens

OTHER AREAS NOT LISTED, CONTACT:
Hewlett-Packard
Export Trade Company
3200 Hillview Ave.
Palo Alto, California 94304
Tel: (415) 493-1501
TWX: 910-373-1267
Cable: HEWPACK Palo Alto
Telex: 034-8300, 034-8493

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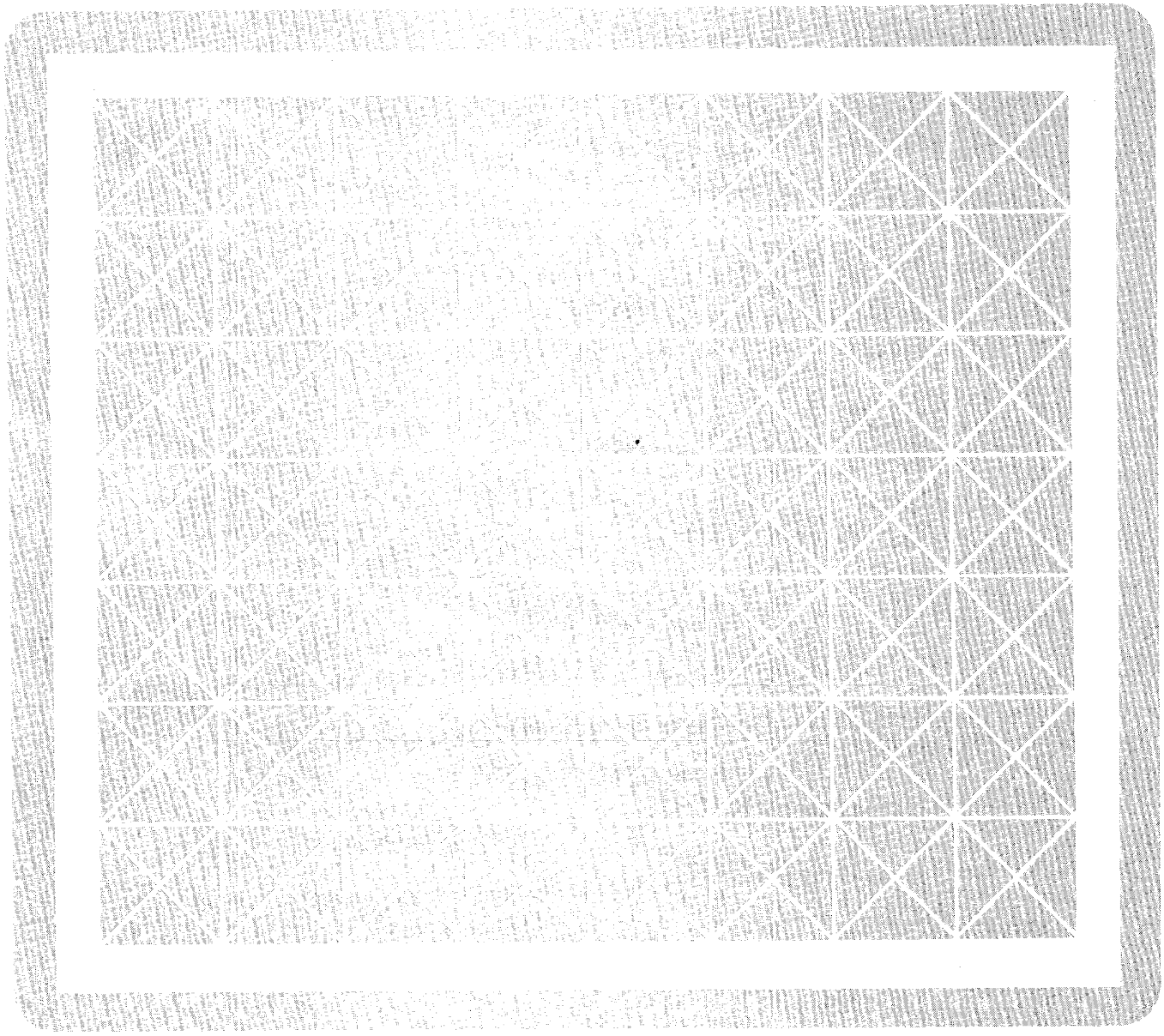

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