HEWLETT hp PACKARD

OPERATING AND SERVICE MANUAL

PART 5

7970B/7970C

DIGITAL MAGNETIC TAPE UNIT

READ/READ MODULES

Printed-Circuit Assemblies:

07970-62166, Series 1218
07970-62168, Series 1218
07970-62167, Series 1218
07970-60570, Series 1218
07970-62001, Series 1045
07970-62003, Series 1039
07970-62004, Series 1045
07970-62005, Series 1045
07970-62006, Series 1039
07970-62012, Series 1045

07970-90383

PRINTED: AUG 1973

SECTION I
DESCRIPTION

1-1. INTRODUCTION.

1-2. This section describes the read/read modules of the HP 7970B/7970C Digital Magnetic Tape Units. A functional description and circuit description is also included to aid in servicing the read/read modules.

1-3. PHYSICAL DESCRIPTION.

1-4. The read/read modules consist of the read magnetic head assembly, a read preamplifier printed-circuit assembly, a read assembly and a density select assembly. The magnetic head assembly is a seven- and nine-track, read, NRZI head. Channel scrambling is accomplished in the head assembly wiring. From the reference edge of the tape (edge facing the operator) the nine-track channel designations are 5, 7, 3, P, 2, 1, 0, 6, and 4. The seven-track channel designations are 7, 6, 5, 4, 3, 2, and P.

1-5. The read preamplifier is located near the head assembly. The preamplifier contains nine identical channels. Seven-track operations do not use channels 0 and 1.

1-6. The read assembly consists of a card cage assembly (motherboard) that contains a read/read control printed-circuit assembly, a single-channel read data printed-circuit assembly and three dual-channel read data printed-circuit assemblies.

1-7. The density select switch assembly allows the operator to select read densities of 200, 556, or 800 cpi. The assembly consists of a three-button, interlocked switch assembly with indicators and a printed-circuit assembly that contains line-drivers. A separate switch and indicator on the assembly allows selection of seven- or nine-track operation.

1-8. FUNCTIONAL DESCRIPTION.

1-9. Information to be read from the magnetic tape has been recorded in NRZI (non-return-to-zero-ones inverted) form, in seven or nine tracks. A "one" bit is represented by a flux reversal and a "zero" bit is represented by the absence of a flux reversal. The character bytes are recorded at a density of 200, 556, or 800 character bytes per inch (cpi).

1-10. As the tape moves across the read head, tracks that contain a flux reversal ("one" bit) generate an analog signal from the head. The coding of information on the tape is such that every byte contains a flux reversal in at least one of the tracks. All bits that make up a character byte may not arrive at the head at the same time. The read data circuits detect the flux transitions in each track and produce a parallel digital output with all bits of the character byte presented simultaneously.

1-11. The recovery of the data is accomplished by generating a fixed-time window or character gate. Starting with the first detected flux reversal, all remaining bits must arrive during the character gate. At the end of the character gate time, a read strobe pulse samples the contents of all input registers, transfers the data to the output registers and conditions the input registers for the next data byte.

1-12. CIRCUIT DESCRIPTION.

1-13. The following paragraphs describe the preamplifier circuits, the read control circuits, and a typical channel of the read data circuits.

1-14. READ/READ PREAMPLIFIER.

1-15. The read/read preamplifier PC assembly contains nine identical circuits. Each circuit consists of switching logic, a switching circuit, and an operational amplifier. Figure 1-1 is a block diagram of a typical read/read preamplifier circuit. The nine-track head and the seven-track head outputs are directly coupled to the preamplifier. Switching logic and switching circuits control the input to the operational amplifier. When seven-track operation is selected, the S7T input (from the density select switch assembly) is high (+5V) and switching logic allows the seven-track read head output to be amplified. When nine-track operation is selected, the S7T input is at ground potential and the switching logic allows the nine-track head outputs to be amplified.

1-16. Each of the seven- or nine-track low level analog outputs from the read head are independently amplified by an integrated-circuit preamplifier located on the preamplifier printed-circuit assembly. The gain of each preamplifier is adjustable.

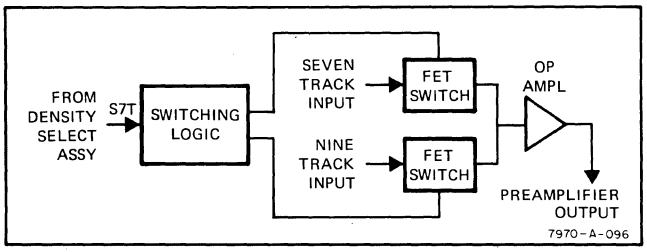


Figure 1-1. Typical Read/Read Preamplifier Circuit, Block Diagram

1-17. READ/READ CONTROL CIRCUITS.

1-18. The read/read control circuits consist of a density select circuit, a read enable circuit, a threshold generator, a skew gate circuit, and a character gate generator. Figure 1-2 is a block diagram of the read/read control circuits. Figure 1-3 is a timing diagram showing the relationship of generated signals and data.

1-19. The read enable circuit is controlled by commands from the tape unit control and status circuits. When the read enable circuit is satisfied, the Read Enable signal conditions the read data input and output registers. The Read Enable signal is also gated with the character gate generator output to provide the "not" Read Clock signal ($\overline{RC}$).

1-20. The threshold generator circuit establishes the bias level for the threshold circuits of the read data circuits. When reading tape the threshold is 22 percent of the nominal peak amplitude.

1-21. The skew gate circuit provides a voltage for the skew delay circuit of the read data circuits. The purpose of skew delay is to compensate for channel-to-channel time differentials introduced in the read system. There are two major sources of interchannel time displacements (static skew). One source is due to non-perfect alignment of individual track gaps in the read head (gap scatter) and the centerlines of the head may be tipped with respect to the tape edge (azimuth misalignment). As a result, certain bits of the byte will be detected before the others. Since the tape speed is constant, the effects of delaying each track so that all outputs occur simultaneously when reading an "all ones" alignment tape, is the same as mechanically aligning the read stack. The second source of static skew is differential phase delays in the individual data channels. The phase response of the head varies from track-to-track because of inductance variance. The overall analog channel bandwidths may be different and reflect differential phase delays at operating frequency.

1-22. During a nine-track operation the skew delay voltage is through Q4 of the read control printed-circuit assembly. During a seven-track operation, Q4 is cut off, and skew delay voltage is through Q1. When changing operations, the voltage sources (Q1 and Q4) do not switch simultaneously; there is a time lag in the switching to prevent the absence of a skew delay voltage.

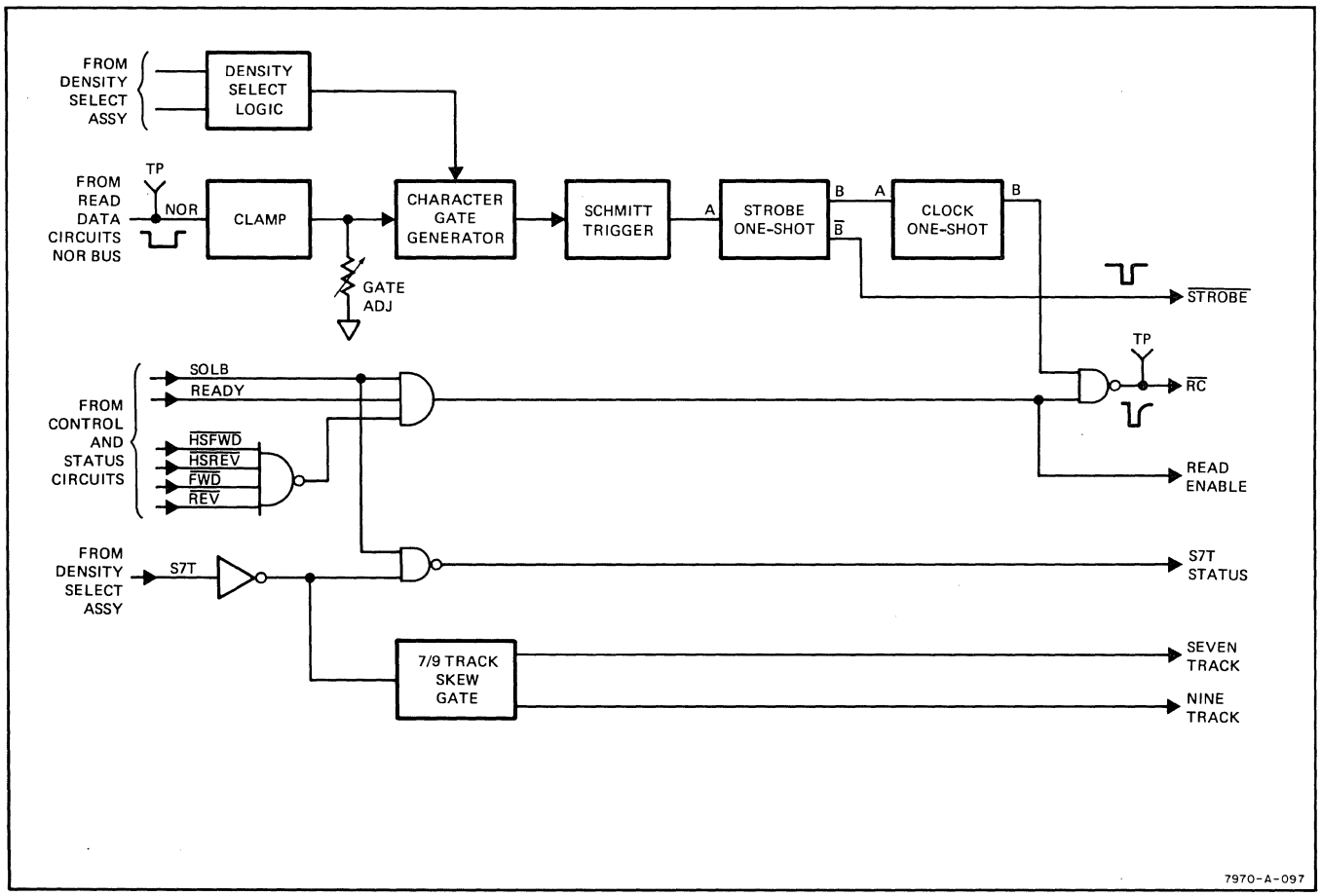


Figure 1-2. Read Control Circuits, Simplified Block Diagram

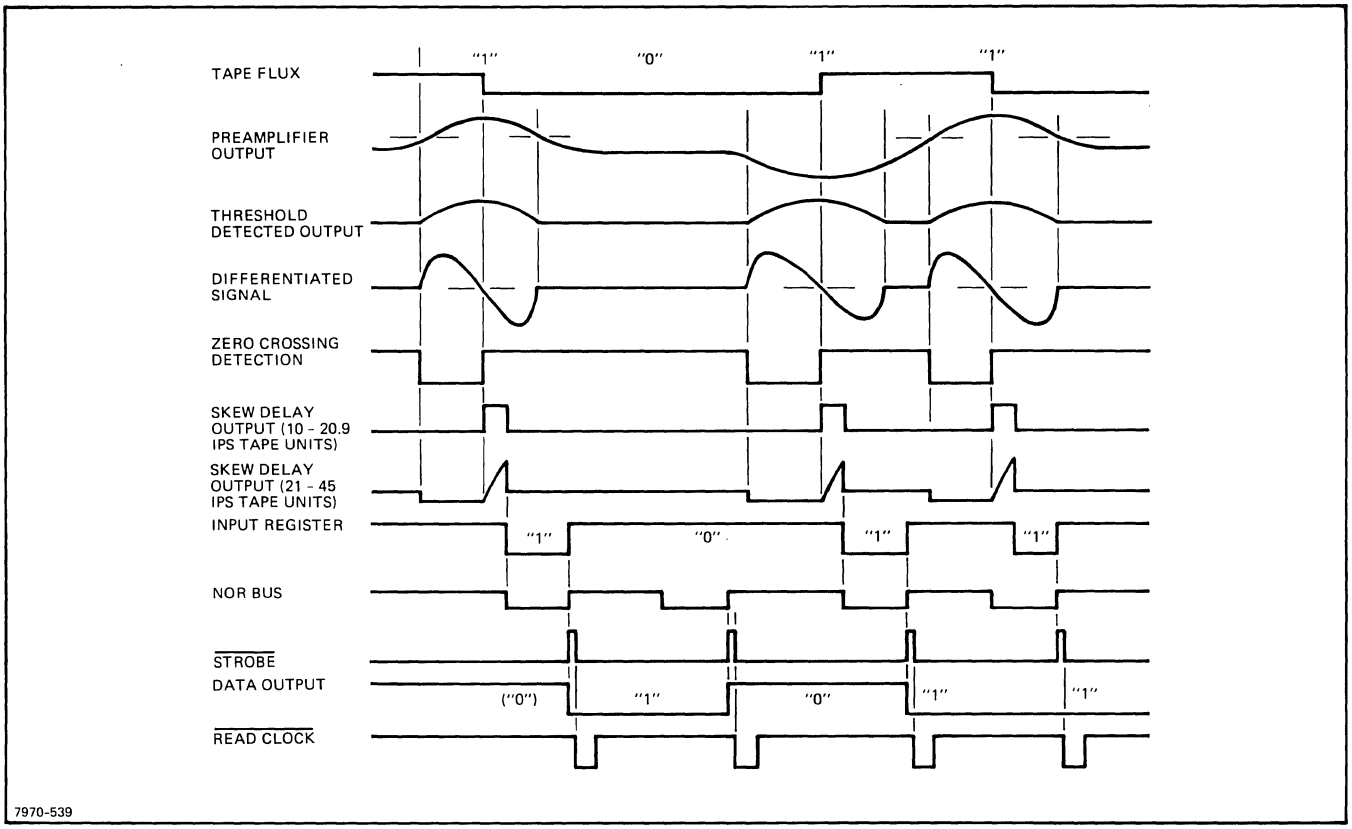


Figure 1-3. Read Data Circuits, Timing Diagram

1-23. The character gate generator provides a "not" Read Strobe ($\overline{\text{STROBE}}$) pulse and a clock pulse that is gated with tape unit status to provide a "not" Read Clock ($\overline{\text{RC}}$) pulse. The first "one" bit detected by the read data circuits conditions the "nor" bus (low) and starts the character gate generator. The width of the character gate is 40 percent of the nominal byte-to-byte spacing and is automatically controlled by the density status input from the tape unit density select switch assembly.

1-24. The output of the character gate generator is coupled to a strobe one-shot through a schmitt-trigger. The trailing edge of the character gate triggers the strobe one-shot, generating the "not" Read Strobe ($\overline{\text{STROBE}}$) pulse. The "not" Read Strobe pulse is an 800 nanosecond pulse used by the read data circuits to sample the output register and set the input register for the next data byte.

1-25. The trailing edge of the "not" Read Strobe pulse triggers the clock one-shot. The output of the clock one-shot is a 3-microsecond pulse that is gated with Read Enable to generate the "not" Read Clock ($\overline{\text{RC}}$) pulse. The read clock pulse indicates that a data byte has been recovered and is on the read data interface lines.

1-26. READ DATA CIRCUITS.

1-27. The analog outputs from the preamplifiers are directly coupled to seven or nine identical data channels located in the read data assembly. Figure 1-4 is a block diagram of the read data circuits. The analog signal from a given channel is phase inverted, fullwave rectified, and threshold clipped so that only the portion of the signal that exceeds the threshold level is processed. This prevents noise or minor tape imperfections from generating erroneous responses.

1-28. The portion of the signal exceeding the threshold level is differentiated and the zero-crossing representing the peak amplitude of data is detected by a high gain amplifier (10 - 20.9 ips tape units) or a Schmitt trigger circuit (21 - 45 ips tape units). The positive-going edge of the trigger output therefore represents the peak of the analog input signal, independent of signal amplitude.

1-29. The positive-going signal triggers the skew delay pulse generator. When the skew delay generator times-out, a short duration negative-going pulse directly clears the input register.

1-30. When the input register is cleared by the detected "one" bit, the input register outputs are set (Q output is low

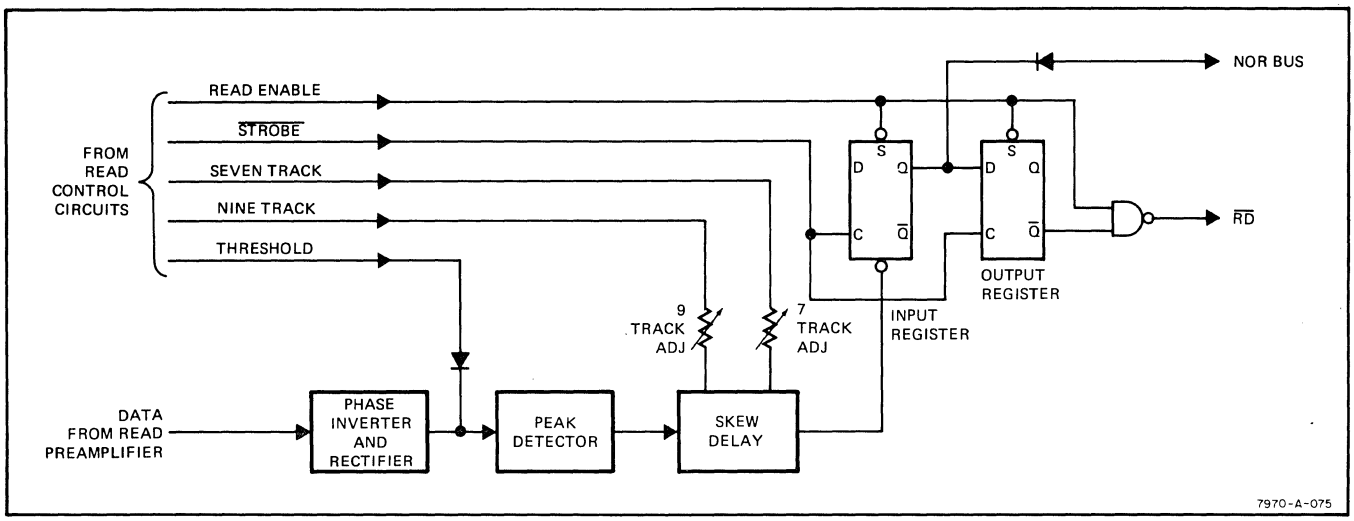


Figure 1-4. Read Data Circuits, Block Diagram

and $\overline{Q}$ output is high). With the input register cleared, the "nor" bus is activated. The "nor" bus is normally at a positive potential; however, when the "nor" bus is activated by the first "one" bit detected, the bus goes low (near 0-volts). When the "nor" bus goes low, the read control character gate is activated. The Q output of the input register (low) is also applied to the output register.

1-31. When the character gate times-out, the leading edge of "not" Read Strobe ($\overline{STROBE}$) clocks the input register contents to the output register and resets the input register. This transfers the data bit to the output register and prepares the input register for the next data byte. The output of the output register is gated with Read Enable to provide the interface with the read data bit.

SECTION II
MAINTENANCE

2-1. INTRODUCTION.

2-2. This section provides maintenance information for the read/read modules of the HP 7970B/7970C Digital Magnetic Tape Units. Maintenance information consists of performance checkout procedures and adjustment procedures. Prior to performing any maintenance to the read/read modules, ensure that the transport is functioning properly. (Refer to part 2.)

2-3. TEST EQUIPMENT REQUIRED.

2-4. In addition to the equipment required for transport maintenance (refer to part 2), the following tapes and test items are required to perform maintenance procedures described in this section.

a. Master Alignment Tape (All "1's" full width at 800 cpi), part number 9162-0027.

b. Reference Amplitude Test Tape (All "1's", full width at 200 cpi), part number 5080-4547.

Note

The HP 13193A Read Test Board is available as an accessory. When used in conjunction with the HP 13191A Control and Status Test Board, maintenance procedures can be performed without the aid of an interfaced computer.

2-5. PERFORMANCE TEST PROCEDURES.

2-6. The following test procedures verify that the read/read data circuits conform to published specifications. The test procedures described assume the use of an on-line computer or the use of off-line test accessories. Prior to performing the test procedures, ensure that all transport adjustments have been made. (Refer to part 2.)

2-7. READ/READ PREAMPLIFIER GAIN TEST.

2-8. Load the tape unit with the Reference Amplitude Test Tape, HP part number 5080-4547. Note the signal level indicated on the test tape label. Select nine-track operation and measure the peak-to-peak output voltage at the preamplifier test points. The measured voltage should be within ±0.3 volt of the level indicated on the test tape label. (Typically 85 percent of 6.4V p-p.) Select seven-track operation and repeat the preamplifier gain test.

2-9. READ THRESHOLD LEVEL TEST.

2-10. Use oscilloscope and check dc voltage level on the threshold test point on the read control card. Value should be +0.450 ±0.020 volt dc.

2-11. READ HEAD STATIC SKEW TEST.

2-12. Read head static skew is measured optically during head manufacturing and is also verified electrically on special test facilities. When installed on the tape transport, certain electrical and mechanical considerations enter as factors. These may modify the static skew to a minor degree. Measurement may be used as additional information for analysis of field performance. The electronic read de-skewing effectively eliminates this factor in normal operation. Measurement is as follows:

a. Select nine-track operation and use the master alignment tape as the source of data.

b. Connect channel A of the oscilloscope to the P (parity) preamplifier output and adjust the sweep to synchronize near the zero axis crossover on the positive slope.

c. Channel B of the oscilloscope will be connected to the various skew test points on the read cards. Channels will be used in alternate mode.

d. With the delayed sweep operated under a sweep rate of 2 microseconds/cm, adjust the delay to display the positive-going step at the start of the channel skew delay ramp on the center of the oscilloscope. This will be the zero time reference for all other measurements. Adjust channel B gain as required to obtain good resolution.

e. Without making any further adjustments to the oscilloscope time base, move the channel B probe to each skew delay test point in sequence and note its relative position to the center of the oscilloscope. Signals to the left of center are early, and may be noted as "plus" with those to the right noted as "minus" as they are later than the signal from track P.

f. When all measurements have been completed in the nine-track mode; the same sequence can be repeated for the seven-track mode. It will be necessary to readjust the time delay for positioning track P to center.

g. Review data taken and determine the two tracks that are the earliest (largest plus number) and latest (largest minus number). The time differential between them (sum of the two times) converted to microinches for the tape speed

involved is the read head static skew. This number should not exceed 225 microinches.

Note

For readings between 200 and 225 microinches, it may be wise to correct for the electronic time delay variation in the peak detection circuitry. This may be measured by repeating steps "a" through "f" except that the oscilloscope channel A probe must be connected to the preamplifier output corresponding to the skew test point on the oscilloscope channel B probe. These figures must be subtracted from the normal readings (taken with channel P as the only sync) to determine the true head skew. Under these conditions, a true head skew in excess of 200 microinches is higher than normal but will not cause any practical problems.

2-13. COMPENSATED STATIC READ SKEW TEST.

2-14. Compensated static read skew is a measure of the degree to which the electronic time delays are effective in eliminating the read head static skew. The termination of each track skew delay is the fall (or negative-going trailing edge) of the positive-going ramp visible at the SKEW testpoints on each read card. With perfect compensation these will all coincide. As a matter of practical consideration this seldom happens except during the period of adjustment with a specific master alignment tape. When comparisons are made using alignment tapes other than the one used for adjustment, or where the same tape is subject to possible damage, it is not uncommon to see a time difference of several microseconds depending on tape speed. Considering only a ±1 percent error in the alignment tapes and complete stability of the skew delay, there could be a difference of 25 microinches between two tapes (allowing a time difference from 2.5 microseconds at 10 ips to 0.5 microsecond at 50 ips). Evaluate compensated skew using the following procedure.

a. Select nine-track operation and use channel A of the oscilloscope for the master reference for all skew measurements. Connect probe to the skew test point for channel P read card.

b. Sync the main sweep to the negative slope of channel A waveform and set sweep speed to display two bit-to-bit distances. This will result in a negative-going trailing edge at the center of the oscilloscope and another at the right side. If there is time asymmetry in the master tape (some tapes have this and some do not), there will be double trailing edges in the center of the screen with the time difference corresponding to the recorded pulse asymmetry on the tape. If this is visible, refer to the note following step "e." Use the variable setting of the main sweep to position pulses as stated. This will assure the visibility of write time asymmetry on the master tape.

c. The delayed sweep will be used to position the next sequential bit in the center of the screen. Use the internal sync, positive slope position on the delayed sweep, and adjust the trigger level for a stable waveform. The delayed sweep should be adjusted (from the ccw position) only as far as required to permit the delayed sweep to internally trigger on the next pulse.

d. Establish final positioning of the P track reference point (negative-going trailing edge) at the center of the screen by use of the sweep positioning controls. Be sure that the delayed sweep remains correctly calibrated since correct time differences in microseconds will be required. Some positioning can also be done with the trigger level.

e. Use channel B of the oscilloscope and the chopped mode to observe the relative position of all other tracks. Note these positions and determine the earliest and latest tracks. The maximum difference should be 30 microinches or less. If readings are between 30 and 50 microinches, check the read skew for the unit. If this skew results in the difference being less than 25 microinches, no adjustment should be made unless there is agreement between two master skew tapes showing that the same relative error exists between the same tracks. If this occurs it can be presumed that the unit adjustments have remained stable (read skew within ±1 percent since last adjustment), but the previous read skew adjustment was made with a bad master alignment tape.

Note

Skew measurements can become somewhat difficult if significant write time asymmetry exists. This asymmetry will be observed on some master alignment tapes. No special steps can be taken when reading the master alignment tape.

f. Select seven-track operation and repeat steps "a" through "e."

2-15. READ CHARACTER GATE, STROBE, AND READ CLOCK TEST.

2-16. The read character gate is initiated by the first "1" bit to complete a read skew delay period. The fall of read skew delay provides a trigger at the "nor" line, causing it to move in a negative direction. This fall triggers the read character gate period which is nominally 40 percent of the bit-to-bit period for each density. Termination of the gate will cause the "nor" line to move in a positive direction, which does two things. It sets the data levels at the read outputs and initiates the leading edge of the read strobe pulse. The read strobe trailing edge then generates the read clock output. The strobe delay time provides an interval for the read data outputs to settle before the read clock output occurs. Measure these characteristics as follows:

a. Load the tape unit with the master alignment tape and select nine-track 800 cpi operation.

b. Sync the scope on the NOR test point with the negative slope. Then adjust the main sweep rate so that the next negative-going edge occurs 10 division later. (Each division now is 10 percent of the bit-to-bit period.)

c. Observe that the positive-going edge (end of gate) occurs between 35 and 45 percent of the bit-to-bit period.

d. Select seven-track operation and repeat steps "b" and "c" for 556 and 200 cpi operation.

2-17. Strobe pulse delay and read clock relationships to data are measured as follows:

a. Select a data pattern that will move a single bit through all data channels in sequence. This will provide a data output pattern and will exercise each read channel in terms of initiating a read strobe.

b. Connect oscilloscope channel A to the data output of any read channel using the negative sync and auto triggering mode.

c. Remove the read data connector to establish standard measurement conditions. (Various lengths of cables and associated capacity will effect measurement.)

d. Set sweep speed to 0.2 microseconds/division and establish a stable pattern for the leading edge of data (for both negative and positive sync).

e. Using the alternate triggered by A mode, connect oscilloscope channel B to the read clock test point on the read control card.

f. Observe the time difference between the leading edge of data and the leading edge of clock. The clock delay must be between 0.5 and 1.5 microseconds.

g. Observe the pulse width of the read clock. This should be between 2 and 3 microseconds.

h. The read clock output should be continuous. (Verifies that read strobe is being initiated by each read channel.)

2-18. ADJUSTMENT PROCEDURES.

2-19. The adjustment procedures for the read/read modules consist of preamplifier gain adjustments, nine-track static skew adjustments, seven-track static skew adjustments, and read character gate adjustments. Prior to performing the read data adjustment, ensure that all transport adjustments have been made and that the adjustments are within tolerance.

2-20. PREAMPLIFIER GAIN ADJUSTMENTS.

2-21. The gain/bandwidth characteristics of the preamplifier will cause small changes in phase that will effect the static skew compensation if the preamplifier gain control is adjusted. Therefore, it must be adjusted prior to the read static skew compensation, and if changed, the read static skew adjustment should be rechecked. Adjustment is made as follows:

a. Load the tape unit with the Reference Amplitude Test Tape, HP part number 5080-4745. Note the signal level indicated on the test tape label and select nine-track operation.

b. Connect an oscilloscope to each preamplifier output test point and adjust the corresponding gain variable resistor to obtain ±0.3 volt of level indicated on the test tape label. (Typically 85 percent of 6.4V p-p.)

c. Select seven-track operation and repeat step "b."

2-22. NINE-TRACK STATIC SKEW COMPENSATION ADJUSTMENTS.

2-23. The techniques for rapid adjustment and for evaluating the need for adjustment differ. Figure 2-1 shows poor skew alignment and proper skew alignment. To adjust the static skew compensation, proceed as follows:

a. Load the Master Alignment Tape, HP part number 9162-0027, and place the unit in synchronous forward mode for the adjustment operation. Select nine-track operation and preset all FWD skew delay controls fully ccw (minimum delay).

b. Using an oscilloscope connected to the SKEW test points compare all data channels to determine which channel is lagging.

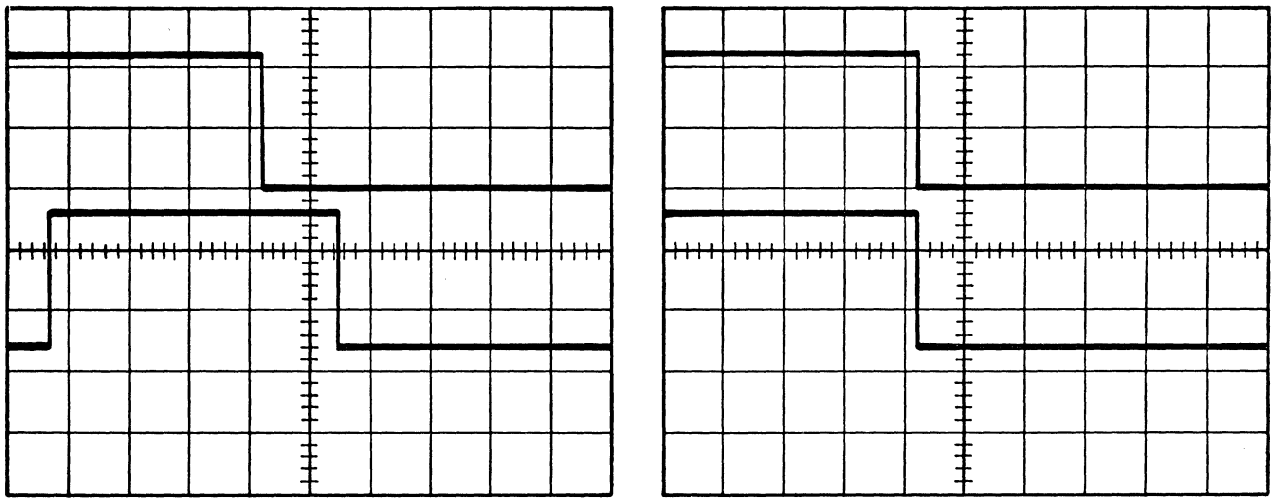
c. Adjust FWD skew delay control of channel 2 until it is slightly lagging the channel determined in step "b." Channel 2 will be reference channel for remaining adjustments.

d. Connect the oscilloscope channel A probe to the SKEW test point of the reference channel (channel 2).

e. Connect the oscilloscope channel B probe to each skew test point in succession and algebraically add oscilloscope channel A and B.

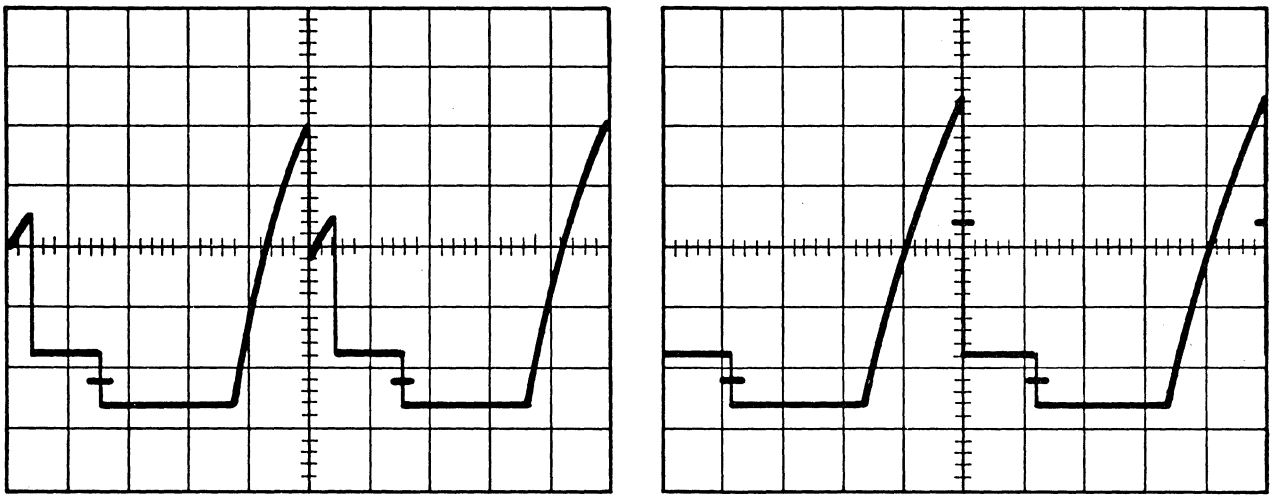
f. Adjust the oscilloscope sweep to display at least one full bit time (leading edge of one bit to the leading edge of the next), with the oscilloscope deflection at approximately 2 V/cm.

g. Adjust each channel FWD skew delay potentiometer for a maximum amplitude.



POOR SKEW ALIGNMENT GOOD SKEW ALIGNMENT

10 - 20.9 IPS TAPE UNITS



POOR SKEW ALIGNMENT GOOD SKEW ALIGNMENT

21 - 37-1/2 IPS TAPE UNITS

7970-528

Figure 2-1. Skew Alignment Waveforms

2-24. SEVEN-TRACK STATIC SKEW COMPENSATION ADJUSTMENTS.

2-25. Seven-track static skew compensation is accomplished in exactly the same manner as that used for nine-track skew except for the use of seven-track drive mode and adjustment of REV skew controls. The same SKEW test points are used for both adjustments.

2-26. When considering the need for readjustment, it must be recognized that there are small differences in the master skew tapes. For example, if there is an observed difference of 1 microsecond between channels, this would correspond to 25 microinches at a tape speed of 25 ips. If the previous adjustment had been made with one master tape and checked with another, and if both master tapes were accurate to ±1 percent (±12.5 microinches), this small difference could occur even with complete stability of adjustment on the part of the electrical and mechanical factors involved in the tape unit.

2-27. READ CHARACTER GATE ADJUSTMENTS.

2-28. The read character gate is adjusted to allow a period equal to 40 percent of the bit-to-bit distance for all of the read bits in a character to be placed in the output register. At the end of this period a read strobe occurs which sets all read data lines. One microsecond later, a read clock is generated which lasts 2 to 3 microseconds as an output signal. The read character gate is adjusted as follows:

a. Use the master alignment tape and place the tape unit in the forward read mode. Select 800 cpi density.

b. Synchronize the oscilloscope (negative slope) to the NOR test point on the read control card. (The first data bit of a character will start the gate time when the line goes to ground.)

c. Observe the bit-to-bit time (negative going edge to negative going edge). The low (or ground) portion of this signal represents the character gate time.

d. Using the read control gate potentiometer (R29) adjust "nor" (ground portion) of the signal to 40% of the bit-to-bit time. Ensure that the bit-to-bit time is consistent with the data transfer rate.

SECTION III
REPLACEABLE PARTS

3-1. INTRODUCTION.

3-2. This section provides information for ordering replacement parts for the read/read modules of the HP 7970B/7970C Digital Magnetic Tape Units.

3-3. This section contains assembly parts list, supporting illustrations, ordering information, and a part number cross reference.

3-4. ASSEMBLY PARTS LISTS.

3-5. The assembly parts lists represent a breakdown of all replaceable parts of the read/read modules. The information contained in the lists are under the following headings:

a. FIGURE & INDEX NO.

b. PART NUMBER.

c. DESCRIPTION.

d. UNITS PER ASSY.

3-6. FIGURE AND INDEX NUMBER.

3-7. The figure and index number column identifies the figure that illustrates each listed item and the index number that identifies the item on the illustration.

3-8. PART NUMBER.

3-9. The part number column provides the Hewlett-Packard part number for each item listed in the assembly parts list.

3-10. DESCRIPTION.

3-11. The description column describes the items within the article. An indented column arrangement is used to show the relationship between a part and the next higher assembly. The top assembly of each listing appears in indention 1. Primary subassemblies (of top assembly) and attaching parts appear in indention 2. This method of indention is continued through indention 3, 4, etc, until all replaceable parts are listed. Attaching parts are listed immediately following the part they attach. Attaching parts are identified by the abbreviation (AP) enclosed in parentheses at the end of the description.

3-12. Reference designation and manufacture information (if applicable) is also included in the description column.

3-13. UNITS PER ASSEMBLY.

3-14. The quantity shown in the units per assembly column reflects the total quantity of a part required by the next higher assembly of that part. This quantity is not necessarily the total used for the complete equipment. The abbreviation AR is used to indicate usage as required of a particular item. The abbreviation REF is used to indicate that the quantity of an item used per assembly is listed in the next higher assembly of the group assembly parts list.

3-15. ORDERING INFORMATION.

3-16. To order replacement parts, address the order or inquiry to the local Hewlett-Packard Sales and Service Office. (Refer to the list at the end of this manual for addresses.) Specify the following information for each part ordered.

a. Identification of the unit, kit, or assembly containing the part.

b. Hewlett-Packard part number for each part.

c. Description of each part.

d. Circuit reference designation (if applicable).

3-17. PART NUMBER CROSS REFERENCE.

3-18. Table 3-1 at the end of this section provides a cross reference between Hewlett-Packard part numbers and manufacturer's part numbers.

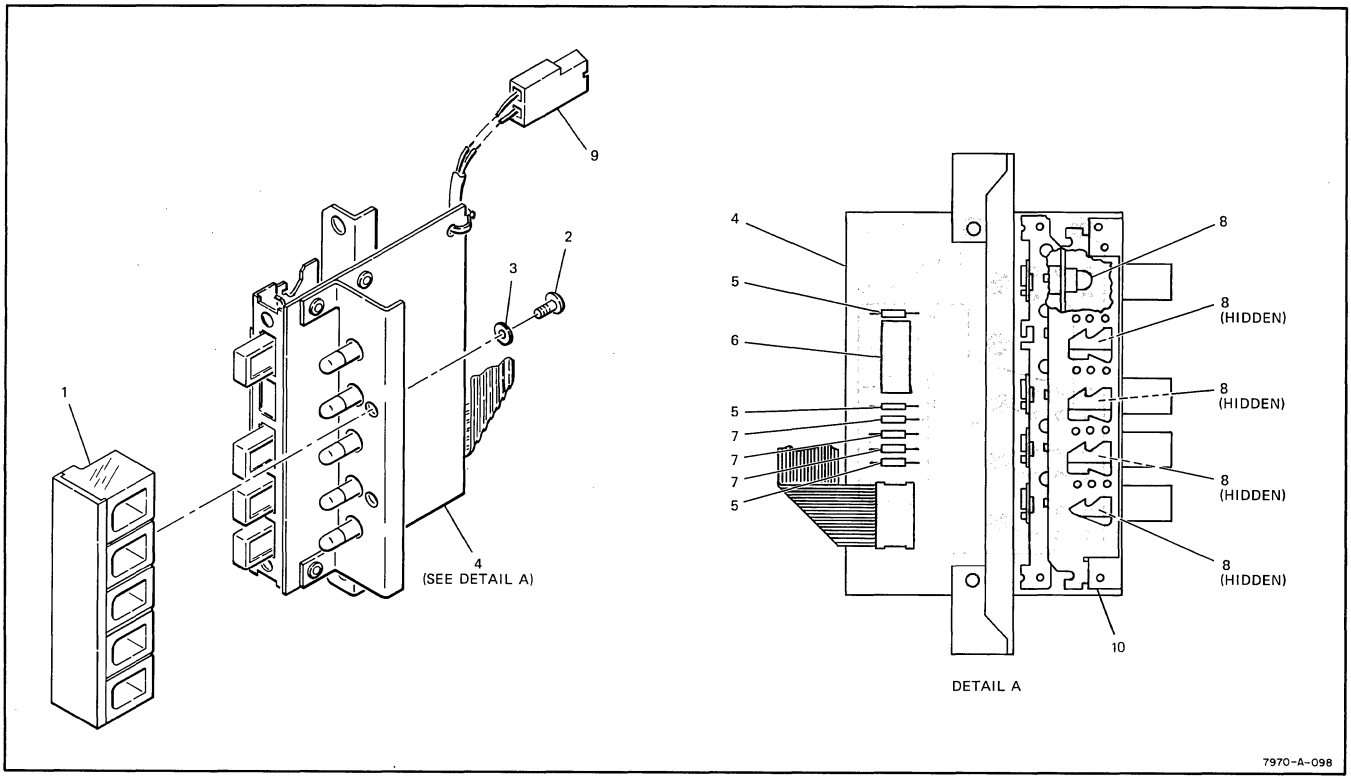


Figure 3-1. Read/Read Density Select Switch Assembly A12

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-1-	07970-62088	DENSITY SELECT SWITCH ASSEMBLY A12, read/read	REF
-1	07970-62008	. LENS BLOCK ASSEMBLY, density select switch, read/read	1
-2	0624-0077	. . SCREW, tapping, no. 4-40, 0.312-inch, pozi (AP)	2
-3	2190-0416	. . WASHER, flat (AP)	2
-4	07970-62006	. DENSITY SELECT PC ASSEMBLY, read/read	1
-5	0757-0419	. . RESISTOR, fxd, 681 ohms, 1%, 1/8W (R1, R2, R3)	3
-6	1820-0256	. . INTEGRATED CIRCUIT (U1).	1
-7	0757-0428	. . RESISTOR, fxd, 1.62k, 1%, 1/8W (R4, R5, R6).	3
-8	2140-0209	. . LAMP, 14V, 0.08A (DS1, DS2, DS3, DS4, DS5).	5
-9	07970-60620	. . CABLE ASSEMBLY, density select switch, read/read	1
-10	3101-1535	. . SWITCH ASSEMBLY (S1 thru S4) (not field replaceable)	1

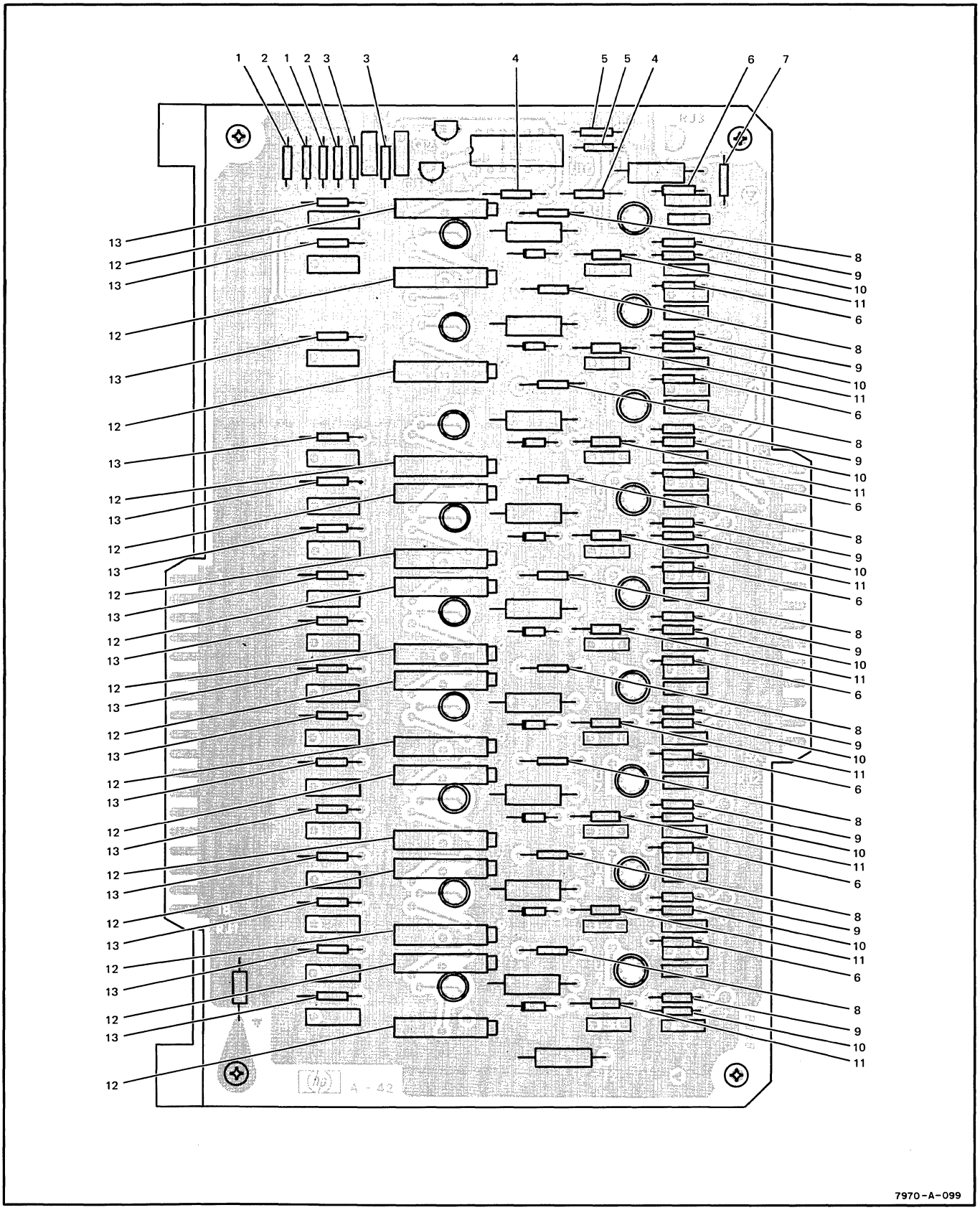


Figure 3-2. Read/Read Preamplifier PC Assembly A15 (Sheet 1 of 2)

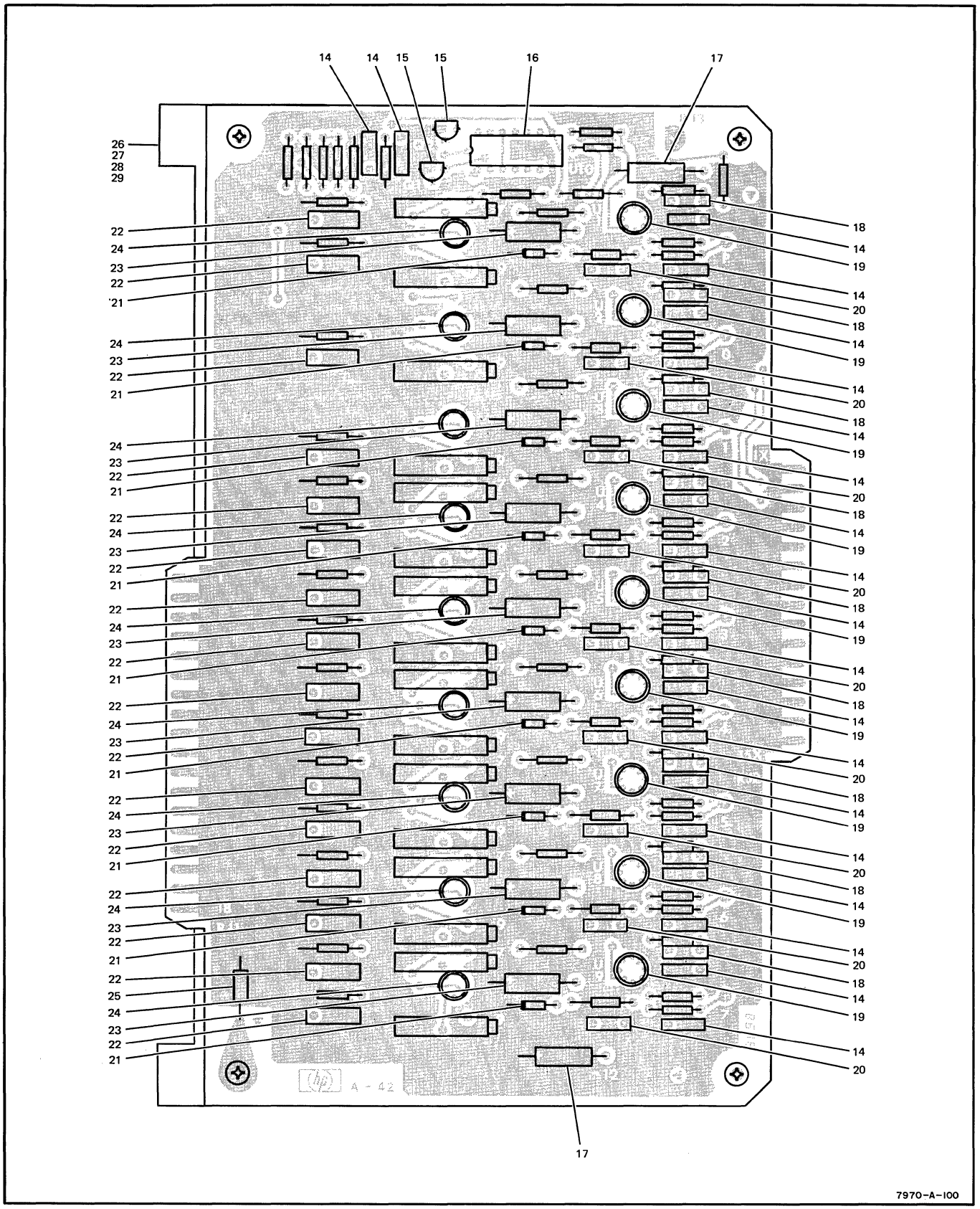


Figure 3-2. Read/Read Preamplifier PC Assembly A15 (Sheet 2 of 2)

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-2-	07970-62001	READ/READ PREAMPLIFIER PC ASSEMBLY A15, 10 - 20.9 ips	REF
3-2-	07970-62012	READ/READ PREAMPLIFIER PC ASSEMBLY A15, 21 - 45 ips	REF
-1	0757-0279	. RESISTOR, fxd, 31.6k, 1%, 1/8W (R4, R8)	2
-2	0757-0442	. RESISTOR, fxd, 10k, 1%, 1/8W (R9, R5)	2
-3	0683-2235	. RESISTOR, fxd, 22k, 5%, 1/4W (R1, R3)	2
-4	0757-0280	. RESISTOR, fxd, 1k, 1%, 1/8W (R6, R10)	2
-5	0683-1035	. RESISTOR, fxd, 10k, 5%, 1/4W (R2, R7)	2
-6	0683-1525	. RESISTOR, fxd, 1.5k, 5%, 1/4W (R107, R207, R307, R407, R507, R607, R707, R807, R907)	9
-7	0683-1025	. RESISTOR, fxd, 1k, 5%, 1/4W (R11)	1
-8	0698-4412	. RESISTOR, fxd, 143 ohms, 1%, 1/8W (R105, R205, R305, R405, R505, R605, R705, R805, R905)	9
-9	0683-1015	. RESISTOR, fxd, 100 ohms, 5%, 1/4W (R108, R208, R308, R408, R508, R608, R708, R808, R908)	9
-10	0683-4325	. RESISTOR, fxd, 4.3k, 5%, 1/4W (R109, R209, R309, R409, R509, R609, R709, R809, R909)	9
-11	0757-0460	. RESISTOR, fxd, 61.9k, 1%, 1/8W (R106, R206, R306, R406, R506, R606, R706, R806, R906)	9
-12	2100-1972	. RESISTOR, var, ww, 20k, 10%, 1W (R102, R402, R502, R602, R702, R802, R902, R104, R204, R304, R404, R504, R604, R704, R804, R904)	16
-13	0683-6825	. RESISTOR, fxd, 6.8k, 5%, 1/4W (R101, R401, R501, R601, R701, R801, R901, R103, R203, R303, R403, R503, R603, R703, R803, R903)	16
-14	0160-2055	. CAPACITOR, fxd, 0.01 μF, -20 +80%, 100 Vdcw (C1, C2, C104, C204, C304, C404, C504, C604, C704, C804, C904, C107, C207, C307, C407, C507, C607, C707, C807, C907)	20
-15	1853-0020	. TRANSISTOR, PNP, Si (Q1, Q2)	2
-16	1820-0349	. INTEGRATED CIRCUIT (U10)	1
-17	0180-0228	. CAPACITOR, fxd, 22 μF, 10%, 15 Vdcw (C4, C5)	2
-18	0140-0198	. CAPACITOR, fxd, 200 pF, 5%, 300 Vdcw (C105, C205, C305, C405, C505, C605, C705, C805, C905)	9
-19	07970-80050	. INTEGRATED CIRCUIT, pretested (U1, U2, U3, U4, U5, U6, U7, U8, U9)	9
-20	0160-3456	. CAPACITOR, fxd, 1000 pF, 10%, 250 Vdcw (C106, C206, C306, C406, C506, C606, C706, C806, C906)	9
-21	1901-0040	. DIODE, Si (CR101, CR201, CR301, CR401, CR501, CR601, CR701, CR801, CR901)	9
-22	0160-2213	. CAPACITOR, fxd, 620 pF, 5%, 300 Vdcw (C101, C401, C501, C601, C701, C801, C901, C102, C202, C302, C402, C502, C602, C702, C802, C902)	16
-23	0180-1704	. CAPACITOR, fxd, 47 μF, 10%, 6 Vdcw (C103, C203, C303, C403, C503, C603, C703, C803, C903)	9
-24	1855-0370	. TRANSISTOR, field effect, dual (Q101, Q201, Q301, Q401, Q501, Q601, Q701, Q801, Q901)	9
-25	0180-0291	. CAPACITOR, fxd, 1 μF, +10%, 35 Vdcw (C3)	1
-26	07970-00672	. BRACKET, read/read preamplifier	1
-27	2360-0195	. . SCREW, no. 6-32, 0.312-inch, pozi (AP)	4
-28	2190-0007	. . WASHER, lock (AP)	4
-29	3050-0228	. . WASHER, flat (AP)	4

Read Preamplifier PC Assembly Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
	07970-62035	1	PE/NRZI PREAMP ASSY,21-45 IPS	28480 28480	07970-62035 07970-62074
C1	0180-1704	9	C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C2	0160-2201	9	C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C3	0160-2208	9	C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C4 NOTE:2	0160-2220	9	C:FXD MICA 1200 PF 5% 300 V	28480	0160-2220
C4 NOTE:1	0140-0200	12	C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C5	0180-0376	9	C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C6	0160-2055	25	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C7	0160-2250	9	C:FXD CER 5.1 PF 500VDCW	72982	301-000-C0H0-519E
C8	0160-3534	9	C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C9	0180-0291	9	C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
C10	0180-1704		C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C11	0160-2201		C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C12	0160-2208		C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C13 NOTE:2	0160-2220		C:FXD MICA 1200 PF 5% 300 V	28480	0160-2220
C13 NOTE:1	0140-0200		C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C14	0180-0376		C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C15	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C16	0160-2250		C:FXD CER 5.1 PF 500VDCW	72982	301-000-C0H0-519E
C17	0160-3534		C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C18	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
C19	0180-1704		C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C20	0160-2201		C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C21	0160-2208		C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C22 NOTE:1	0140-0200		C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C22 NOTE:2	0160-2220		C:FXD MICA 1200 PF 5% 300 V	28480	0160-2220
C23	0180-0376		C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C24	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C25	0160-2250		C:FXD CER 5.1 PF 500VDCW	72982	301-000-C0H0-519E
C26	0160-3534		C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C27	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
C28	0180-1704		C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C29	0160-2201		C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C30	0160-2208		C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C31 NOTE:1	0140-0200		C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C31 NOTE:2	0160-2220		C:FXD MICA 1200 PF 5% 300 V	28480	0160-2220
C32	0180-0376		C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C33	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C34	0160-2250		C:FXD CER 5.1 PF 500VDCW	72982	301-000-C0H0-519E
C35	0160-3534		C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C36	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
C37	0180-1704		C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C38	0160-2201		C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C39	0160-2208		C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C40 NOTE:2	0160-2220		C:FXD MICA 1200 PF 5% 300 V	28480	0160-2220
C40 NOTE:1	0140-0200		C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C41	0180-0376		C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C42	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C43	0160-2250		C:FXD CER 5.1 PF 500VDCW	72982	301-000-C0H0-519E
C44	0160-3534		C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C45	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
C46	0180-1704		C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C47	0160-2201		C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C48	0160-2208		C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C49 NOTE:2	0160-2220		C:FXD MICA 1200 PF 5% 300 V	28480	0160-2220
C49 NOTE:1	0140-0200		C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C50	0180-0376		C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C51	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C52	0160-2250		C:FXD CER 5.1 PF 500VDCW	72982	301-000-C0H0-519E
C53	0160-3534		C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C54	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
C55	0180-1704		C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C56	0160-2201		C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C57	0160-2208		C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C58 NOTE:2	0160-2220		C:FXD MICA 1200 PF 5% 300 V	28480	0160-2220
C58 NOTE:1	0140-0200		C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C59	0180-0376		C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C60	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C61	0160-2250		C:FXD CER 5.1 PF 500VDCW	72982	301-000-C0H0-519E
C62	0160-3534		C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C63	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS

Read Preamplifier PC Assembly Replaceable Parts (Continued)

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
C64	0180-1704		C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C65	0160-2201		C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C66	0160-2208		C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C67	0140-0200		C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C67					
C68	0180-0376		C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C69	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C70	0160-2250		C:FXD CER 5.1 PF 500VDCW	72982	301-000-COH0-519E
C71	0160-3534		C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C72	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
C73	0180-1704		C:FXD ELECT 47 UF 10% 6VDCW	28480	0180-1704
C74	0160-2201		C:FXD MICA 51 PF 5%	72136	RDM15E510J1C
C75	0160-2208		C:FXD MICA 330 PF 5% 300VDCW	28480	0160-2208
C76	0140-0200		C:FXD MICA 390 PF 5%	72136	RDM15F391-J3C
C77	0180-0376		C:FXD ELECT 0.47 UF 10% 35VDCW	56289	150D474X9035A2-DYS
C78	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C79	0160-2250		C:FXD CER 5.1 PF 500VDCW	72982	301-000-COH0-519E
C80	0160-3534		C:FXD MICA 510 PF 5% 100VDCW	00853	RDM15F511JIC
C81	0180-0291		C:FXD ELECT 1.0 UF 10% 35VDCW	56289	150D105X9035A2-DYS
C82	0180-0228	2	C:FXD ELECT 22 UF 10% 15VDCW	56289	150D226X9015B2-DYS
C83	0180-0228		C:FXD ELECT 22 UF 10% 15VDCW	56289	150D226X9015B2-DYS
C84	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C85	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C86	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C87	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C88	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C89	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C90	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C91	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C92	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C93	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C94	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C95	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C96	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C97	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C101	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C102	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
Q1	1853-0036	2	TSTR:SI PNP	80131	2N3906
Q2	1853-0036		TSTR:SI PNP	80131	2N3906
Q3	1855-0370	9	TSTR:FET DUAL N-CHANNEL	28480	1855-0370
Q4	1855-0370		TSTR:FET DUAL N-CHANNEL	28480	1855-0370
Q5	1855-0370		TSTR:FET DUAL N-CHANNEL	28480	1855-0370
Q6	1855-0370		TSTR:FET DUAL N-CHANNEL	28480	1855-0370
Q7	1855-0370		TSTR:FET DUAL N-CHANNEL	28480	1855-0370
Q8	1855-0370		TSTR:FET DUAL N-CHANNEL	28480	1855-0370
Q9	1855-0370		TSTR:FET DUAL N-CHANNEL	28480	1855-0370
Q10	1855-0370		TSTR:FET DUAL N-CHANNEL	28480	1855-0370
Q11	1855-0370		TSTR:FET DUAL N-CHANNEL	28480	1855-0370
R1	0757-0440	9	R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R2	2100-1972	7	R:VAR WW 20K OHM 10% 1W	28480	2100-1972
R3	0757-0394	9	R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R4	0698-0082	9	R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R5	2100-2707	9			
R6	0757-0317	9	R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R7	0757-0278	9	R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R8	0757-0458	18	R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R9	0698-3434	9	R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R10	0757-0280	12	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R11	0757-0438	9	R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R11	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R12	0757-0401	18	R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R13	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R14	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R16	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R17	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R18	2100-2707				
R19	0757-0317		R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R20	0757-0278		R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R21	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R22	0698-3434		R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R23	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R24	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R25	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R26	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
R27	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R28	2100-2850		R:VAR WW 10K OHM 10% 1W	28480	2100-2850
R29	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R30	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R31	2100-2707				
R32	0757-0317		R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R33	0757-0278		R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R34	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R35	0698-3434		R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R36	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R37	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R38	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R39	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R40	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R41	2100-1972		R:VAR WW 20K OHM 10% 1W	28480	2100-1972
R42	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R43	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R44	2100-2707				
R45	0757-0317		R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R46	0757-0278		R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R47	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R48	0698-3434		R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R49	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R50	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R51	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R52	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R53	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R54	2100-1972		R:VAR WW 20K OHM 10% 1W	28480	2100-1972
R55	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R56	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R57	2100-2707				
R58	0757-0317		R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R59	0757-0278		R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R60	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R61	0698-3434		R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R62	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R63	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R64	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R65	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R66	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R67	2100-1972		R:VAR WW 20K OHM 10% 1W	28480	2100-1972
R68	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R69	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R70	2100-2707				
R71	0757-0317		R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R72	0757-0278		R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R73	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R74	0698-3434		R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R75	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R76	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R77	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R78	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R79	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R80	2100-1972		R:VAR WW 20K OHM 10% 1W	28480	2100-1972
R81	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R82	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R83	2100-2707				
R84	0757-0317		R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R85	0757-0278		R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R86	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R87	0698-3434		R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R88	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R89	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R90	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R91	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R92	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R93	2100-1972		R:VAR WW 20K OHM 10% 1W	28480	2100-1972
R94	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R95	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R96	2100-2707				
R97	0757-0317		R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R98	0757-0278		R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R99	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R100	0698-3434		R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R101	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
R102	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R103	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R104	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R105	0757-0440		R:FXD MET FLM 7.50K OHM 1% 1/8W	28480	0757-0440
R106	2100-1972		R:VAR WW 20K OHM 10% 1W	28480	2100-1972
R107	0757-0394		R:FXD MET FLM 51.1 OHM 1% 1/8W	28480	0757-0394
R108	0698-0082		R:FXD MET FLM 464 OHM 1% 1/8W	28480	0698-0082
R109	2100-2707				
R110	0757-0317		R:FXD MET FLM 1.33K OHM 1% 1/8W	28480	0757-0317
R111	0757-0278		R:FXD MET FLM 1.78K OHM 1% 1/8W	28480	0757-0278
R113	0698-3434		R:FXD MET FLM 34.8 OHM 1% 1/8W	28480	0698-3434
R114	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R115	0757-0438		R:FXD MET FLM 5.11K OHM 1% 1/8W	28480	0757-0438
R116	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R117	0757-0401		R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R118	0683-1005	2	R:FXD COMP 10 OHM 5% 1/4W	01121	CB 1005
R119	0683-1005		R:FXD COMP 10 OHM 5% 1/4W	01121	CB 1005
R120	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R121	0757-0442	4	R:FXD MET FLM 10.0K OHM 1% 1/8W	28480	0757-0442
R122	0683-2235	2	R:FXD COMP 22K OHM 5% 1/4W	01121	CB 2235
R123	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R124	0757-0280		R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R125	0757-0279	2	R:FXD MET FLM 3.16K OHM 1% 1/8W	28480	0757-0279
R126	0757-0279		R:FXD MET FLM 3.16K OHM 1% 1/8W	28480	0757-0279
R127	0757-0442		R:FXD MET FLM 10.0K OHM 1% 1/8W	28480	0757-0442
R128	0757-0442		R:FXD MET FLM 10.0K OHM 1% 1/8W	28480	0757-0442
R129	0757-0442		R:FXD MET FLM 10.0K OHM 1% 1/8W	28480	0757-0442
R130	0683-2235		R:FXD COMP 22K OHM 5% 1/4W	01121	CB 2235
R131	2100-2850		R:VAR WW 10K OHM 10% 1W	28480	2100-2850
R132	2100-2850		R:VAR WW 10K OHM 10% 1W	28480	2100-2850
R133	2100-2850		R:VAR WW 10K OHM 10% 1W	28480	2100-2850
R134	2100-2850		R:VAR WW 10K OHM 10% 1W	28480	2100-2850
R135	2100-2850		R:VAR WW 10K OHM 10% 1W	28480	2100-2850
R136	2100-2850		R:VAR WW 10K OHM 10% 1W	28480	2100-2850
R137	2100-2850		R:VAR WW 10K OHM 10% 1W	28480	2100-2850
R138	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R139	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R140	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R141	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R142	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R143	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R144	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R145	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
R146	0757-0458		R:FXD MET FLM 51.1K OHM 1% 1/8W	28480	0757-0458
U1	1820-0054	1	IC:TTL QUAD 2-INPT NAND GATE	01295	SN7400N
U2	1826-0068	9	INTEGRATED CIRCUIT	28480	1826-0068
U3	1826-0044	9	INTEGRATED CIRCUIT	28480	1826-0044
U4	1826-0044		INTEGRATED CIRCUIT	28480	1826-0044
U5	1826-0068		INTEGRATED CIRCUIT	28480	1826-0068
U6	1826-0044		INTEGRATED CIRCUIT	28480	1826-0044
U7	1826-0044		INTEGRATED CIRCUIT	28480	1826-0044
U8	1826-0068		INTEGRATED CIRCUIT	28480	1826-0068
U9	1826-0044		INTEGRATED CIRCUIT	28480	1826-0044
U10	1826-0044		INTEGRATED CIRCUIT	28480	1826-0044
U11	1826-0068		INTEGRATED CIRCUIT	28480	1826-0068
U12	1826-0044		INTEGRATED CIRCUIT	28480	1826-0044
U13	1826-0044		INTEGRATED CIRCUIT	28480	1826-0044
U14	1826-0068		INTEGRATED CIRCUIT	28480	1826-0068
U15	1826-0044		INTEGRATED CIRCUIT	28480	1826-0044
U16	1826-0068		INTEGRATED CIRCUIT	28480	1826-0068
U17	1826-0068		INTEGRATED CIRCUIT	28480	1826-0068
U18	1826-0068		INTEGRATED CIRCUIT	28480	1826-0068
U19	1826-0068		INTEGRATED CIRCUIT	28480	1826-0068

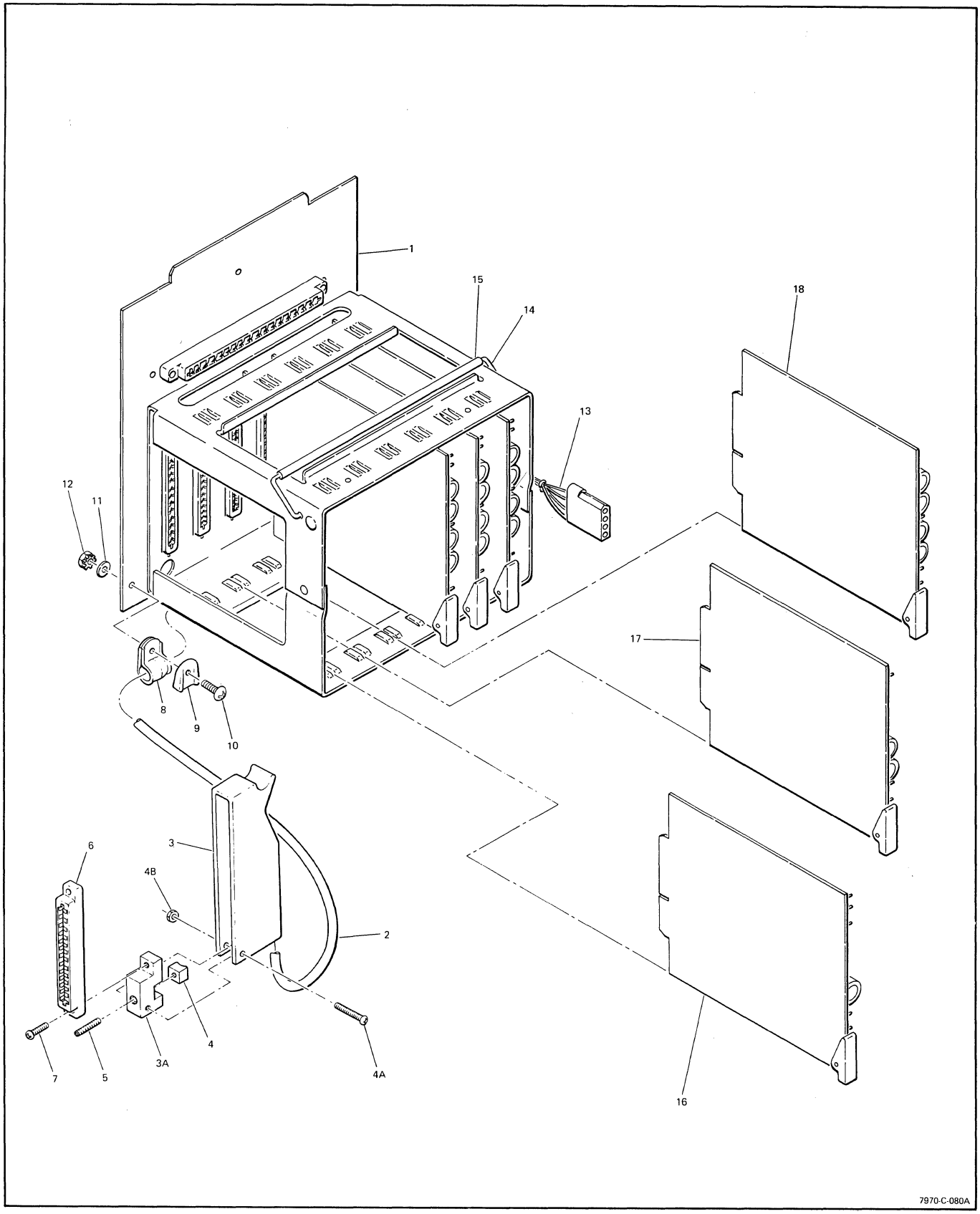


Figure 3-3. Read/Read Assembly A18

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-3-	Reference Only	READ/READ ASSEMBLY A18	REF
-1	07970-62003	. READ/READ MOTHERBOARD ASSEMBLY	1
-2	8120-1523	. . CABLE, unshielded, 24 conductor	3.5 ft.
-3	07970-40204	. . HOLDER, connector	1
-3A	5040-6072	. . . BLOCK, mounting	1
-4	5040-6003	. . CLAMP, cable, connector holder	1
-4A	2200-0091	. . . SCREW, no. 4-40, 0.562-inch, pozi (AP)	1
-4B	2260-0001	. . . NUT, hex, no. 4-40 (AP)	1
-5	3030-0143	. . . SCREW, set, no. 6-32, 0.500-inch, pozi (AP)	1
-6	1251-0159	. . CONNECTOR, printed circuit	1
-7	0624-0098	. . . SCREW, tapping, no. 4-40, 0.438-inch, pozi (AP)	2
-8	1400-0440	. . CLAMP, cable (AP)	1
-9	2190-0452	. . . WASHER, D-type (AP)	1
-10	2360-0199	. . . SCREW, no. 6-32, 0.438-inch, pozi (AP)	1
-11	3050-0227	. . . WASHER, flat (AP)	1
-12	2420-0001	. . . NUT, hex, no. 6-32 (AP)	1
-13	07970-60430	. . CABLE ASSEMBLY, read power	1
-14	07970-00470	. . RETAINING SPRING, PC board	1
-15	1400-0795	. . TIE, cable, spiral, 0.250 OD	6 in.
-16	-----	. READ/READ CONTROL PC ASSEMBLY A18A1 (See figure 3-4 for details.)	1
-17	-----	. READ DATA PC ASSEMBLY, single-channel A18A2 (See figures 3-5, 3-6 for details.)	1
-18	-----	. READ DATA PC ASSEMBLY, dual-channel A18A3 thru A18A6 (See figures 3-7, 3-8 for details.)	4

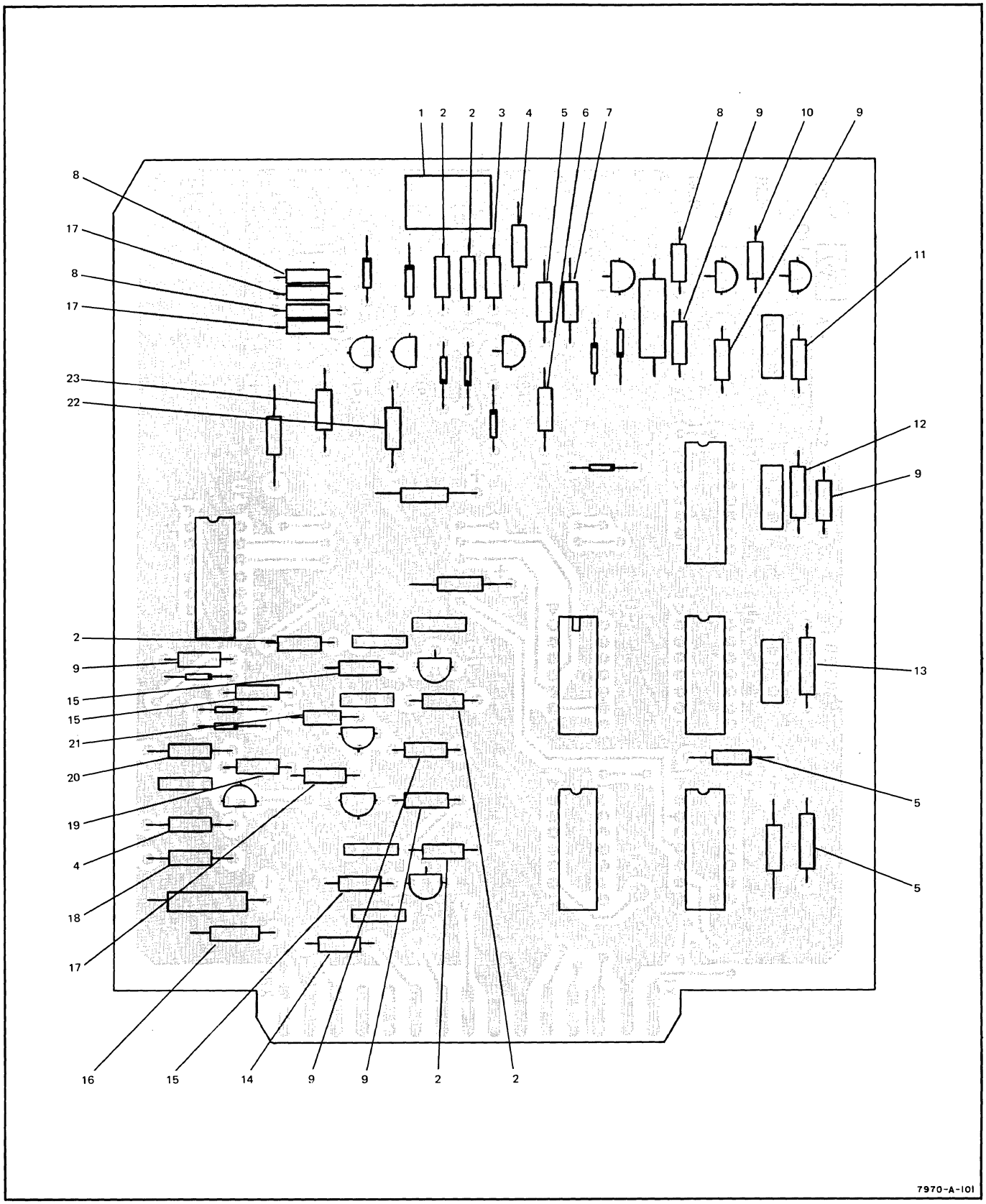


Figure 3-4. Read/Read Control PC Assembly A18A1 (Sheet 1 of 2)

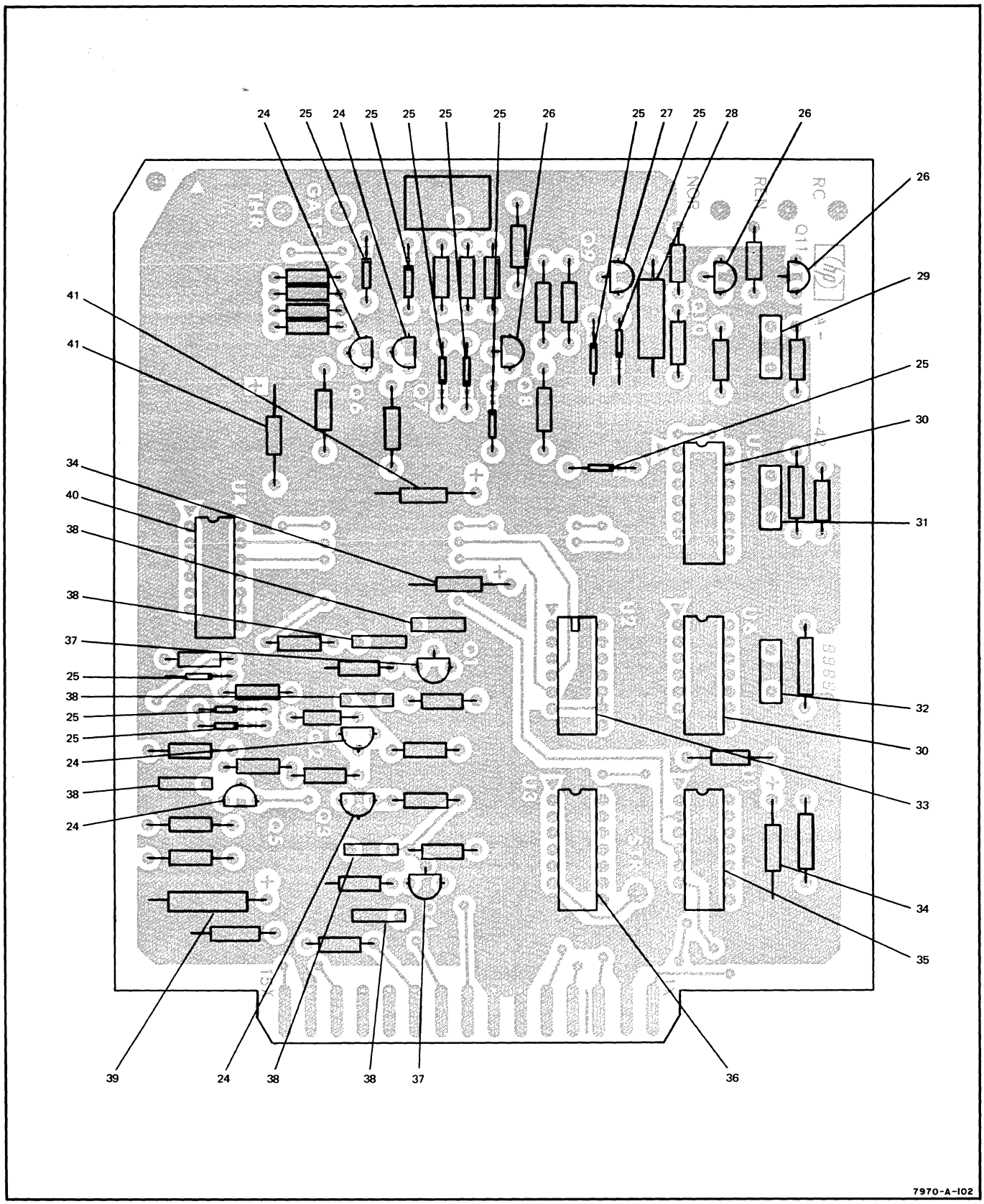


Figure 3-4. Read/Read Control PC Assembly A18A1 (Sheet 2 of 2)

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-4-	07970-62004	READ/READ CONTROL PC ASSEMBLY A18A1, 10 - 20.9 ips	REF
3-4-	07970-62005	READ/READ CONTROL PC ASSEMBLY A18A1, 21 - 45 ips	REF
-1	2100-1758	. RESISTOR, var, ww, 1k, 5%, 1W (R29)	1
-2	0683-2225	. RESISTOR, fxd, 2.2k, 5%, 1/4W (R2, R4, R8, R22, R29)	5
-3	0683-1235	. RESISTOR, fxd, 12k, 5%, 1/4W (R23)	1
-4	0698-3132	. RESISTOR, fxd, 261 ohms, 1%, 1/8W (R12, R28)	2
-5	0757-0428	. RESISTOR, fxd, 1620 ohms, 1%, 1/8W (R10, R26, R42)	3
-6	0698-3438	. RESISTOR, fxd, 147 ohms, 1%, 1/8W (R27)	1
-7	0757-0199	. RESISTOR, fxd, 21.5k, 1%, 1/8W (R25)	1
-8	0683-8235	. RESISTOR, fxd, 82k, 5%, 1/4W (R30, R37, R38)	3
-9	0683-1025	. RESISTOR, fxd, 1k, 5%, 1/4W (R3, R7, R11, R31, R32, R39)	6
-10	0683-2725	. RESISTOR, fxd, 2.7k, 5%, 1/4W (R34)	1
-11	0683-6815	. RESISTOR, fxd, 680 ohms, 5%, 1/4W (R33)	1
-12	0757-0442	. RESISTOR, fxd, 10k, 1%, 1/8W (R35)	1
-13	0757-0444	. RESISTOR, fxd, 12.1k, 1%, 1/8W (R36)	1
-14	0683-1525	. RESISTOR, fxd, 1.5k, 5%, 1/4W (R41)	1
-15	0683-6825	. RESISTOR, fxd, 6.8k, 5%, 1/4W (R1, R9, R40)	3
-16	0757-0401	. RESISTOR, fxd, 100 ohms, 1%, 1/8W (R15)	1
-17	0683-3325	. RESISTOR, fxd, 3.3k, 5%, 1/4W (R6, R17, R19)	3
-18	0757-0280	. RESISTOR, fxd, 1k, 1%, 1/8W (R13)	1
-19	0683-3335	. RESISTOR, fxd, 33k, 5%, 1/4W (R14)	1
-20	0757-1094	. RESISTOR, fxd, 1.47k, 1%, 1/8W (R16)	1
-21	0683-2235	. RESISTOR, fxd, 22k, 5%, 1/4W (R5)	1
-22	0757-0443	. RESISTOR, fxd, 11k, 1%, 1/8W (R21)	1
-23	0757-0439	. RESISTOR, fxd, 6.81k, 1%, 1/8W (R20)	1
-24	1854-0071	. TRANSISTOR, NPN, Si (Q2, Q3, Q5, Q6, Q7)	5
-25	1901-0040	. DIODE, Si (CR1, CR2, CR3, CR4, CR5, CR6, CR7, CR8, CR9, CR10, CR11)	11
-26	1854-0270	. TRANSISTOR, NPN, Si, 2N4265 (Q8, Q10, Q11)	3
-27	1853-0015	. TRANSISTOR, PNP, Si, 2N3640 (Q9)	1
-28	0160-0162	. CAPACITOR, fxd, 0.022 µF, 10% (C8) (used only on 07970-60540)	1
-28	0160-0161	. CAPACITOR, fxd, 0.01 µF, 10% (C8) (used only on 07970-60550)	1
-29	0160-2307	. CAPACITOR, fxd, 47 pF, 5%, 300 Vdcw (C9)	1
-30	1820-0088	. INTEGRATED CIRCUIT, type 851 (U5, U6)	2
-31	0140-0193	. CAPACITOR, fxd, 82 pF, 5%, 300 Vdcw (C10)	1
-32	0160-2209	. CAPACITOR, fxd, 360 pF, 5%, 300 Vdcw (C11)	1
-33	1820-0069	. INTEGRATED CIRCUIT, type 7420N (U2)	1
-34	0180-1701	. CAPACITOR, fxd, 6.8 µF, 20%, 6 Vdcw (C12, C13)	2
-35	1820-0348	. INTEGRATED CIRCUIT, type 844 (U1)	1
-36	1820-0276	. INTEGRATED CIRCUIT (U3)	1
-37	1853-0036	. TRANSISTOR, PNP, Si, 2N3906 (Q1, Q4)	2
-38	0160-2055	. CAPACITOR, fxd, 0.01 µF, -20 +80%, 100 Vdcw (C1, C2, C3, C4, C5, C6)	6
-39	0180-1704	. CAPACITOR, fxd, 47 µF, 10%, 6 Vdcw (C7)	1
-40	1820-0349	. INTEGRATED CIRCUIT (U4)	1
-41	0180-0210	. CAPACITOR, fxd, 3.3 µF, 20%, 15 Vdcw (C14, C15)	2

Read Control PC Assembly Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
	07970-62061	1	NRZI READ CONTROL PC ASSY,21-45 IPS	28480	07970-62061
C1	0160-2055	8	C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C2	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C3	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C4	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C5	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C6	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C7	0180-1704	1	C:FXD ELECT 47 UF 10% 6VDCW	28480	0160-1704
C8	0160-0161	1	C:FXD MY 0.01 UF 10% 200VDCW	56289	192P10392-PTS
C9	0160-2307	1	C:FXD MICA 47 PF 5%	28480	0160-2307
C10	0140-0193	9	C:FXD MICA 82 PF 5%	28480	0140-0193
C11	0160-2209	1	C:FXD MICA 360 PF 5%	72136	RDM15F361J3C
C12	0180-1701	2	C:FXD ELECT 6.8 UF 20% 6VDCW	28480	0180-1701
C13	0180-1701		C:FXD ELECT 6.8 UF 20% 6VDCW	28480	0180-1701
C14	0180-0210	2	C:FXD ELECT 3.3 UF 20% 15VDCW	56289	150D335X0015A2-DYS
C15	0180-0210		C:FXD ELECT 3.3 UF 20% 15VDCW	56289	150D335X0015A2-DYS
C16	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
C17	0160-2055		C:FXD CER 0.01 UF +80-20% 100VDCW	56289	C023F101F103ZS22-CDH
CR1	1901-0040	13	DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR2	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR3	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR4	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR5	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR6	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR7	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR8	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR9	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR10	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR11	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR12	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
CR13	1901-0040		DIODE:SILICON 50 MA 30 WV	07263	FDG1088
Q1	1853-0036	2	TSTR:SI PNP	80131	2N3906
Q2	1854-0071	5	TSTR:SI NPN(SELECTED FROM 2N3704)	28480	1854-0071
Q3	1854-0071		TSTR:SI NPN(SELECTED FROM 2N3704)	28480	1854-0071
Q4	1853-0036		TSTR:SI PNP	80131	2N3906
Q5	1854-0071		TSTR:SI NPN(SELECTED FROM 2N3704)	28480	1854-0071
Q6	1854-0071		TSTR:SI NPN(SELECTED FROM 2N3704)	28480	1854-0071
Q7	1854-0071		TSTR:SI NPN(SELECTED FROM 2N3704)	28480	1854-0071
Q8	1854-0270	3	TSTR:SI NPN	80131	2N4265
Q9	1853-0015	1	TSTR:SI PNP	80131	2N3640
Q10	1854-0270		TSTR:SI NPN	80131	2N4265
Q11	1854-0270		TSTR:SI NPN	80131	2N4265
R1	0683-6825	2	R:FXD COMP 6800 OHM 5% 1/4W	01121	CB 6825
R2	0683-2225	5	R:FXD COMP 2.2K OHM 5% 1/4W	01121	CB 2225
R3	0683-1025	5	R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
R4	0683-2225		R:FXD COMP 2.2K OHM 5% 1/4W	01121	CB 2225
R5	0683-2235	1	R:FXD COMP 22K OHM 5% 1/4W	01121	CB 2235
R6	0683-3325	3	R:FXD COMP 3300 OHM 5% 1/4W	01121	CB 3325
R7	0683-1025		R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
R8	0683-2225		R:FXD COMP 2.2K OHM 5% 1/4W	01121	CB 2225
R9	0683-6825		R:FXD COMP 6800 OHM 5% 1/4W	01121	CB 6825
R10	0757-0428	9	R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
R11	0683-1025		R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
R12	0698-3132	2	R:FXD FLM 261 OHM 1% 1/8W	28480	0698-3132
R13	0757-0280	1	R:FXD MET FLM 1K OHM 1% 1/8W	28480	0757-0280
R14	0683-3335	1	R:FXD COMP 33K OHM 5% 1/4W	01121	CB 3335
R15	0757-0401	1	R:FXD MET FLM 100 OHM 1% 1/8W	28480	0757-0401
R16	0757-1094	1	R:FXD MET FLM 1.47K OHM 1% 1/8W	28480	0757-1094
R17	0683-3325		R:FXD COMP 3300 OHM 5% 1/4W	01121	CB 3325
R18	0757-0418	3	R:FXD MET FLM 619 OHM 1% 1/8W	28480	0757-0418
R19	0683-3325		R:FXD COMP 3300 OHM 5% 1/4W	01121	CB 3325
R20	0757-0439	1	R:FXD MET FLM 6.81K OHM 1% 1/8W	28480	0757-0439
R21	0757-0443	1	R:FXD MET FLM 11.0K OHM 1% 1/8W	28480	0757-0443
R22	0683-2225		R:FXD COMP 2.2K OHM 5% 1/4W	01121	CB 2225
R23	0683-1235	1	R:FXD COMP 12K OHM 5% 1/4W	01121	CB 1235
R24	0683-2225		R:FXD COMP 2.2K OHM 5% 1/4W	01121	CB 2225
R25	0757-0199	1	R:FXD MET FLM 21.5K OHM 1% 1/8W	28480	0757-0199
R26	0757-0428		R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
R27	0698-3438	1	R:FXD MET FLM 147 OHM 1% 1/8W	28480	0698-3438
R28	0698-3132		R:FXD FLM 261 OHM 1% 1/8W	28480	0698-3132

Read Control PC Assembly Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
R30	0683-8235	3	R:FXD COMP 82K OHM 5% 1/4W	01121	EB 8235
R31	0683-1025		R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
R32	0683-1025		R:FXD COMP 1000 OHM 5% 1/4W	01121	CB 1025
R33	0683-6815	1	R:FXD COMP 680 OHM 5% 1/4W	01121	CB 6815
R34	0683-2725	1	R:FXD COMP 2700 OHM 5% 1/4W	01121	CB 2725
R35	0757-0442	1	R:FXD MET FLM 10.0K OHM 1% 1/8W	28480	0757-0442
R36	0757-0444	1	R:FXD MET FLM 12.1K OHM 1% 1/8W	28480	0757-0444
R37	0683-8235		R:FXD COMP 82K OHM 5% 1/4W	01121	EB 8235
R38	0683-8235		R:FXD COMP 82K OHM 5% 1/4W	01121	EB 8235
R39	0757-0428		R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
R40	0757-0418		R:FXD MET FLM 619 OHM 1% 1/8W	28480	0757-0418
R41	0683-1525	1	R:FXD COMP 1500 OHM 5% 1/4W	01121	CB 1525
R42	0757-0428		R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
R43	0757-0428		R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
R44	0757-0428		R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
R45	0757-0428		R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
R46	0757-0428		R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
R47	0757-0418		R:FXD MET FLM 619 OHM 1% 1/8W	28480	0757-0418
R48	0757-0428		R:FXD MET FLM 1.62K OHM 1% 1/8W	28480	0757-0428
U1	1820-0348	1	IC:DTL DUAL 4-INPT NAND BUFFER	04713	MC844P
U2	1820-0069	1	IC:TTL DUAL 4-INPT POS NAND GATE	01295	SN7420N
U3	1820-0376	1	IC:TTL HS DUAL 4-INPT NAND BUFFER	01295	SN74H40N
U4	1820-0349	1	IC:DTL QUAD 2-INPT NAND GATE RL=2K	04713	MC849P
U5	1820-0088	2	IC:DTL MONOSTABLE MULTIVIBRATOR	04713	MC851P
U6	1820-0088		IC:DTL MONOSTABLE MULTIVIBRATOR	04713	MC851P
U7	1820-0256	1	IC:DTL QUAD 2-INPUT POWER GATE	04713	MC858P

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-4-	07970-62004	READ/READ CONTROL PC ASSEMBLY A18A1, 10 - 20.9 ips	REF
3-4-	07970-62005	READ/READ CONTROL PC ASSEMBLY A18A1, 21 - 45 ips	REF
-1	2100-1758	. RESISTOR, var, ww, 1k, 5%, 1W (R29)	1
-2	0683-2225	. RESISTOR, fxd, 2.2k, 5%, 1/4W (R2, R4, R8, R22, R29)	5
-3	0683-1235	. RESISTOR, fxd, 12k, 5%, 1/4W (R23)	1
-4	0698-3132	. RESISTOR, fxd, 261 ohms, 1%, 1/8W (R12, R28)	2
-5	0757-0428	. RESISTOR, fxd, 1620 ohms, 1%, 1/8W (R10, R26, R42)	3
-6	0698-3438	. RESISTOR, fxd, 147 ohms, 1%, 1/8W (R27)	1
-7	0757-0199	. RESISTOR, fxd, 21.5k, 1%, 1/8W (R25)	1
-8	0683-8235	. RESISTOR, fxd, 82k, 5%, 1/4W (R30, R37, R38)	3
-9	0683-1025	. RESISTOR, fxd, 1k, 5%, 1/4W (R3, R7, R11, R31, R32, R39)	6
-10	0683-2725	. RESISTOR, fxd, 2.7k, 5%, 1/4W (R34)	1
-11	0683-6815	. RESISTOR, fxd, 680 ohms, 5%, 1/4W (R33)	1
-12	0757-0442	. RESISTOR, fxd, 10k, 1%, 1/8W (R35)	1
-13	0757-0444	. RESISTOR, fxd, 12.1k, 1%, 1/8W (R36)	1
-14	0683-1525	. RESISTOR, fxd, 1.5k, 5%, 1/4W (R41)	1
-15	0683-6825	. RESISTOR, fxd, 6.8k, 5%, 1/4W (R1, R9, R40)	3
-16	0757-0401	. RESISTOR, fxd, 100 ohms, 1%, 1/8W (R15)	1
-17	0683-3325	. RESISTOR, fxd, 3.3k, 5%, 1/4W (R6, R17, R19)	3
-18	0757-0280	. RESISTOR, fxd, 1k, 1%, 1/8W (R13)	1
-19	0683-3335	. RESISTOR, fxd, 33k, 5%, 1/4W (R14)	1
-20	0757-1094	. RESISTOR, fxd, 1.47k, 1%, 1/8W (R16)	1
-21	0683-2235	. RESISTOR, fxd, 22k, 5%, 1/4W (R5)	1
-22	0757-0443	. RESISTOR, fxd, 11k, 1%, 1/8W (R21)	1
-23	0757-0439	. RESISTOR, fxd, 6.81k, 1%, 1/8W (R20)	1
-24	1854-0071	. TRANSISTOR, NPN, Si (Q2, Q3, Q5, Q6, Q7)	5
-25	1901-0040	. DIODE, Si (CR1, CR2, CR3, CR4, CR5, CR6, CR7, CR8, CR9, CR10, CR11)	11
-26	1854-0270	. TRANSISTOR, NPN, Si, 2N4265 (Q8, Q10, Q11)	3
-27	1853-0015	. TRANSISTOR, PNP, Si, 2N3640 (Q9)	1
-28	0160-0162	. CAPACITOR, fxd, 0.022 µF, 10% (C8) (used only on 07970-60540)	1
-28	0160-0161	. CAPACITOR, fxd, 0.01 µF, 10% (C8) (used only on 07970-60550)	1
-29	0160-2307	. CAPACITOR, fxd, 47 pF, 5%, 300 Vdcw (C9)	1
-30	1820-0088	. INTEGRATED CIRCUIT, type 851 (U5, U6)	2
-31	0140-0193	. CAPACITOR, fxd, 82 pF, 5%, 300 Vdcw (C10)	1
-32	0160-2209	. CAPACITOR, fxd, 360 pF, 5%, 300 Vdcw (C11)	1
-33	1820-0069	. INTEGRATED CIRCUIT, type 7420N (U2)	1
-34	0180-1701	. CAPACITOR, fxd, 6.8 µF, 20%, 6 Vdcw (C12, C13)	2
-35	1820-0348	. INTEGRATED CIRCUIT, type 844 (U1)	1
-36	1820-0276	. INTEGRATED CIRCUIT (U3)	1
-37	1853-0036	. TRANSISTOR, PNP, Si, 2N3906 (Q1, Q4)	2
-38	0160-2055	. CAPACITOR, fxd, 0.01 µF, -20 +80%, 100 Vdcw (C1, C2, C3, C4, C5, C6)	6
-39	0180-1704	. CAPACITOR, fxd, 47 µF, 10%, 6 Vdcw (C7)	1
-40	1820-0349	. INTEGRATED CIRCUIT (U4)	1
-41	0180-0210	. CAPACITOR, fxd, 3.3 µF, 20%, 15 Vdcw (C14, C15)	2

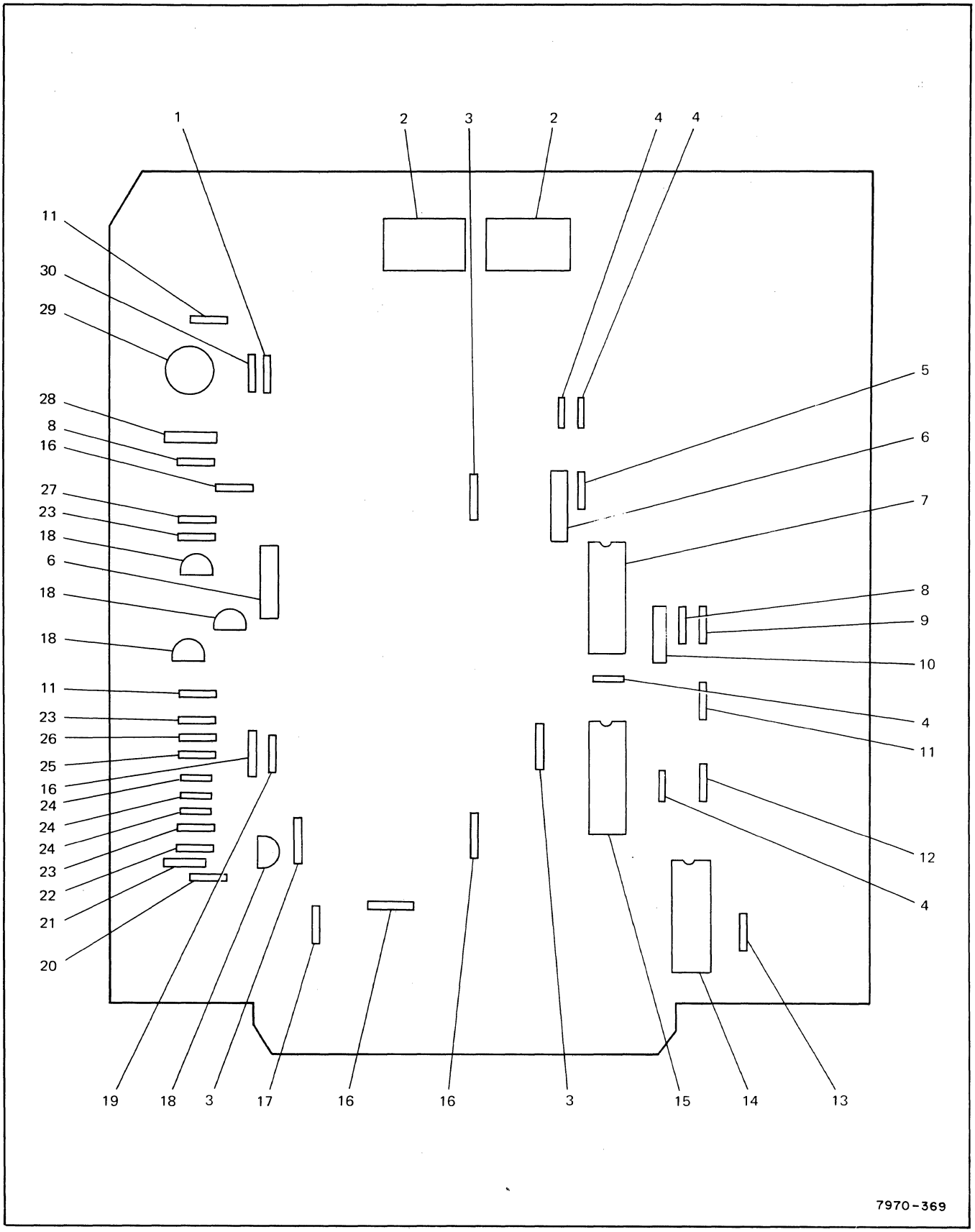


Figure 3-5. Single-Channel Read Data PC Assembly (10 - 20.9 ips)

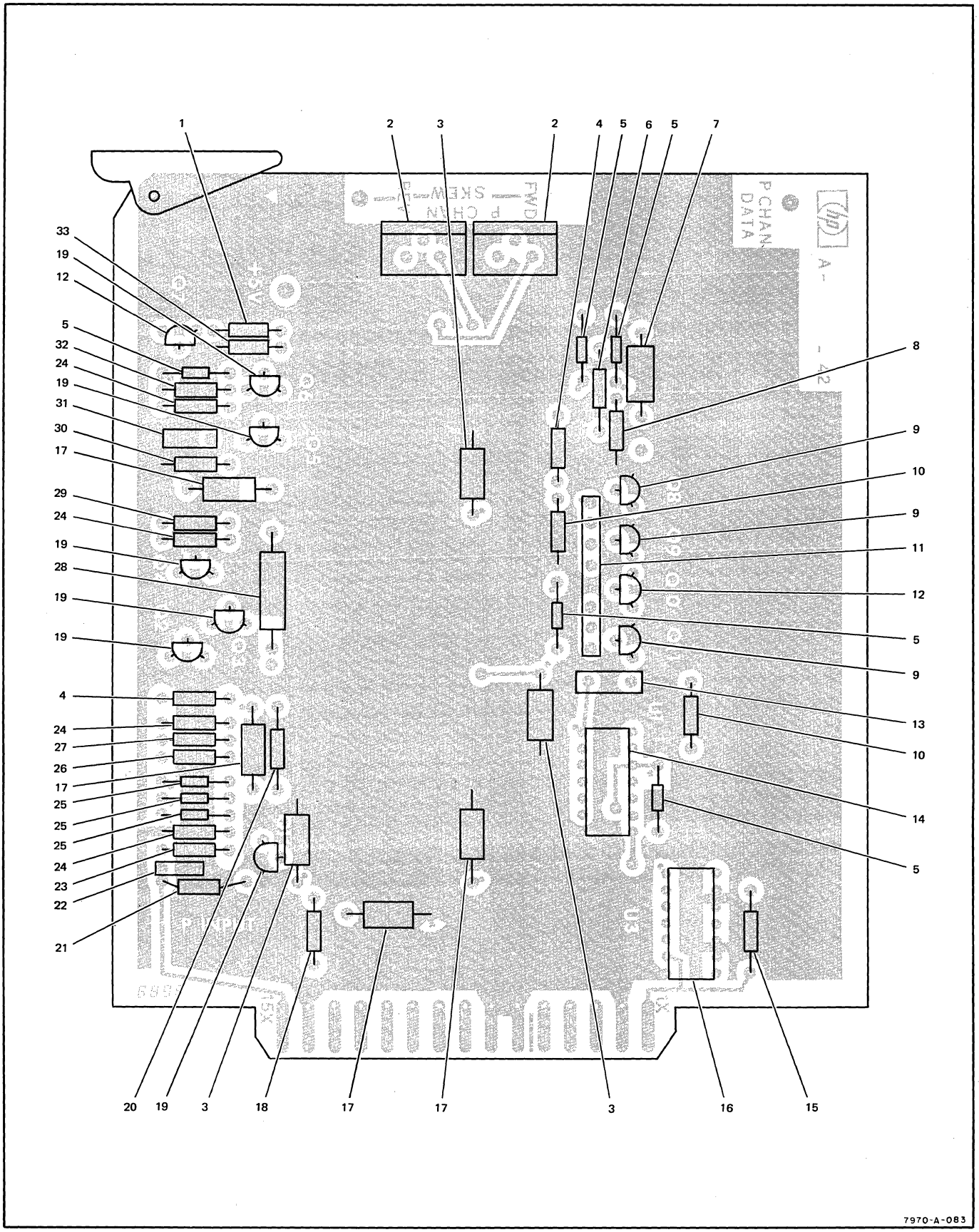


Figure 3-5. Single-Channel Read Data PC Assembly A18A2

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-5-	07970-62167	READ DATA PC ASSEMBLY A18A2, single-channel (10 - 20.9 ips)	REF
-1	0683-4715	. RESISTOR, fxd, 470 ohms, 1/4W (R14)	1
-2	2100-1923	. RESISTOR, var, 50k (R21, R22)	2
-3	0180-1701	. CAPACITOR, fxd, 6.8 µF, 6V, tant (C1, C8, C9)	3
-4	1901-0040	. DIODE, Si, 30V, 30 mA (CR5, CR6, CR7, CR8)	4
-5	0757-0289	. RESISTOR, fxd, 13.3k, 1%, 1/8W (R20)	1
-6	0160-0160	. CAPACITOR, fxd, 0.0082 µF, Mylar (C3, C7)	2
-7	1820-0515	. INTEGRATED CIRCUIT, MV 9602 (U4)	1
-8	0683-4725	. RESISTOR, fxd, 4.7k, 1/4W (R11, R19)	2
-9	0683-2725	. RESISTOR, fxd, 2.7k, 1/4W (R18)	1
-10	0140-0197	. CAPACITOR, fxd, 180 pF, mica (C6)	1
-11	0683-2225	. RESISTOR, fxd, 2.2k, 1/4W (R4, R16, R17)	3
-12	0683-1025	. RESISTOR, fxd, 1k, 1/4W (R24)	1
-13	0757-0429	. RESISTOR, fxd, 1.62k, 1%, 1/8W (R23)	1
-14	1820-0348	. INTEGRATED CIRCUIT, type 844 (U3)	1
-15	1820-0077	. INTEGRATED CIRCUIT, type SN7474 (U1)	1
-16	0180-0210	. CAPACITOR, fxd, 3.3 µF, 15V (C2, C4, C10, C11)	4
-17	0683-1515	. RESISTOR, fxd, 150 ohms, 1/4W (R26)	1
-18	1854-0071	. TRANSISTOR, 2N3391 (Q1, Q2, Q3, Q4)	4
-19	0698-4477	. RESISTOR, fxd, 10.5k, 1%, 1/8W (R2)	1
-20	0757-0442	. RESISTOR, fxd, 10k, 1%, 1/8W (R1)	1
-21	0160-3449	. CAPACITOR, fxd, 2000 pF, 10% (C12)	1
-22	0683-3635	. RESISTOR, fxd, 36k, 1/4W (R3)	1
-23	0683-1035	. RESISTOR, fxd, 10k, 1/4W (R5, R8, R9)	3
-24	1901-0450	. DIODE, Si (CR1, CR2, CR3)	3
-25	0683-2255	. RESISTOR, fxd, 2.2M, 1/4W (R7)	1
-26	0683-1045	. RESISTOR, fxd, 100k, 1/4W (R10)	1
-27	0683-6825	. RESISTOR, fxd, 6.8k, 1/4W (R6)	1
-28	0160-3573	. CAPACITOR, fxd, 680 pF, cer (C5)	1
-29	1826-0065	. INTEGRATED CIRCUIT, comparator, LM 311 (U5)	1
-30	0683-4735	. RESISTOR, fxd, 47k, 1/4W (R15)	1

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-5-	07970-62167	READ DATA PC ASSEMBLY A18A2, single-channel (10 - 20.9 ips)	REF
-1	0683-4715	. RESISTOR, fxd, 470 ohms, 1/4W (R14)	1
-2	2100-1923	. RESISTOR, var, 50k (R21, R22)	2
-3	0180-1701	. CAPACITOR, fxd, 6.8 µF, 6V, tant (C1, C8, C9)	3
-4	1901-0040	. DIODE, Si, 30V, 30 mA (CR5, CR6, CR7, CR8)	4
-5	0757-0289	. RESISTOR, fxd, 13.3k, 1%, 1/8W (R20)	1
-6	0160-0160	. CAPACITOR, fxd, 0.0082 µF, Mylar (C3, C7)	2
-7	1820-0515	. INTEGRATED CIRCUIT, MV 9602 (U4)	1
-8	0683-4725	. RESISTOR, fxd, 4.7k, 1/4W (R11, R19)	2
-9	0683-2725	. RESISTOR, fxd, 2.7k, 1/4W (R18)	1
-10	0140-0197	. CAPACITOR, fxd, 180 pF, mica (C6)	1
-11	0683-2225	. RESISTOR, fxd, 2.2k, 1/4W (R4, R16, R17)	3
-12	0683-1025	. RESISTOR, fxd, 1k, 1/4W (R24)	1
-13	0757-0429	. RESISTOR, fxd, 1.62k, 1%, 1/8W (R23)	1
-14	1820-0348	. INTEGRATED CIRCUIT, type 844 (U3)	1
-15	1820-0077	. INTEGRATED CIRCUIT, type SN7474 (U1)	1
-16	0180-0210	. CAPACITOR, fxd, 3.3 µF, 15V (C2, C4, C10, C11)	4
-17	0683-1515	. RESISTOR, fxd, 150 ohms, 1/4W (R26)	1
-18	1854-0071	. TRANSISTOR, 2N3391 (Q1, Q2, Q3, Q4)	4
-19	0698-4477	. RESISTOR, fxd, 10.5k, 1%, 1/8W (R2)	1
-20	0757-0442	. RESISTOR, fxd, 10k, 1%, 1/8W (R1)	1
-21	0160-3449	. CAPACITOR, fxd, 2000 pF, 10% (C12)	1
-22	0683-3635	. RESISTOR, fxd, 36k, 1/4W (R3)	1
-23	0683-1035	. RESISTOR, fxd, 10k, 1/4W (R5, R8, R9)	3
-24	1901-0450	. DIODE, Si (CR1, CR2, CR3)	3
-25	0683-2255	. RESISTOR, fxd, 2.2M, 1/4W (R7)	1
-26	0683-1045	. RESISTOR, fxd, 100k, 1/4W (R10)	1
-27	0683-6825	. RESISTOR, fxd, 6.8k, 1/4W (R6)	1
-28	0160-3573	. CAPACITOR, fxd, 680 pF, cer (C5)	1
-29	1826-0065	. INTEGRATED CIRCUIT, comparator, LM 311 (U5)	1
-30	0683-4735	. RESISTOR, fxd, 47k, 1/4W (R15)	1

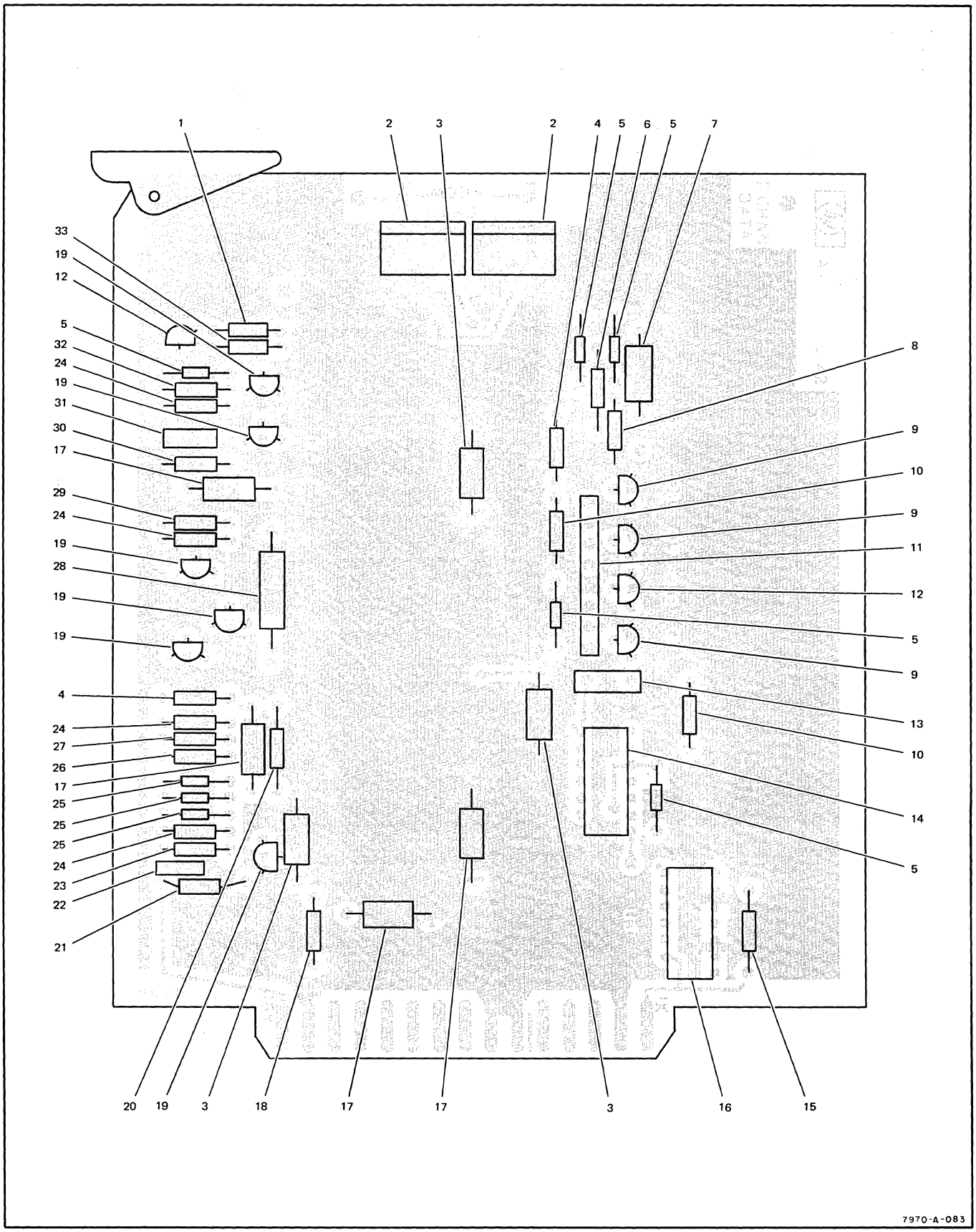


Figure 3-6. Single-Channel Read Data PC Assembly (21 - 45 IPS)

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-6-	07970-60570	READ DATA PC ASSEMBLY A18A2, single-channel, 21 - 45 ips	REF
-1	0683-4735	. RESISTOR, fxd, 47k, 5%, 1/4W (R15)	1
-2	2100-1761	. RESISTOR, var, ww, 10k, 5%, 1W (R21, R22)	2
-3	0180-1701	. CAPACITOR, fxd, 6.8 µF, 20%, 6 Vdcw (C1, C8, C9)	3
-4	0683-2225	. RESISTOR, fxd, 2.2k, 5%, 1/4W (R4, R16)	2
-5	1901-0040	. DIODE, Si (CR4, CR5, CR6, CR7, CR8)	5
-6	0757-0279	. RESISTOR, fxd, 3.16k, 1%, 1/8W (R20)	1
-7	0160-0155	. CAPACITOR, fxd, 0.0033 µF, 10% (C7)	1
-8	0683-1015	. RESISTOR, fxd, 100 ohms, 5%, 1/4W (R19)	1
-9	1854-0270	. TRANSISTOR, NPN, Si, 2N4265 (Q8, Q9, Q11)	3
-10	0683-1025	. RESISTOR, fxd, 1k, 5%, 1/4W (R17, R24)	2
-11	1810-0044	. RESISTOR NETWORK (R18)	1
-12	1853-0015	. TRANSISTOR, PNP, Si, 2N3640 (Q7, Q10)	2
-13	0140-0197	. CAPACITOR, fxd, 180 pF, 5%, 300 Vdcw (C6)	1
-14	1820-0077	. INTEGRATED CIRCUIT, type 7474N (U1)	1
-15	0757-0428	. RESISTOR, fxd, 1.62k, 1%, 1/8W (R23)	1
-16	1820-0348	. INTEGRATED CIRCUIT, type 844 (U3)	1
-17	0180-0210	. CAPACITOR, fxd, 3.3 µF, 20%, 15 Vdcw (C2, C4, C10, C11)	4
-18	0683-1515	. RESISTOR, fxd, 150 ohms, 5%, 1/4W (R26)	1
-19	1854-0071	. TRANSISTOR, NPN, Si (Q1, Q2, Q3, Q4, Q5, Q6)	6
-20	0698-4477	. RESISTOR, fxd, 10.5k, 1%, 1/8W (R2)	1
-21	0757-0442	. RESISTOR, fxd, 10k, 1%, 1/8W (R1)	1
-22	0160-3449	. CAPACITOR, fxd, 2000 pF, 10%, 250 Vdcw (C12)	1
-23	0683-3635	. RESISTOR, fxd, 36k, 5%, 1/4W (R3)	1
-24	0683-1035	. RESISTOR, fxd, 10k, 5%, 1/4W (R5, R8, R9, R12)	4
-25	1901-0450	. DIODE, Si (CR1, CR2, CR3)	3
-26	0683-2255	. RESISTOR, fxd, 2.2M, 5%, 1/4W (R7)	1
-27	0683-1045	. RESISTOR, fxd, 100k, 5%, 1/4W (R10)	1
-28	0160-0156	. CAPACITOR, fxd, 0.0039 µF, 10% (C3)	1
-29	0683-6825	. RESISTOR, fxd, 6.8k, 5%, 1/4W (R6)	1
-30	0683-4725	. RESISTOR, fxd, 4.7k, 5%, 1/4W (R11)	1
-31	0160-3572	. CAPACITOR, fxd, 330 pF, 10%, 500 Vdcw (C5)	1
-32	0683-1235	. RESISTOR, fxd, 12k, 5%, 1/4W (R13)	1
-33	0683-4715	. RESISTOR, fxd, 470 ohms, 5%, 1/4W (R14)	1

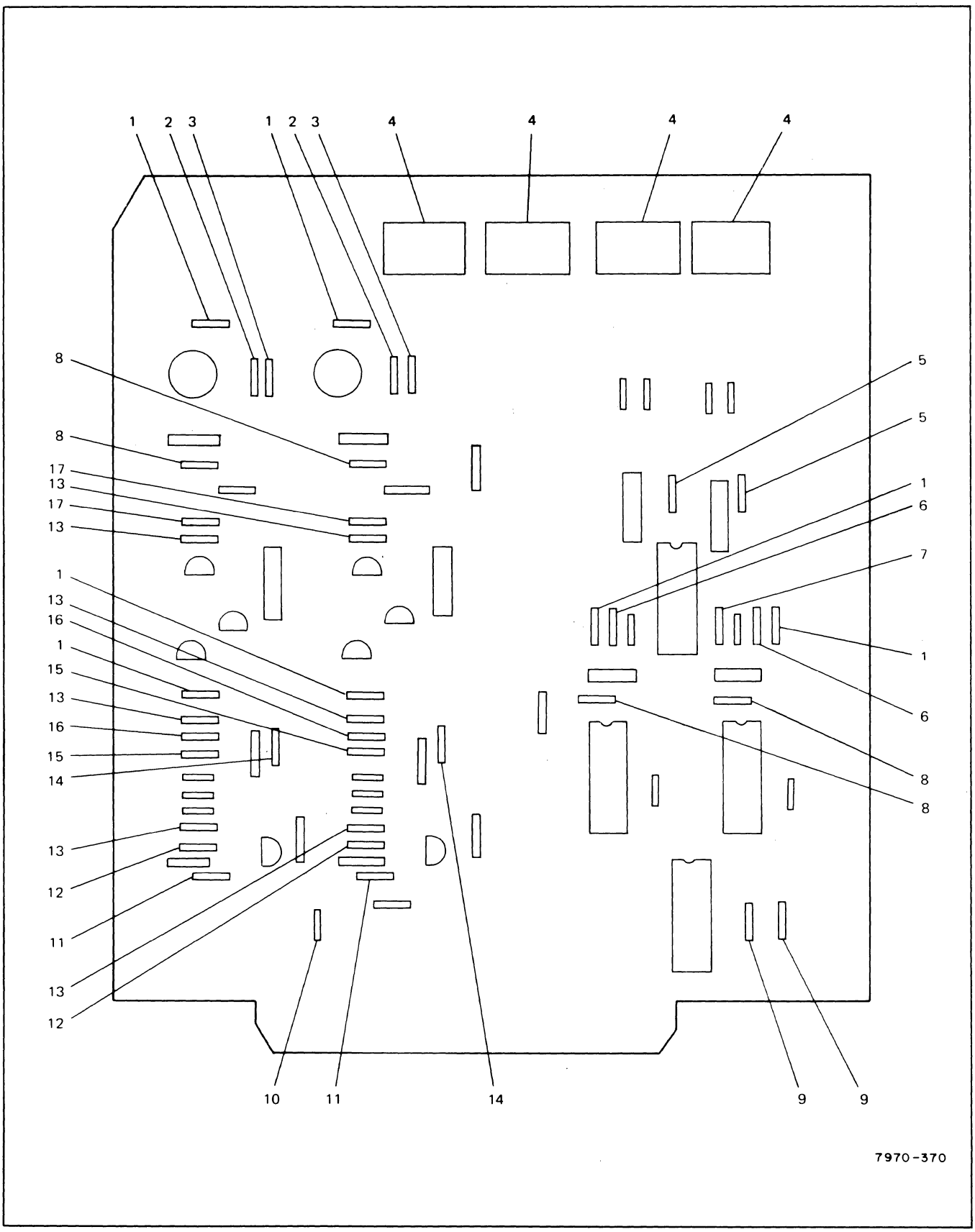


Figure 3-7. Dual-Channel Read Data PC Assembly (10 - 20.9 IPS) (Sheet 1 of 2)

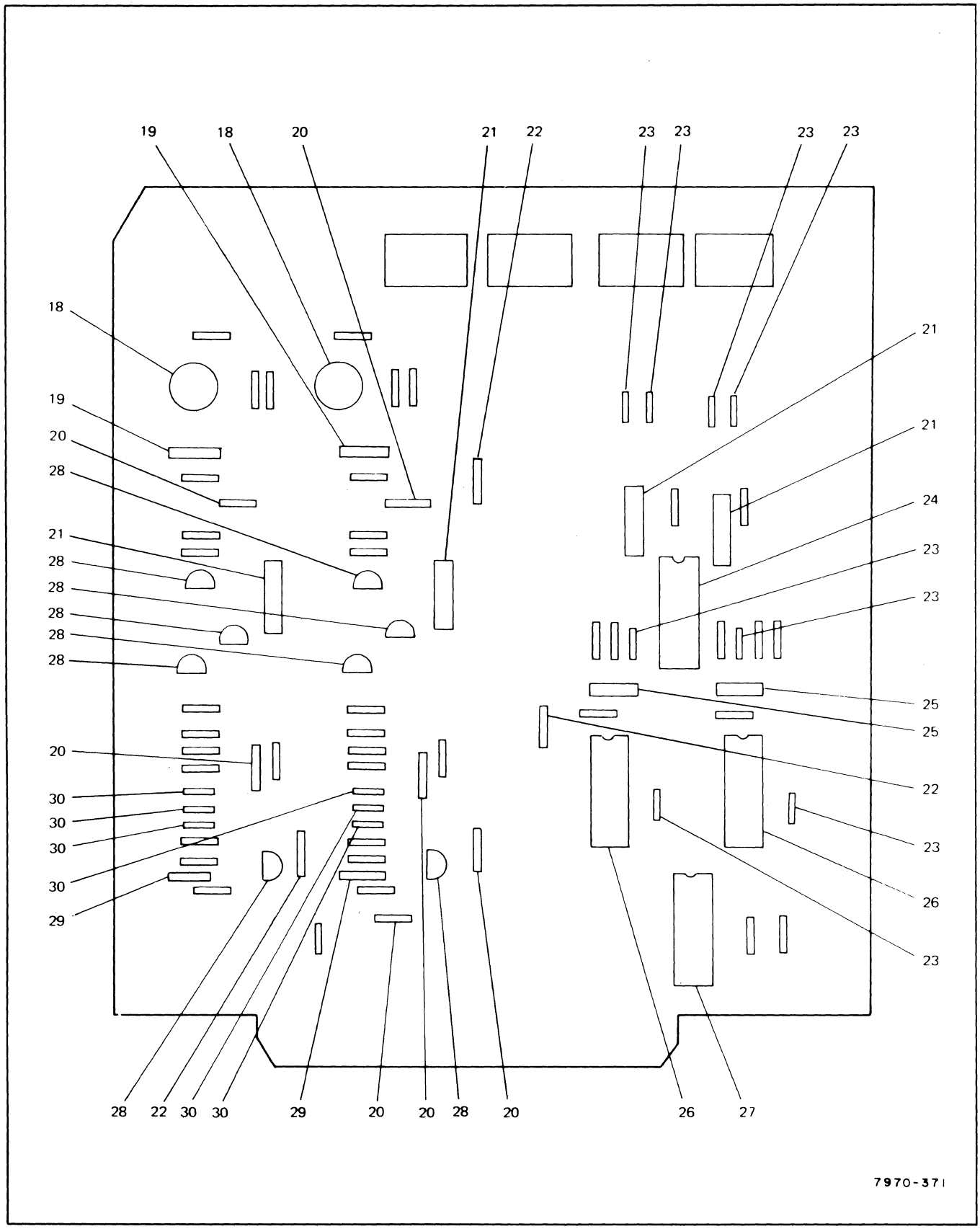


Figure 3-7. Dual-Channel Read Data PC Assembly (10 - 20.9 IPS) (Sheet 2 of 2)

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-7-	07970-62166	READ DATA PC ASSEMBLY A18A3, dual-channel (10 - 20.9 ips)	REF
-1	0683-2225	. RESISTOR, fxd, 2.2k, 1/4W (R4, R16, R17, R104, R116, R117)	6
-2	0683-4735	. RESISTOR, fxd, 47k, 1/4W (R15, R115)	2
-3	0683-4715	. RESISTOR, fxd, 470 ohms, 1/4W (R14, R114)	2
-4	2100-1923	. RESISTOR, var, 50k (R21, R22, R121, R122)	4
-5	0757-0289	. RESISTOR, fxd, 13.3k, 1%, 1/8W (R20, R120)	2
-6	0683-2725	. RESISTOR, fxd, 2.7k, 1/4W (R18, R118)	2
-7	0683-1025	. RESISTOR, fxd, 1k, 1/4W (R24)	1
-8	0683-4725	. RESISTOR, fxd, 4.7k, 1/4W (R11, R19, R111, R119)	4
-9	0757-0428	. RESISTOR, fxd, 1.62k, 1%, 1/8W (R23, R25)	2
-10	0683-1515	. RESISTOR, fxd, 150 ohms, 1/4W (R26)	1
-11	0757-0442	. RESISTOR, fxd, 10k, 1%, 1/8W (R1, R101)	2
-12	0683-3635	. RESISTOR, fxd, 36k, 1/4W (R3, R103)	2
-13	0683-1035	. RESISTOR, fxd, 10k, 1/4W (R5, R8, R9, R105, R108, R109)	6
-14	0698-4477	. RESISTOR, fxd, 10.5k, 1%, 1/8W (R2, R102)	2
-15	0683-2255	. RESISTOR, fxd, 2.2M, 1/4W (R7, R107)	2
-16	0683-1045	. RESISTOR, fxd, 100k, 1/4W (R10, R110)	2
-17	0683-6825	. RESISTOR, fxd, 6.8k, 1/4W (R6, R106)	2
-18	1826-0065	. INTEGRATED CIRCUIT, comparator, LM 311 (U5, U6)	2
-19	0160-3573	. CAPACITOR, fxd, 680 pF, cer (C5, C105)	2
-20	0180-0210	. CAPACITOR, fxd, 3.3 µF, 15V (C2, C4, C10, C11, C102, C104)	6
-21	0160-0160	. CAPACITOR, fxd, 0.0082 µF, Mylar (C3, C103, C7, C107)	4
-22	0180-1701	. CAPACITOR, fxd, 6.8 µF, 6V, tant (C1, C8, C9)	3
-23	1901-0040	. DIODE, Si, 30V, 30 mA (CR5 thru CR8, CR105 thru CR108)	8
-24	1820-0515	. INTEGRATED CIRCUIT, MV 9602 (U4)	1
-25	0140-0197	. CAPACITOR, fxd, 180 pF, mica (C6, C106)	2
-26	1820-0077	. INTEGRATED CIRCUIT, SN 7474 (U1, U2)	2
-27	1820-0348	. INTEGRATED CIRCUIT, type 844 (U3)	1
-28	1854-0071	. TRANSISTOR, 2N3391 (Q1 thru Q4, Q12 thru Q15)	8
-29	0160-3449	. CAPACITOR, fxd, 2000 pF, 10% (C12, C112)	2
-30	1901-0450	. DIODE, Si (CR1 thru CR3, CR101 thru CR103)	6

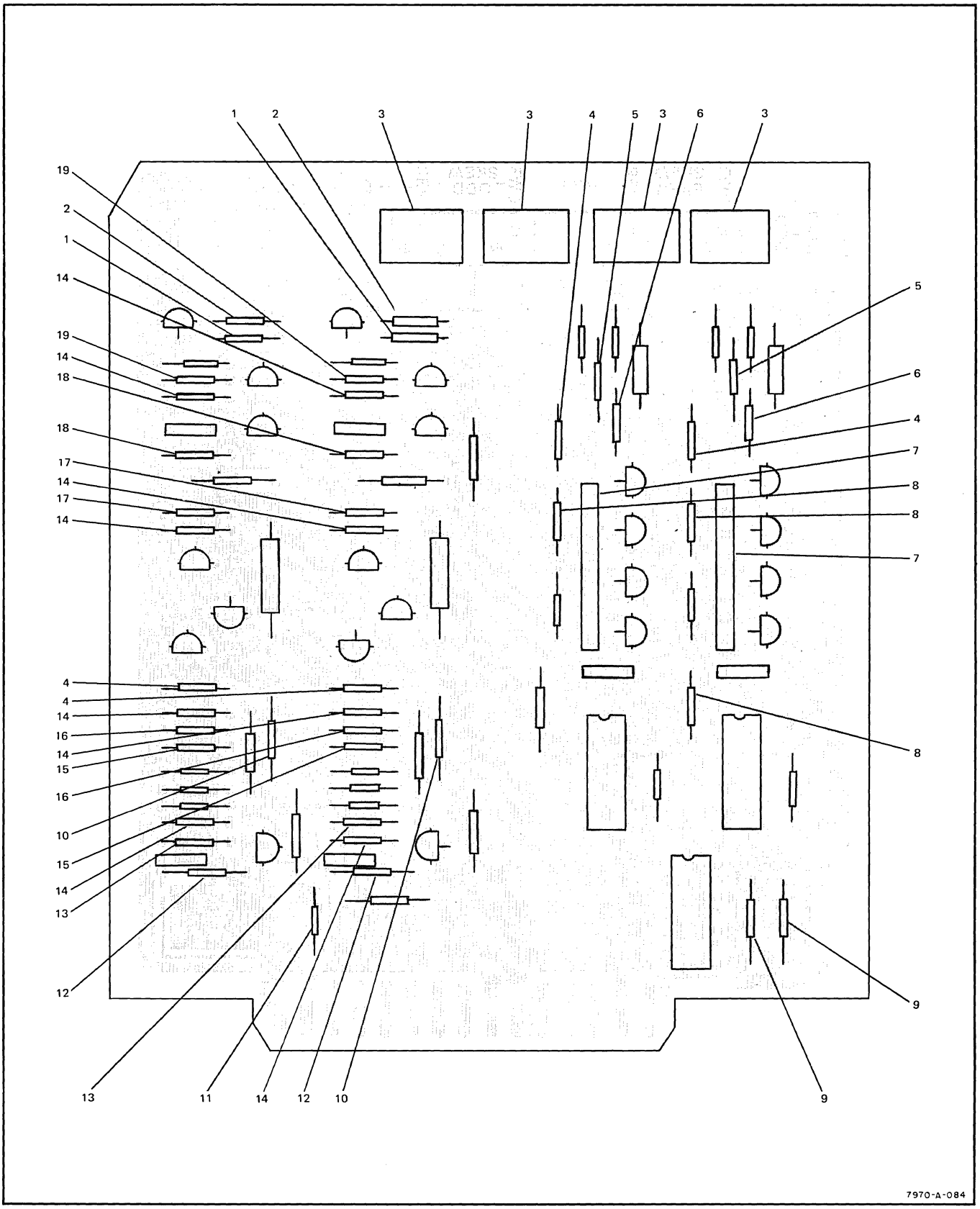


Figure 3-8. Dual-Channel Read Data PC Assembly (21 - 45 IPS) (Sheet 1 of 2)

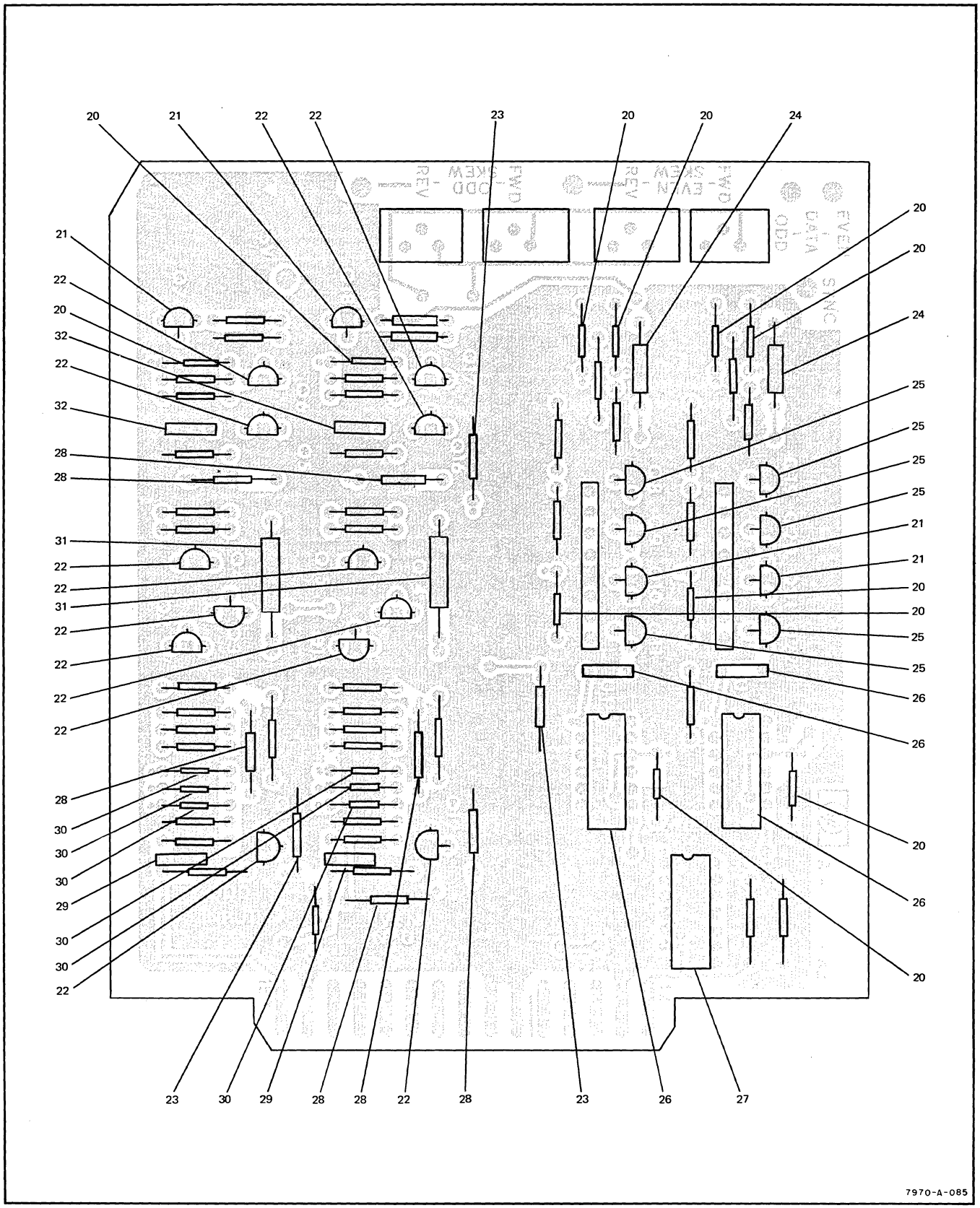


Figure 3-8. Dual-Channel Read Data PC Assembly (21 - 45 IPS) (Sheet 2 of 2)

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5	UNITS PER ASSY
3-8-	07970-60530	READ DATA PC ASSEMBLY A18A3 thru A18A6, dual-channel, 21 - 45 ips . . .	REF*
-1	0683-4715	. RESISTOR, fxd, 470 ohms, 5%, 1/4W (R14, R114)	2
-2	0683-4735	. RESISTOR, fxd, 47k, 5%, 1/4W (R15, R115)	2
-3	2100-1761	. RESISTOR, var, ww, 10k, 5%, 1W (R21, R22, R121, R122)	4
-4	0683-2225	. RESISTOR, fxd, 2.2k, 5%, 1/4W (R4, R16, R104, R116)	4
-5	0757-0279	. RESISTOR, fxd, 3.16k, 1%, 1/8W (R20, R120)	2
-6	0683-1015	. RESISTOR, fxd, 100 ohms, 5%, 1/4W (R19, R119).	2
-7	1810-0044	. RESISTOR NETWORK (R18, R118)	2
-8	0683-1025	. RESISTOR, fxd, 1k, 5%, 1/4W (R17, R24, R117)	3
-9	0757-0428	. RESISTOR, fxd, 1.62k, 1%, 1/8W (R23, R25)	2
-10	0698-4477	. RESISTOR, fxd, 10.5k, 1%, 1/8W (R2, R102)	2
-11	0683-1515	. RESISTOR, fxd, 150 ohms, 5%, 1/4W (R26)	1
-12	0757-0442	. RESISTOR, fxd, 10k, 1%, 1/8W (R1, R101).	2
-13	0683-3635	. RESISTOR, fxd, 36k, 5%, 1/4W (R3, R103).	2
-14	0683-1035	. RESISTOR, fxd, 10k, 5%, 1/4W (R5, R8, R9, R12, R105, R108, R109, R112). .	8
-15	0683-2255	. RESISTOR, fxd, 2.2M, 5%, 1/4W (R7, R107)	2
-16	0683-1045	. RESISTOR, fxd, 100k, 5%, 1/4W (R10, R110)	2
-17	0683-6825	. RESISTOR, fxd, 6.8k, 5%, 1/4W (R6, R106)	2
-18	0683-4725	. RESISTOR, fxd, 4.7k, 5%, 1/4W (R11, R111)	2
-19	0683-1235	. RESISTOR, fxd, 12k, 5%, 1/4W (R13, R113)	2
-20	1901-0040	. DIODE, Si (CR4 thru CR8, CR105 thru CR108, CR204)	10
-21	1853-0015	. TRANSISTOR, PNP, Si, 2N3640 (Q7, Q10, Q18, Q21).	4
-22	1854-0071	. TRANSISTOR, NPN, Si (Q1 thru Q6, Q12 thru Q17)	12
-23	0180-1701	. CAPACITOR, fxd, 6.8 µF, 20%, 6 Vdcw (C1, C8, C9)	3
-24	0160-0155	. CAPACITOR, fxd, 0.0033 µF, 10% (C7, C107)	2
-25	1854-0270	. TRANSISTOR, NPN, Si, 2N4265 (Q8, Q9, Q11, Q19, Q20, Q22)	6
-26	1820-0077	. INTEGRATED CIRCUIT,type 7474N (U1, U2)	2
-27	1820-0348	. INTEGRATED CIRCUIT, type 844 (U3)	1
-28	0180-0210	. CAPACITOR, fxd, 3.3 µF, 20%, 15 Vdcw (C2, C4, C10, C11, C102, C104). . .	6
-29	0160-3449	. CAPACITOR, fxd, 2000 pF, 10%, 250 Vdcw (C12, C112).	2
-30	1901-0450	. DIODE, Si (CR1, CR2, CR3, CR101, CR102, CR103)	6
-31	0160-0156	. CAPACITOR, fxd, 0.0039 µF, 10%, (C3, C103)	2
-32	0160-3572	. CAPACITOR, fxd, 330 pF, 10%, 500 Vdcw (C4, C105)	2

*A18A3 used only in 9-track applications.

Table 3-1. Part Number Cross Reference

HP PART NUMBER	MFR CODE	MFR PART NUMBER
0140-0193	28480	0140-0193
0140-0197	14655	RDM15F181J3C
0140-0198	72136	RDM15F201J3C
0160-0155	56289	192P33292-PTS
0160-0156	56289	192P39292-PTS
0160-0159	56289	192P68282-PTS
0160-0160	56289	192P82292-PTS
0160-0161	56289	192P10392-PTS
0160-0162	56289	192P22392-PTS
0160-2055	56289	C023F101F103ZS22-CDH
0160-2209	72136	RDM15F361J3C
0160-2213	28480	0160-2213
0160-2307	28480	0160-2307
0160-3449	56289	C067B251F202KS25-CDH
0160-3456	56289	C067F251F102KE12-CDH
0160-3572	56289	C067F501F331KS22-CDH
0160-3573	56289	C067F501F681KS22-CDH
0180-0210	56289	150D335X0015A2-DYS
0180-0228	56289	150D226X9015B2-DYS
0180-0291	56289	150D105X9035A2-DYS
0180-1701	28480	0180-1701
0180-1704	28480	0180-1704
0624-0077	00000	OBD
0624-0098	00000	OBD
0683-1015	01121	CB 1015
0683-1025	01121	CB 1025
0683-1035	01121	CB 1035
0683-1045	01121	CB 1045
0683-1235	01121	CB 1235
0683-1515	01121	CB 1515
0683-1525	01121	CB 1525
0683-2225	01121	CB 2225
0683-2235	01121	CB 2235
0683-2255	01121	CB 2255
0683-2725	01121	CB 2725
0683-3325	01121	CB 3325
0683-3335	01121	CB 3335
0683-3635	01121	CB 3635
0683-4325	01121	CB 4325
0683-4715	01121	CB 4715
0683-4725	01121	CB 4725
0683-4735	01121	CB 4735
0683-6815	01121	CB 6815
0683-6825	01121	CB 6825
0683-8235	01121	EB 8235
0698-3132	28480	0698-3132

HP PART NUMBER	MFR CODE	MFR PART NUMBER
0698-3438	28480	0698-3438
0698-4412	28480	0698-4412
0698-4477	28480	0698-4477
0757-0199	28480	0757-0199
0757-0279	28480	0757-0279
0757-0280	28480	0757-0280
0757-0401	28480	0757-0401
0757-0419	28480	0757-0419
0757-0428	28480	0757-0428
0757-0439	28480	0757-0439
0757-0442	28480	0757-0442
0757-0443	28480	0757-0443
0757-0444	28480	0757-0444
0757-0460	28480	0757-0460
0757-1094	28480	0757-1094
1251-0159	71785	251-15-30-261
1400-0292	95987	1/4-6B
1400-0795	05593	SWP-1/4XXT(100')
1810-0044	56289	200C1791-CRR
1820-0069	01295	SN7420N
1820-0077	01295	SN7474N
1820-0088	04713	MC851P
1820-0256	04713	MC858P
1820-0276	04713	MC 1033P
1820-0348	04713	MC844P
1820-0349	04713	MC849P
1853-0015	80131	2N3640
1853-0020	28480	1853-0020
1853-0036	80131	2N3906
1854-0071	28480	1854-0071
1854-0270	80131	2N4265
1855-0370	28480	1855-0370
1901-0040	07263	FDG1088
1901-0450	28480	1901-0450
2100-1758	28480	2100-1758
2100-1761	28480	2100-1761
2100-1972	28480	2100-1972
2140-0209	03508	382
2190-0007	28480	2190-0007
2190-0416	00000	OBD
2190-0452	95987	D6-140
2360-0195	00000	OBD
2360-0199	00000	OBD
2420-0001	78189	OBD
3030-0143	00000	OBD
3050-0228	80120	MS15795-305

SECTION IV
MAINTENANCE DIAGRAMS

This section contains schematic and parts location diagrams for the read/read modules of the 7970B/7970C Digital Magnetic Tape Units.

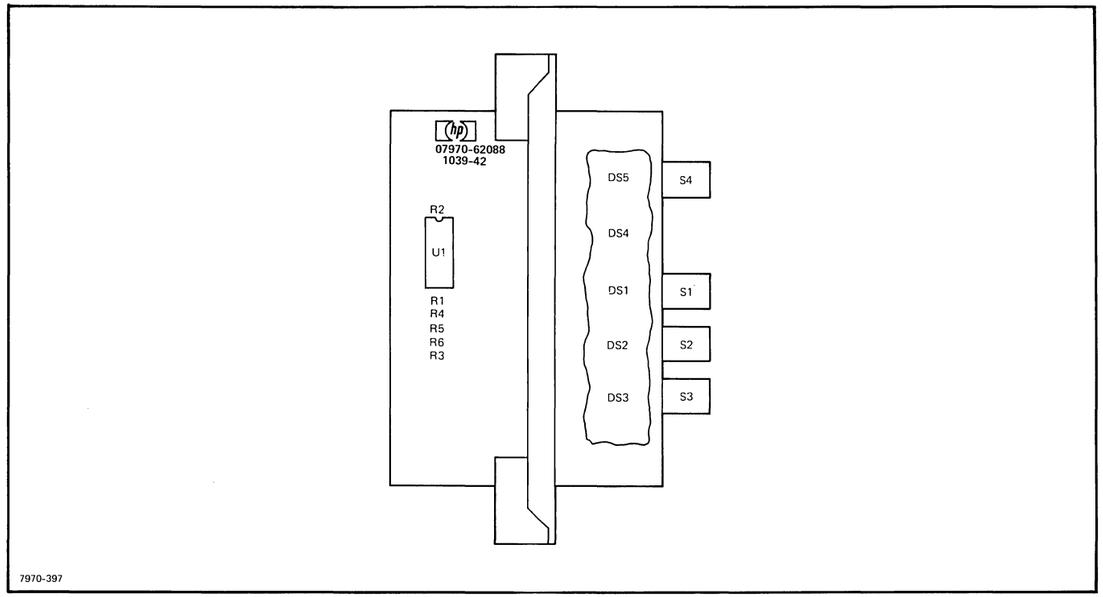


Figure 4-1. Read/Read Density Select Switch Assembly A12, Parts Location Diagram

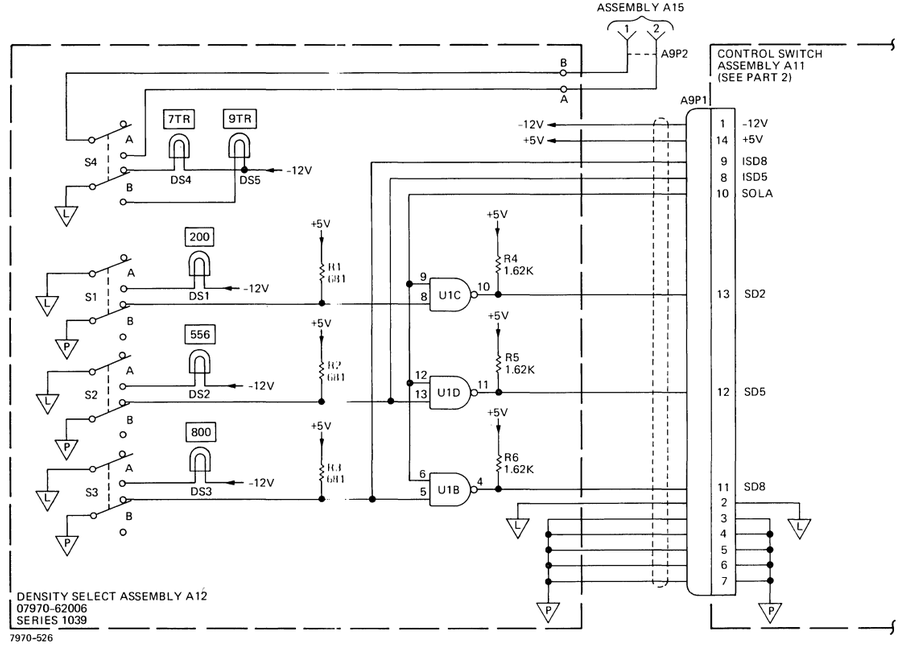


Figure 4-2. Read/Read Density Select Switch Assembly A12, Schematic Diagram

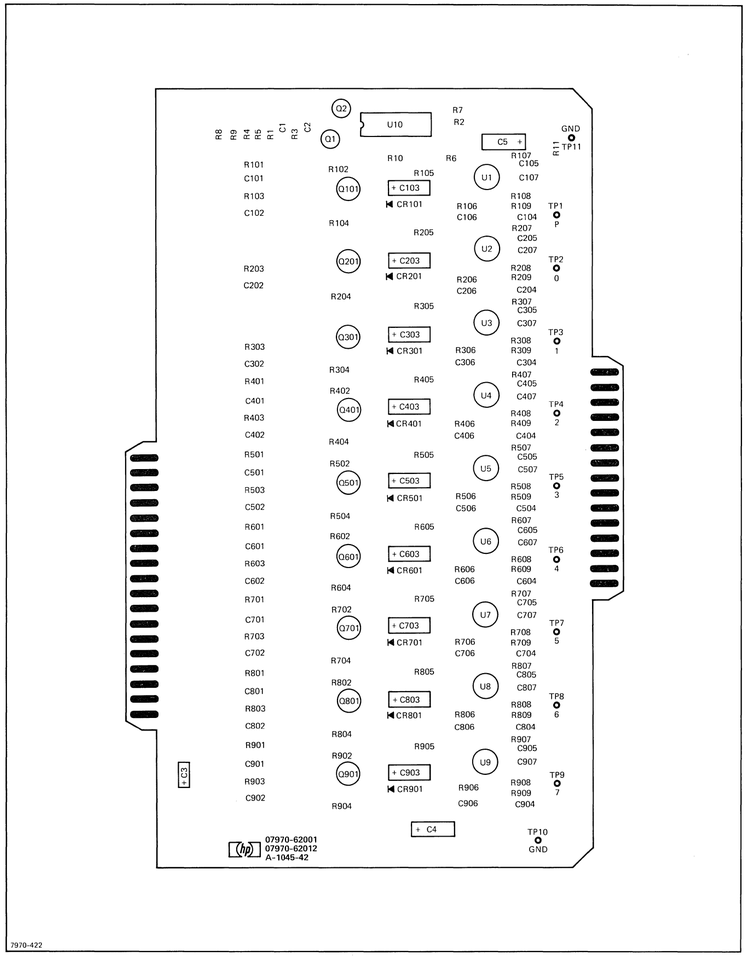


Figure 4-3. Read/Read Preamplifier PC Assembly A15, Parts Location Diagram

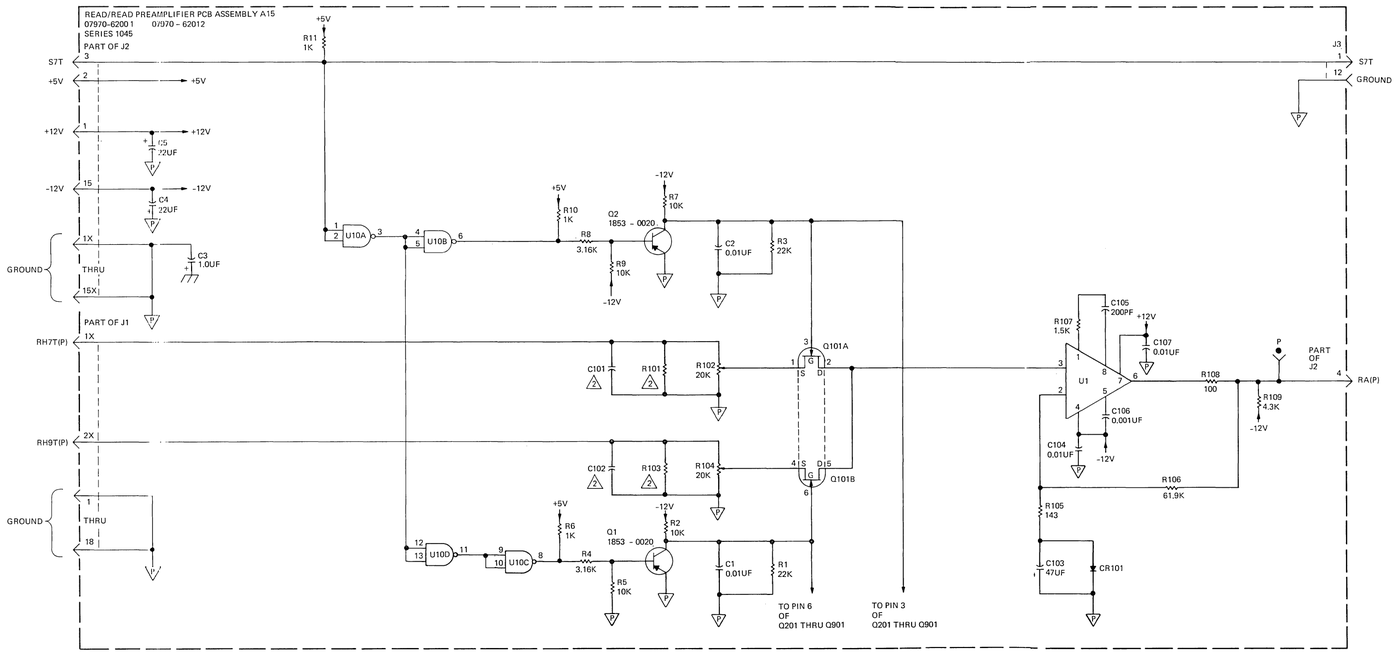


TABLE I

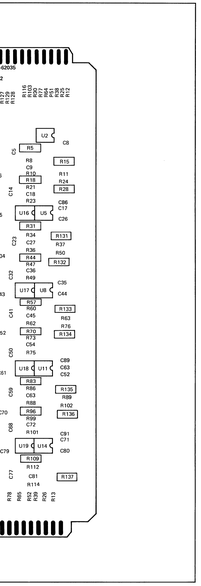
CONNECTOR J1 SIGNAL	CONNECTOR J1 PIN	CONNECTOR J2 SIGNAL	CONNECTOR J2 PIN	TEST POINT IDENT	REF DESIG SERIES (DEVICE AND COMMON CIRCUITS EXCEPTED)	REF DESIG (DEVICE ONLY)	REMARKS
RH7T(P) RH9T(P)	1X 2X	RA(P)	4	P	100	U1	
RH7T(N/A) RH9T(0)	4X	RA(0)	5	0	200	U2	C201, R201, R202 OMITTED
RH7T(N/A) RH9T(1)	6X	RA(1)	6	1	300	U3	C301, R301, R302 OMITTED
RH7T(2) RH9T(2)	7X 8X	RA(2)	7	2	400	U4	
RH7T(3) RH9T(3)	9X 10X	RA(3)	8	3	500	U5	
RH7T(4) RH9T(4)	11X 12X	RA(4)	9	4	600	U6	
RH7T(5) RH9T(5)	13X 14X	RA(5)	10	5	700	U7	
RH7T(6) RH9T(6)	15X 16X	RA(6)	11	6	800	U8	
RH7T(7) RH9T(7)	17X 18X	RA(7)	12	7	900	U9	

1. THIS PCB ASSEMBLY INCLUDES NINE IDENTICAL CIRCUITS. ONE SUCH CIRCUIT AND COMMON GATING, POWER, AND GROUNDING CIRCUITS ARE SHOWN. SHOULD AN INPUT SIGNAL BE NOT APPLICABLE(N/A), THE NORMALLY ASSOCIATED ADJUSTMENT NETWORK IS OMITTED AND THE SOURCE CONNECTION (PIN 1) OF THE ASSOCIATED FET RETURNED TO POWER GROUND. FOR SIGNAL AND REFERENCE DESIGNATIONS OF ALL NINE IDENTICAL CIRCUITS, SEE TABLE I.

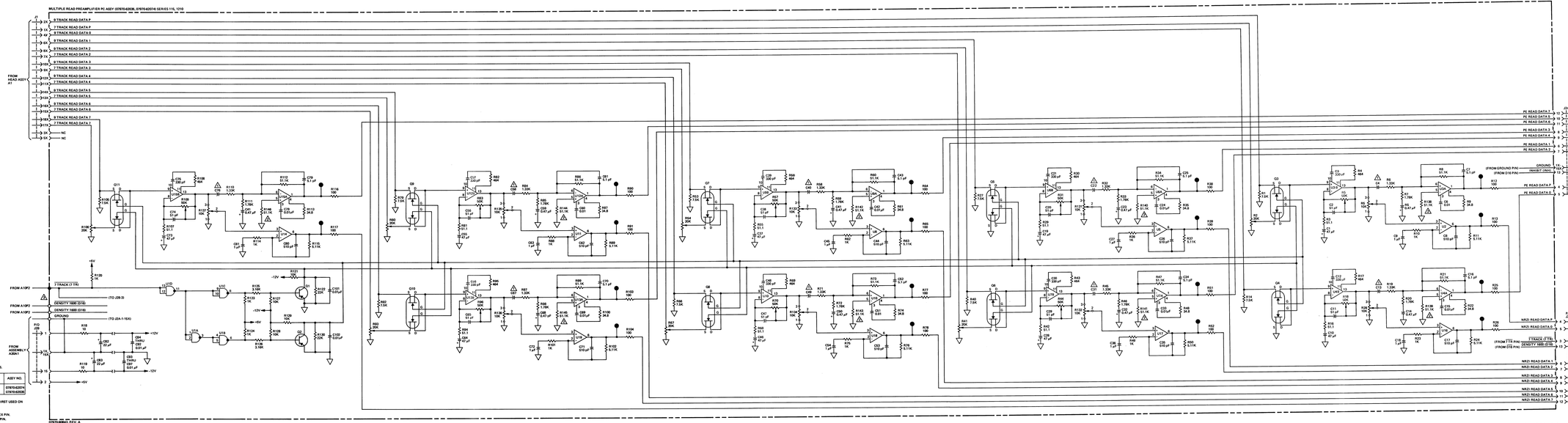
2.

SPEED	R101 R103	C101 C102	ASSEMBLY
10 – 20.9	6.8K	620PF	07970 – 62001
21 – 45	17.8K	270PF	07970 – 62012

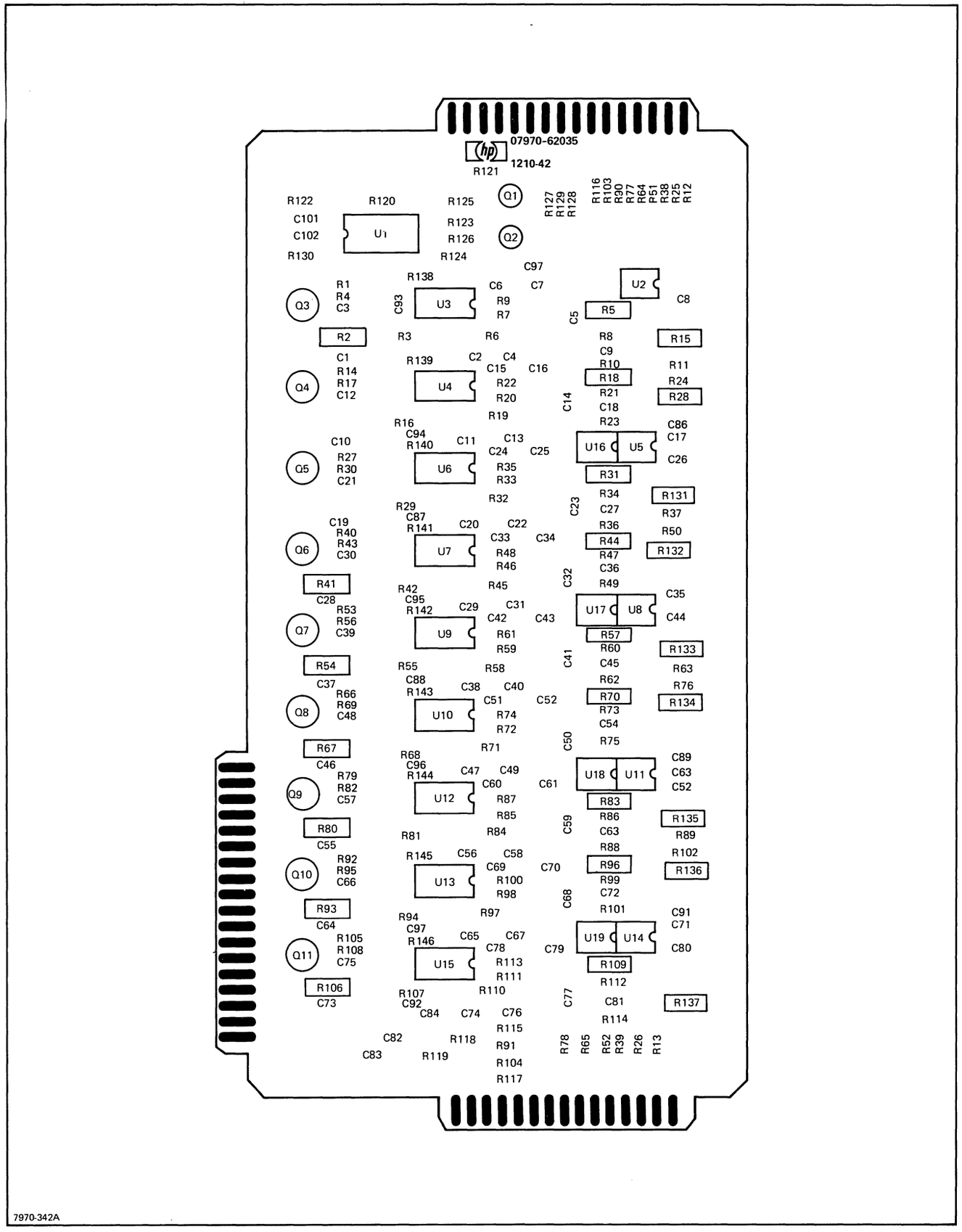
Figure 4-4. Read/Read Preamplifier PC Assembly A15, Schematic Diagram



ocation Diagram

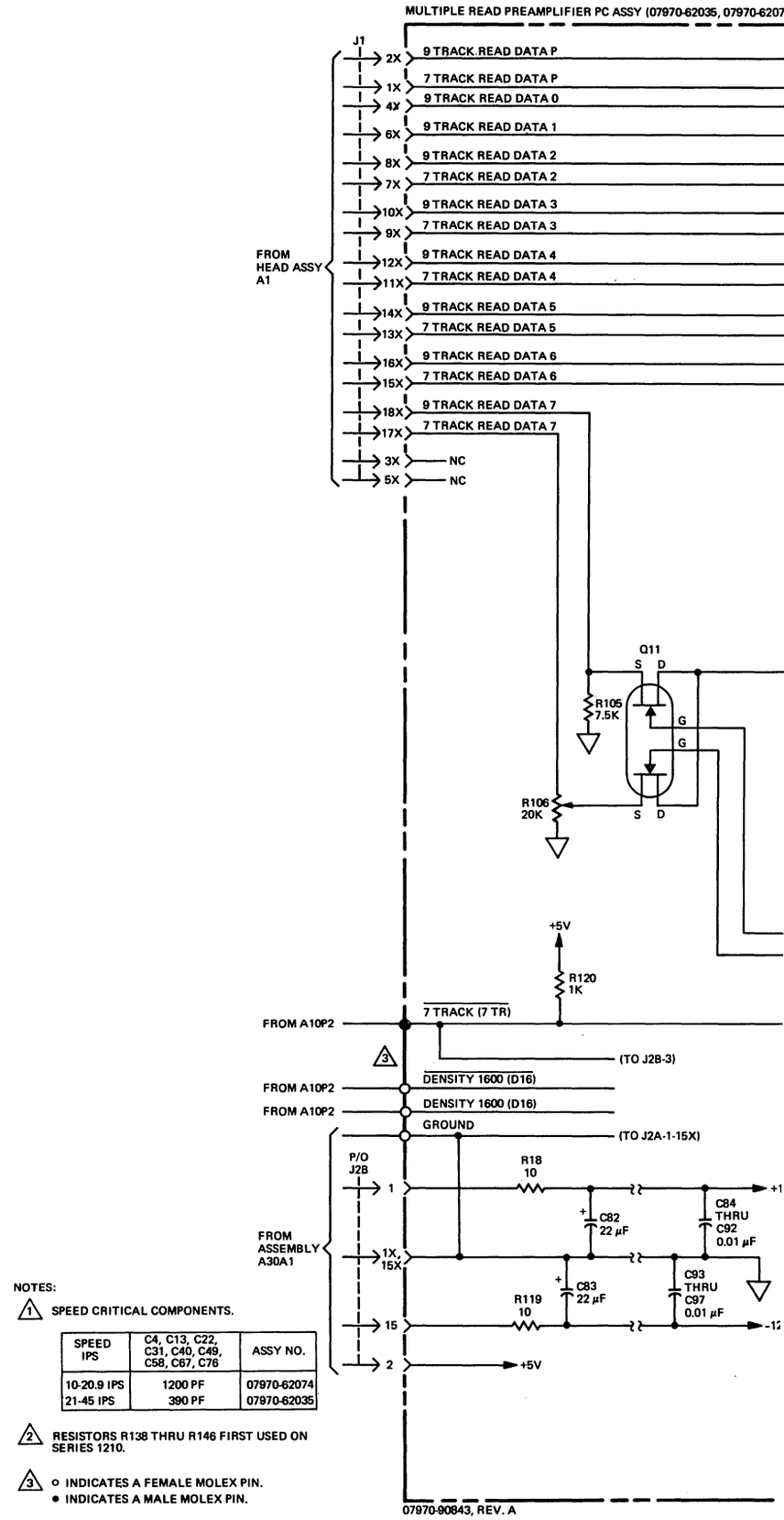


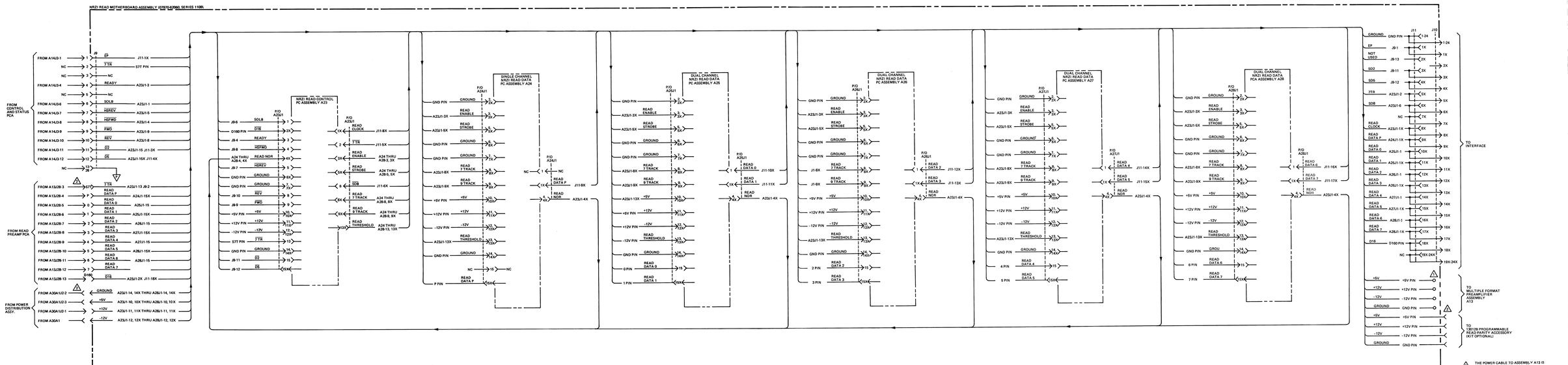
Read Preamplifier PCA, Schematic Diagram



7970-342A

Read Preamplifier PCA, Parts Location Diagram





THE POWER CABLE TO ASSEMBLY A13 IS HARDWIRED AT ASSEMBLY A22.

CONNECTORS ARE MOLEX PIN TYPES.

Figure 4-5. Read/Read Assembly A18, Schematic Diagram

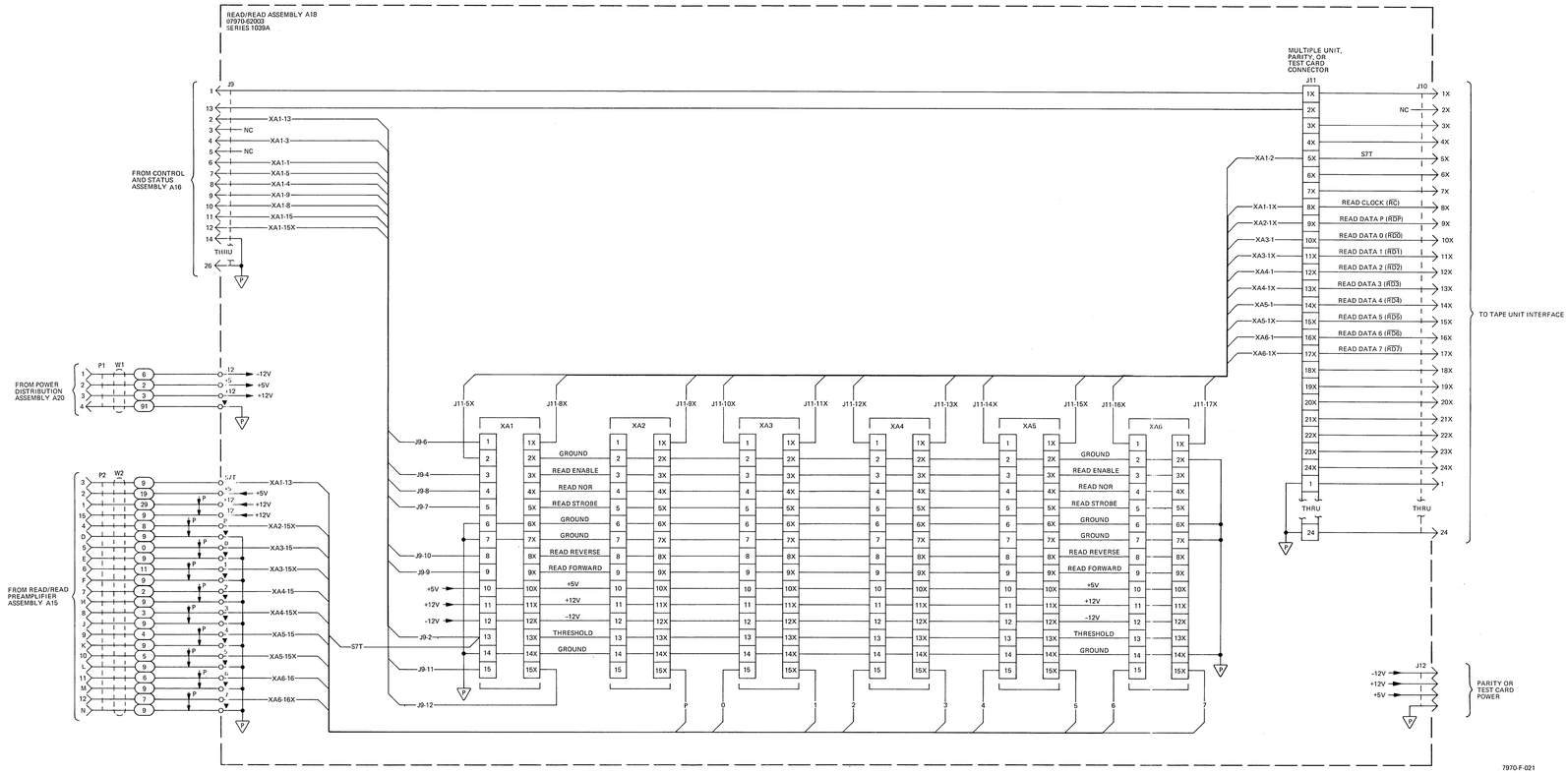


Figure 4-5. Read/Read Assembly A18, Schematic Diagram

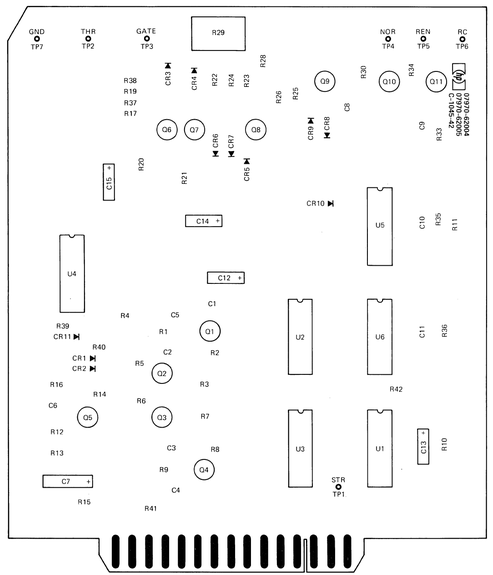


Figure 4-6. Read/Read Control PC Assembly A18A1, Parts Location Diagram

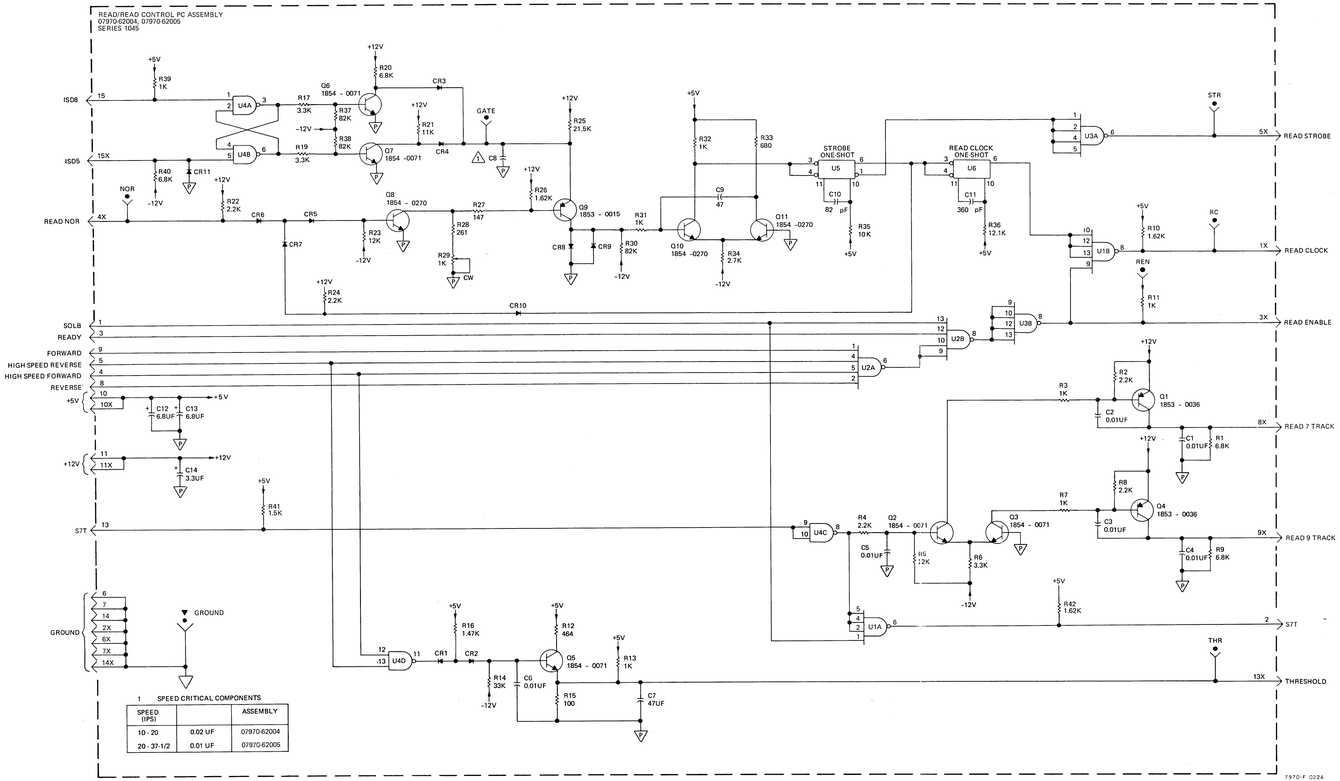
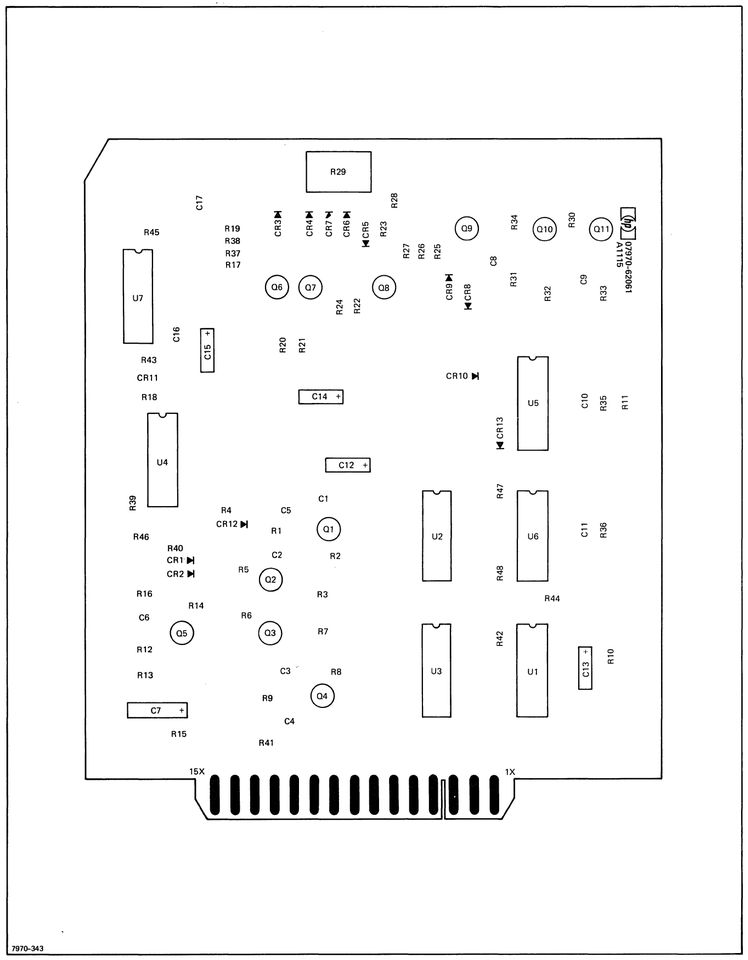
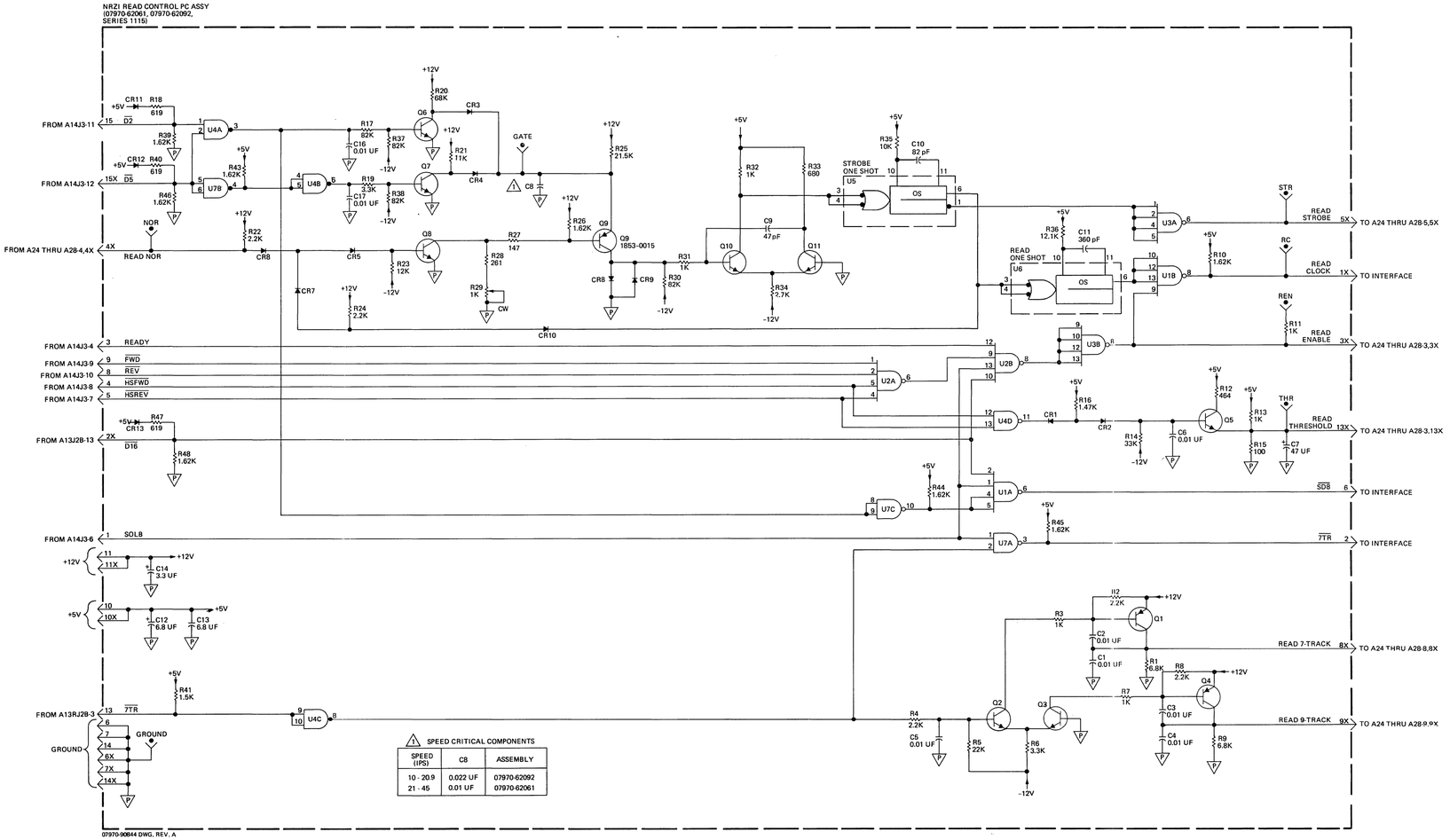


Figure 4-7. Read/Read Control PC Assembly A18A1, Schematic Diagram



Read Control PCA, Parts Location Diagram



Read Control PCA, Schematic Diagram

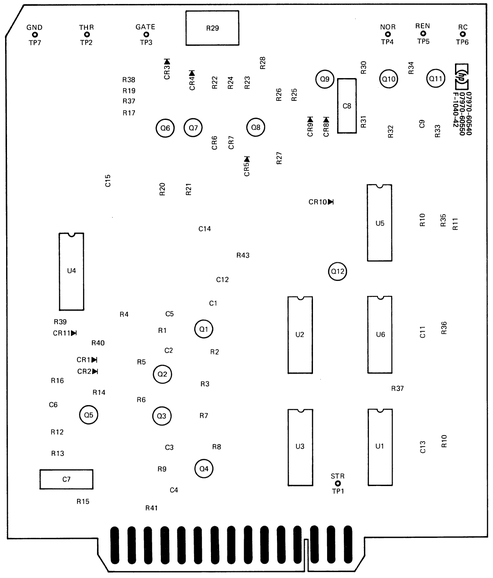


Figure 4-6. Read Control PC Assembly A18A1, Parts Location Diagram

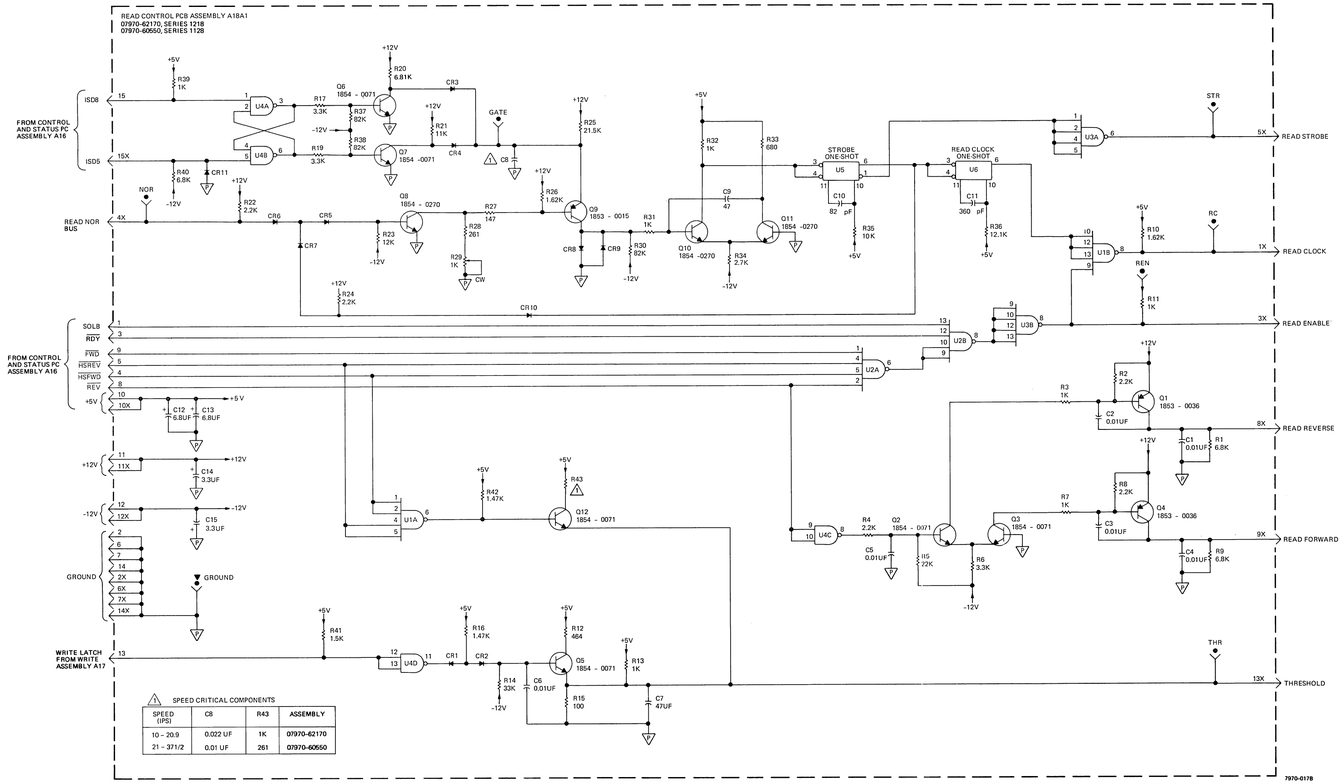


Figure 4-7. Read Control PC Assembly A18A1, Schematic Diagrams

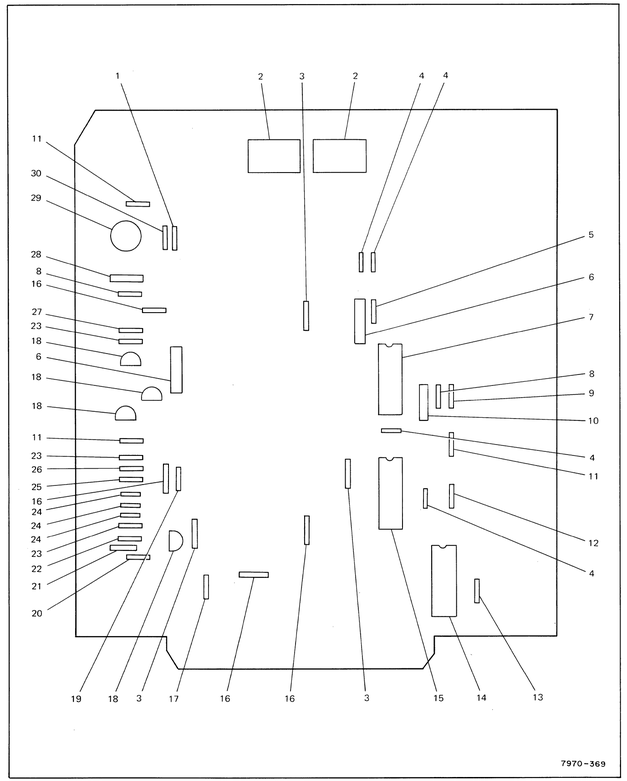


Figure 4-8. Single-Channel Read Data Assembly (10 - 20.9 IPS), Parts Location Diagram

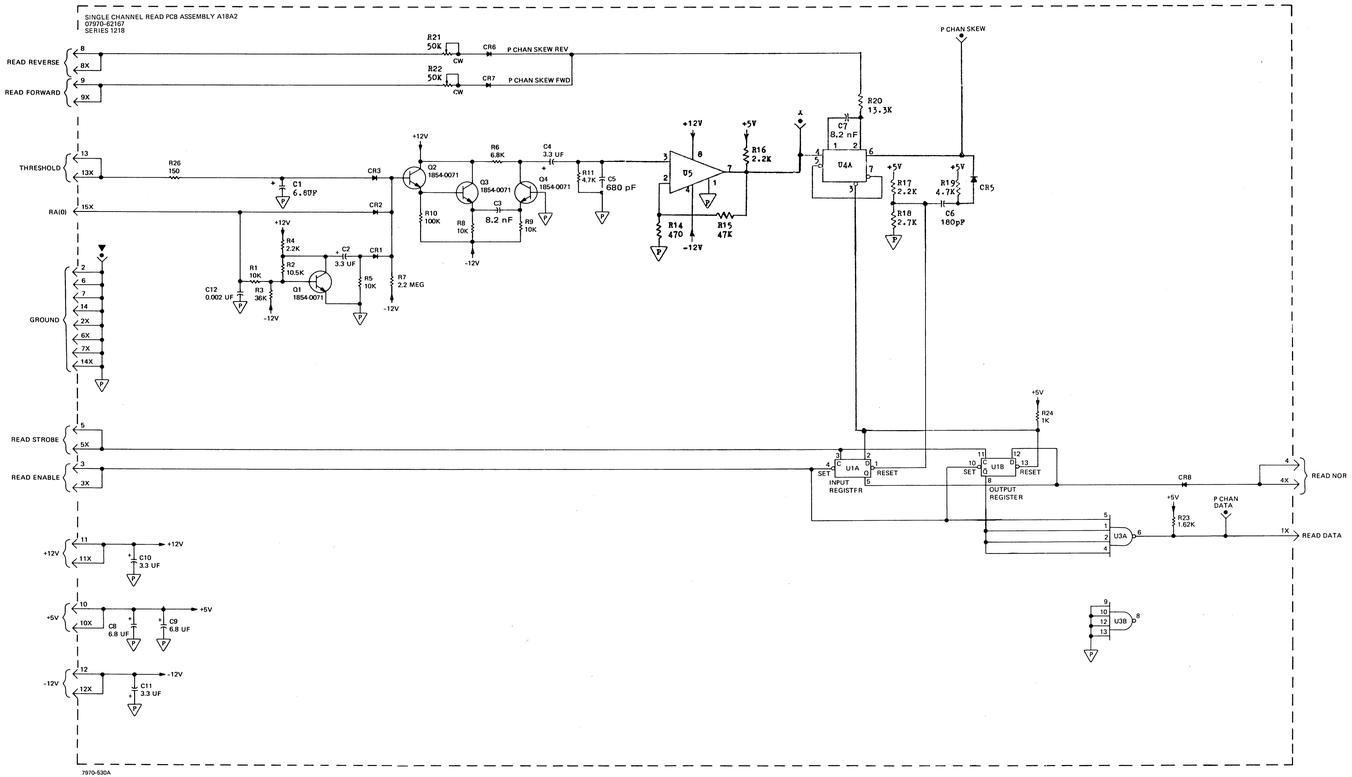


Figure 4-9. Single-Channel Read Data Assembly (10 - 20.9 IPS), Schematic Diagram

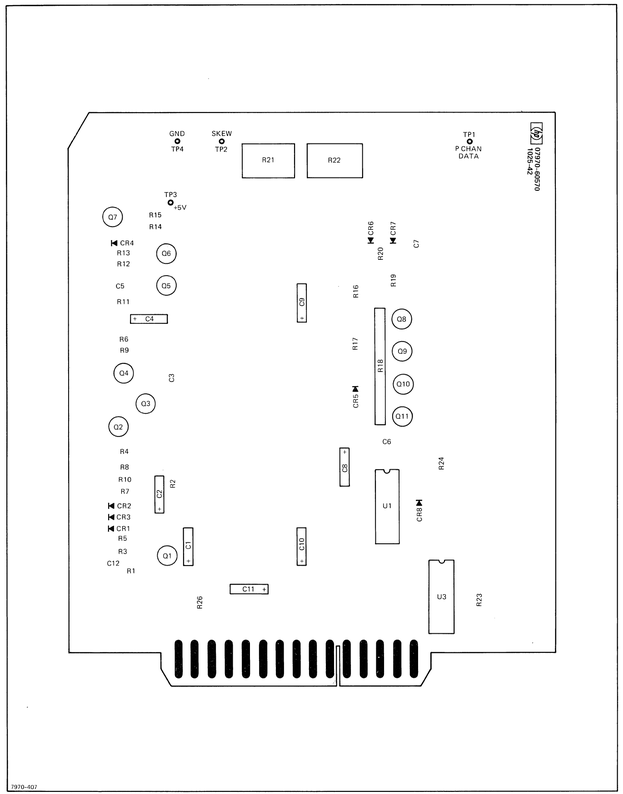


Figure 4-10. Single-Channel Read Data PC Assembly A18A2 (21 - 45 IPS), Parts Location Diagram

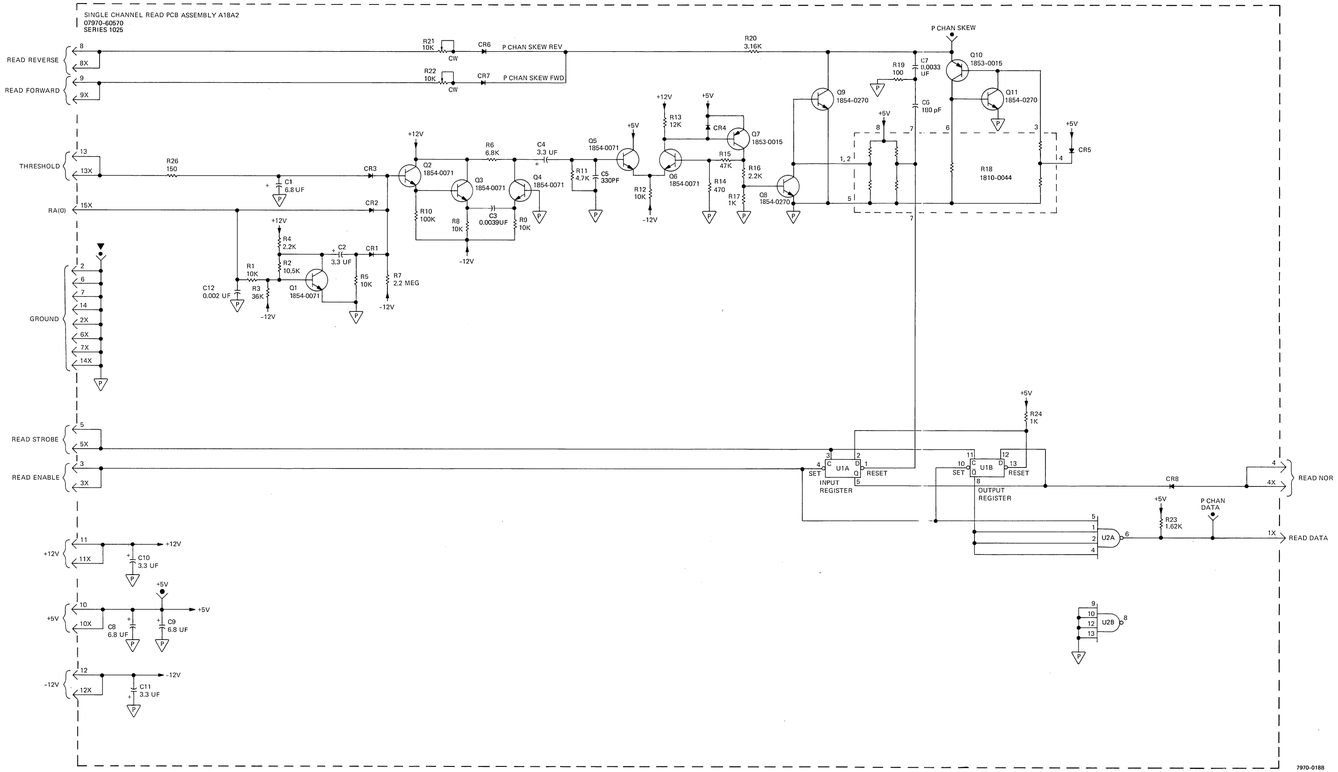


Figure 4-11. Single-Channel Read Data PC Assembly A18A2 (21 - 45 IPS), Schematic Diagram

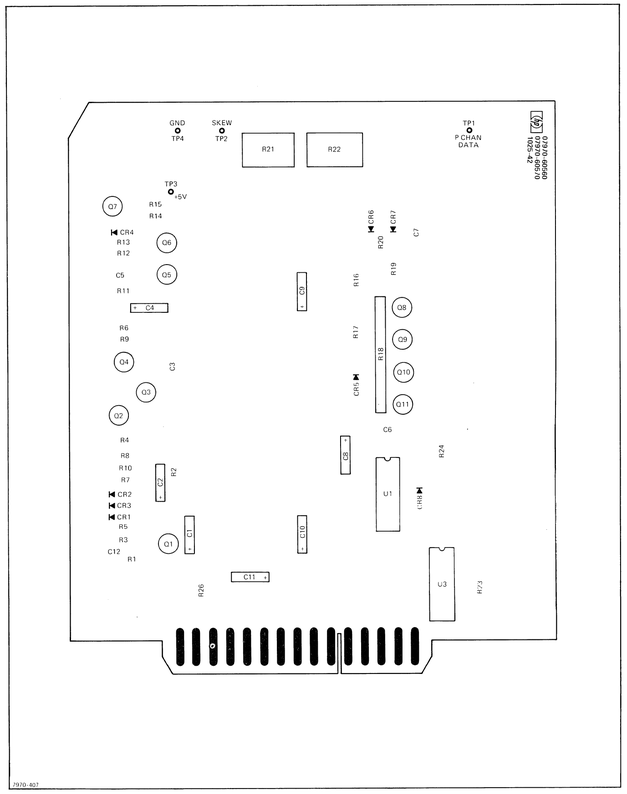


Figure 4-10. Single-Channel Read Data PC Assembly A18A2, Parts Location Diagram

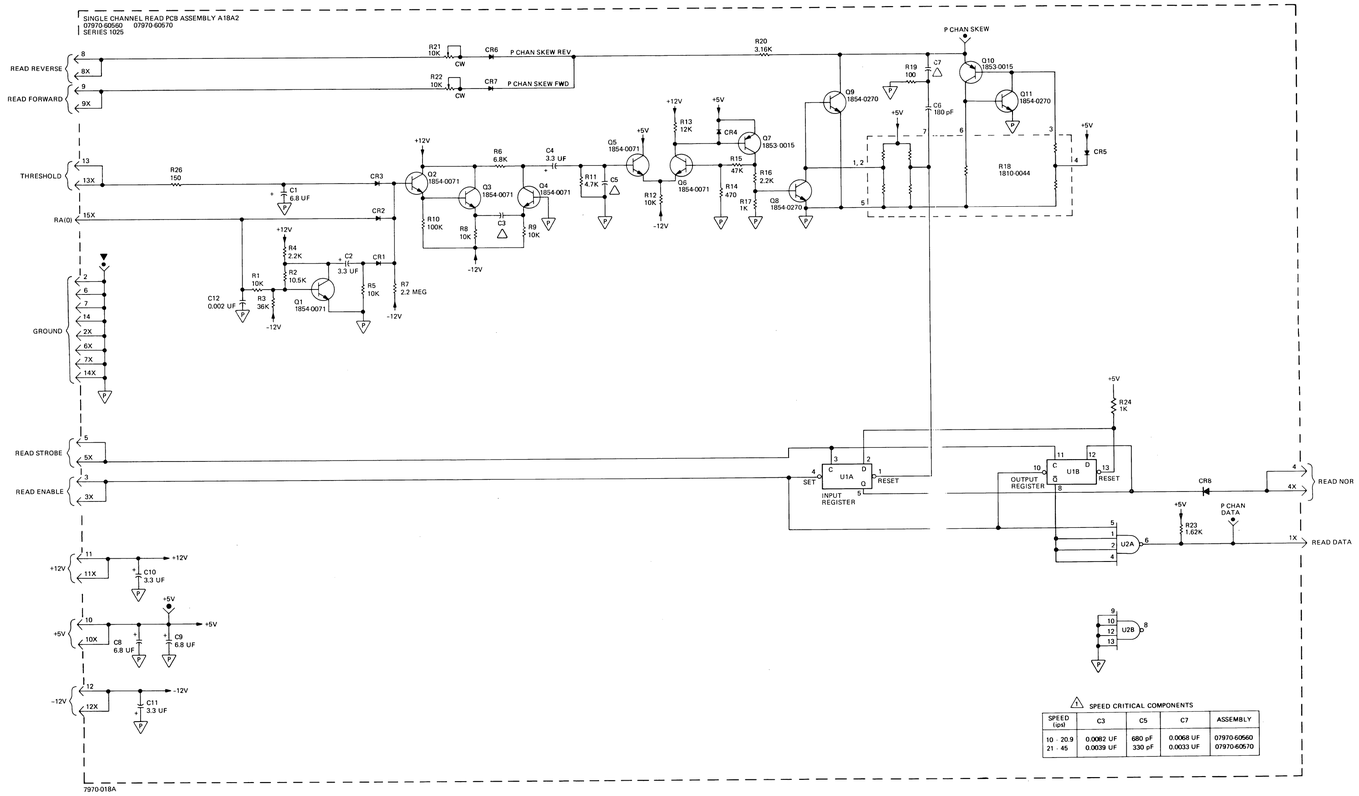


Figure 4-11. Single-Channel Read Data PC Assembly A18A2, Schematic Diagram

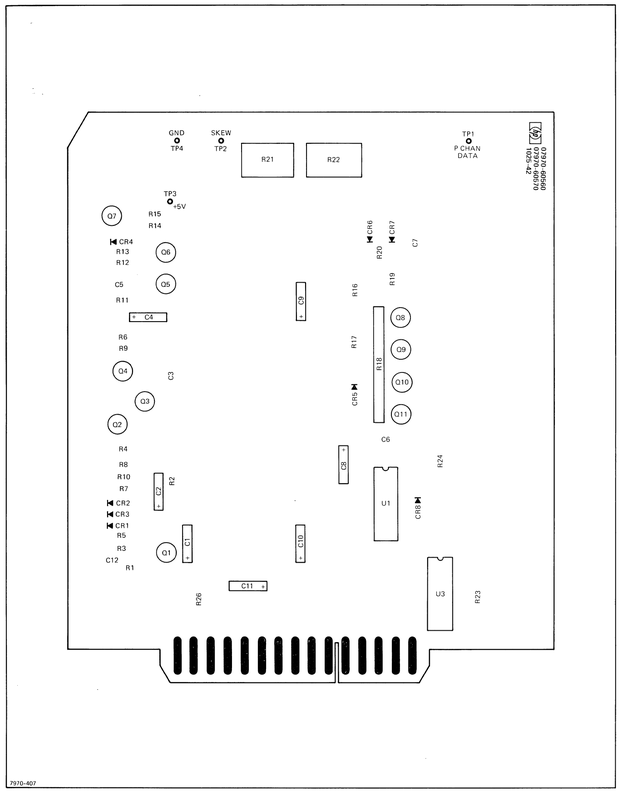
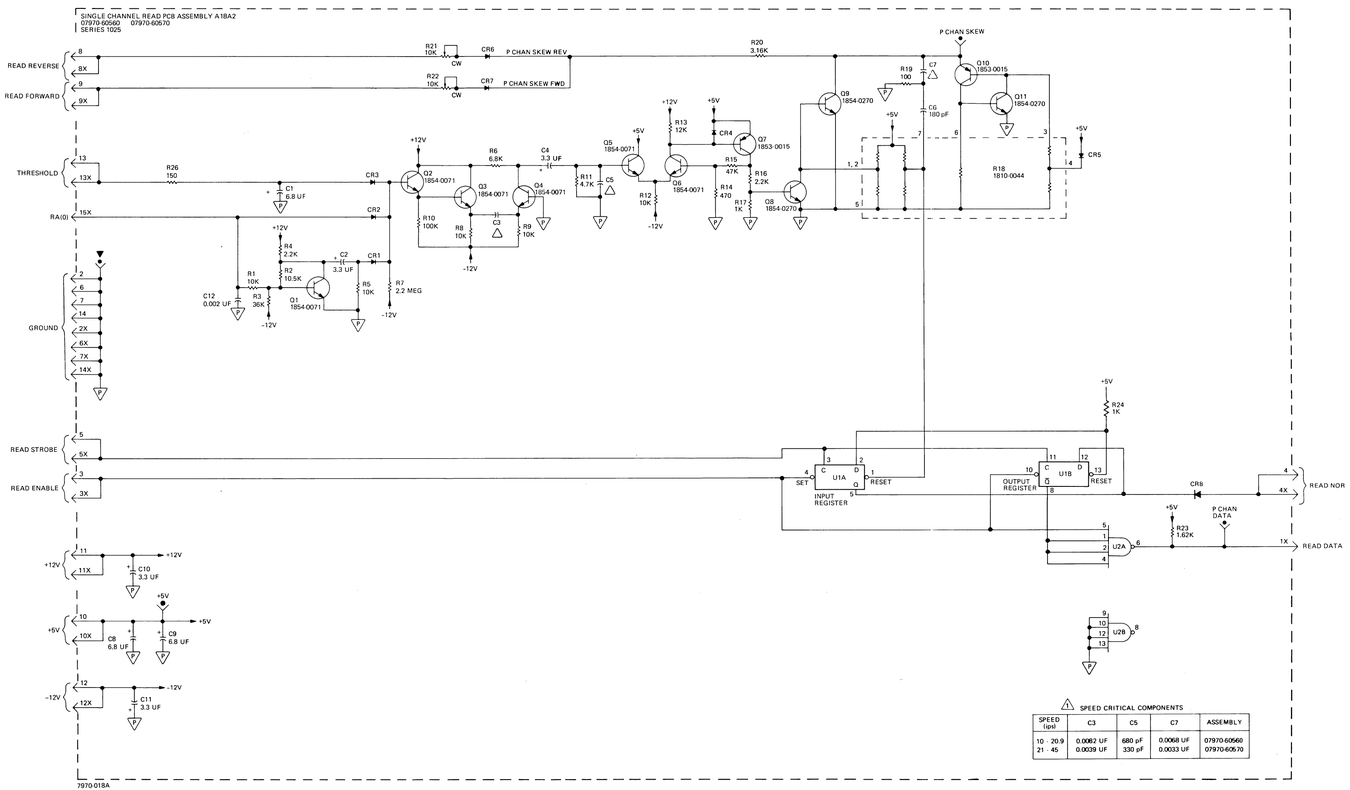


Figure 4-10. Single-Channel Read Data PC Assembly A18A2, Parts Location Diagram



⚠ SPEED CRITICAL COMPONENTS

SPEED (ips)	C3	C5	C7	ASSEMBLY
10 - 20.9	0.0082 UF	680 pF	0.0068 UF	07970-60560
21 - 45	0.0039 UF	330 pF	0.0033 UF	07970-60570

Figure 4-11. Single-Channel Read Data PC Assembly A18A2, Schematic Diagram

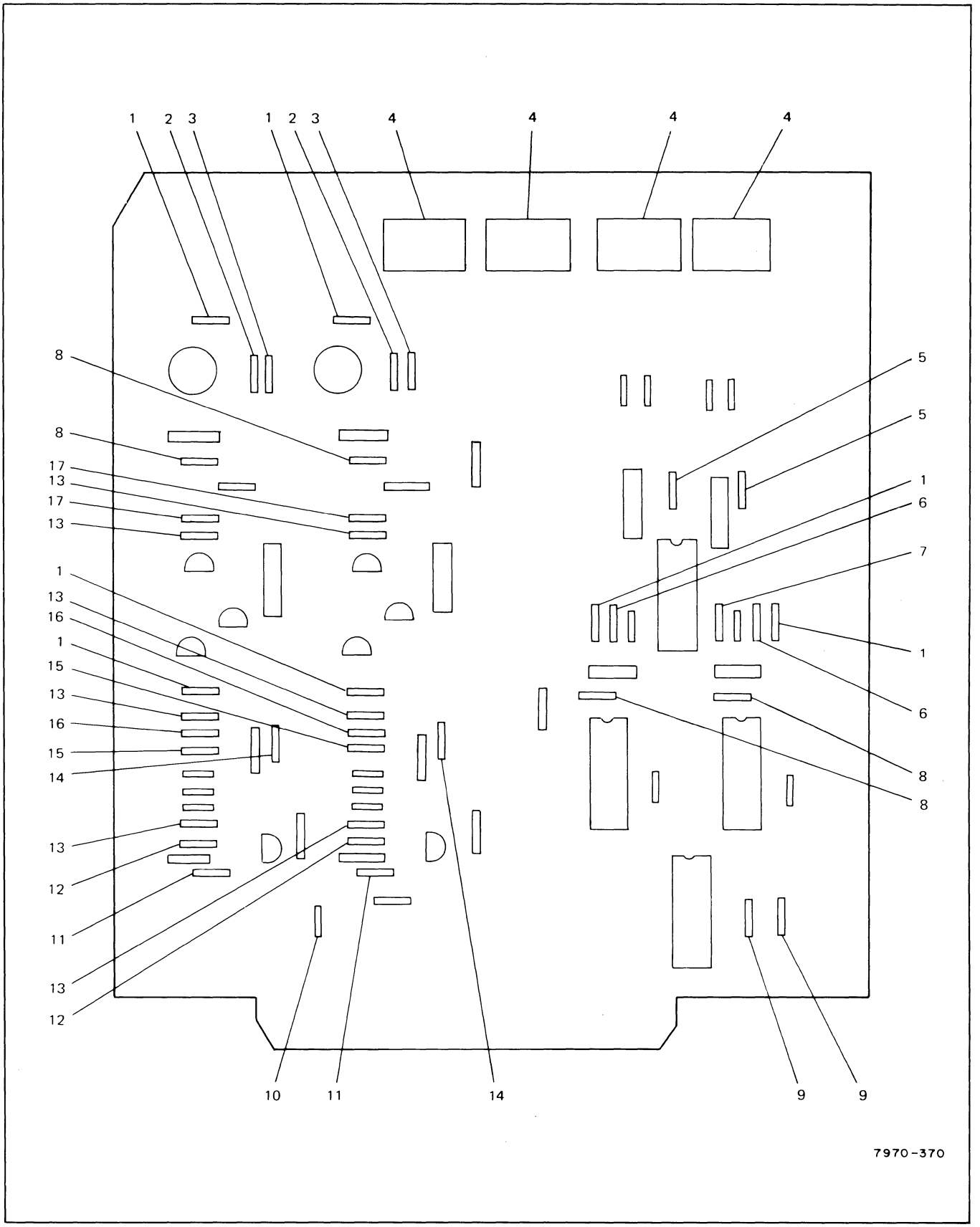


Figure 4-12. Dual-Channel Read Data Assembly (10 - 20.9 ips), Parts Location Diagram (Sheet 1 of 2)

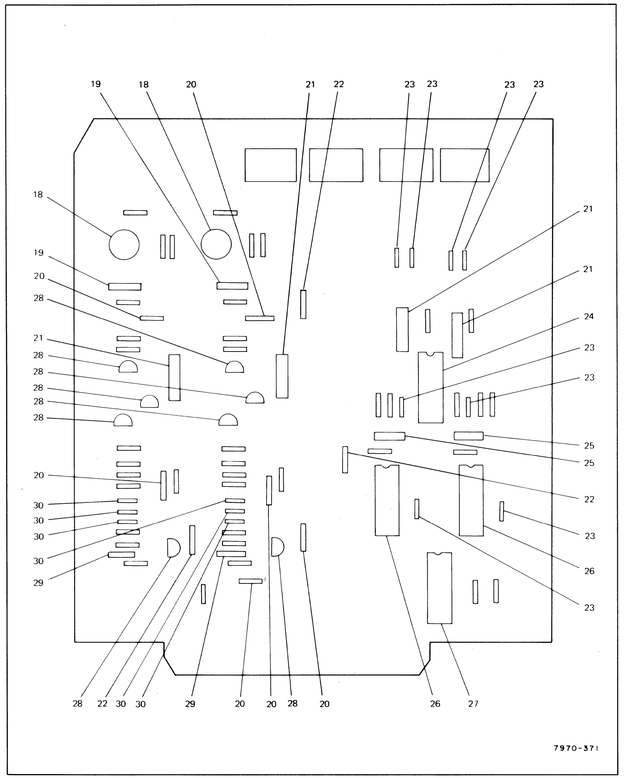


Figure 4-12. Dual-Channel Read Data Assembly (10 - 20.9 ips), Parts Location Diagram (Sheet 2 of 2)

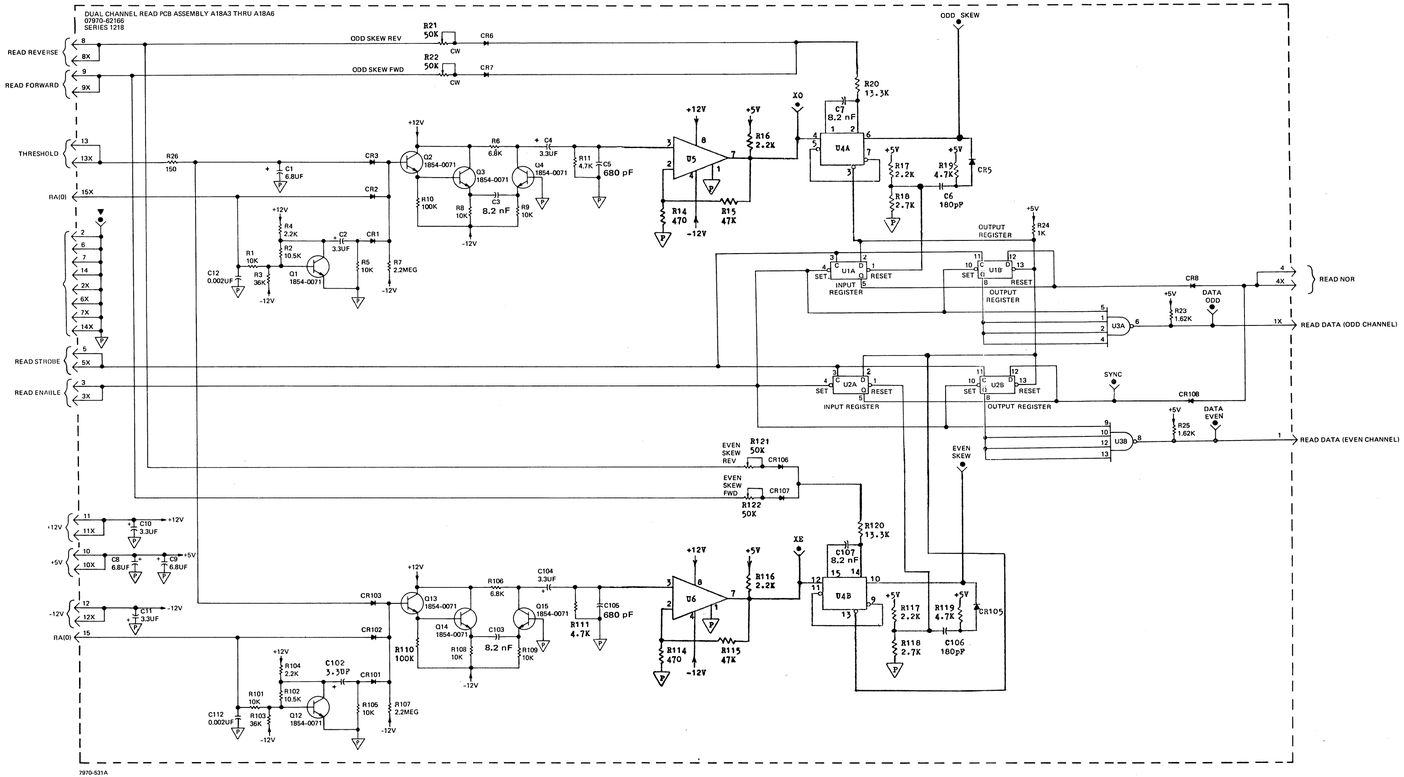


Figure 4-13. Dual-Channel Read Data Assembly (10 - 20.9 IPS), Schematic Diagram

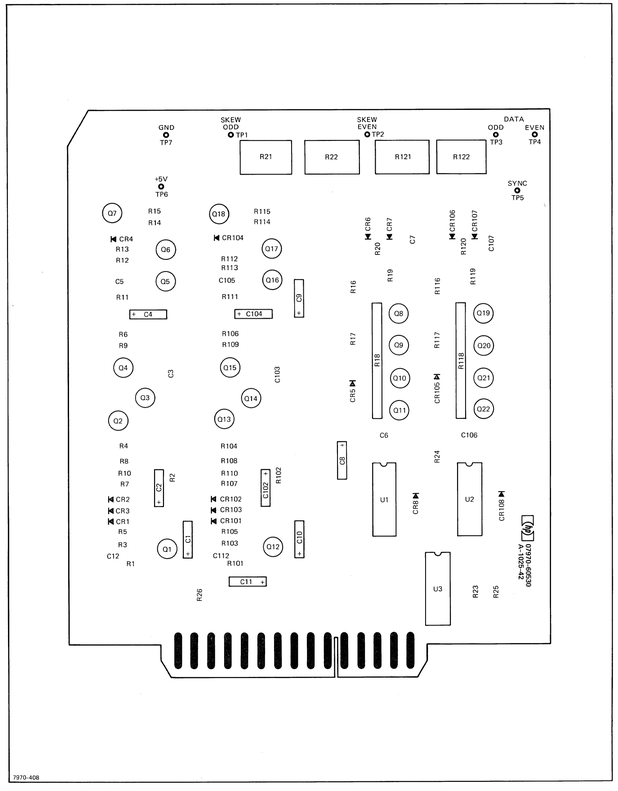


Figure 4-14. Dual-Channel Read Data PC Assembly (21 - 45 ips), Parts Location Diagram

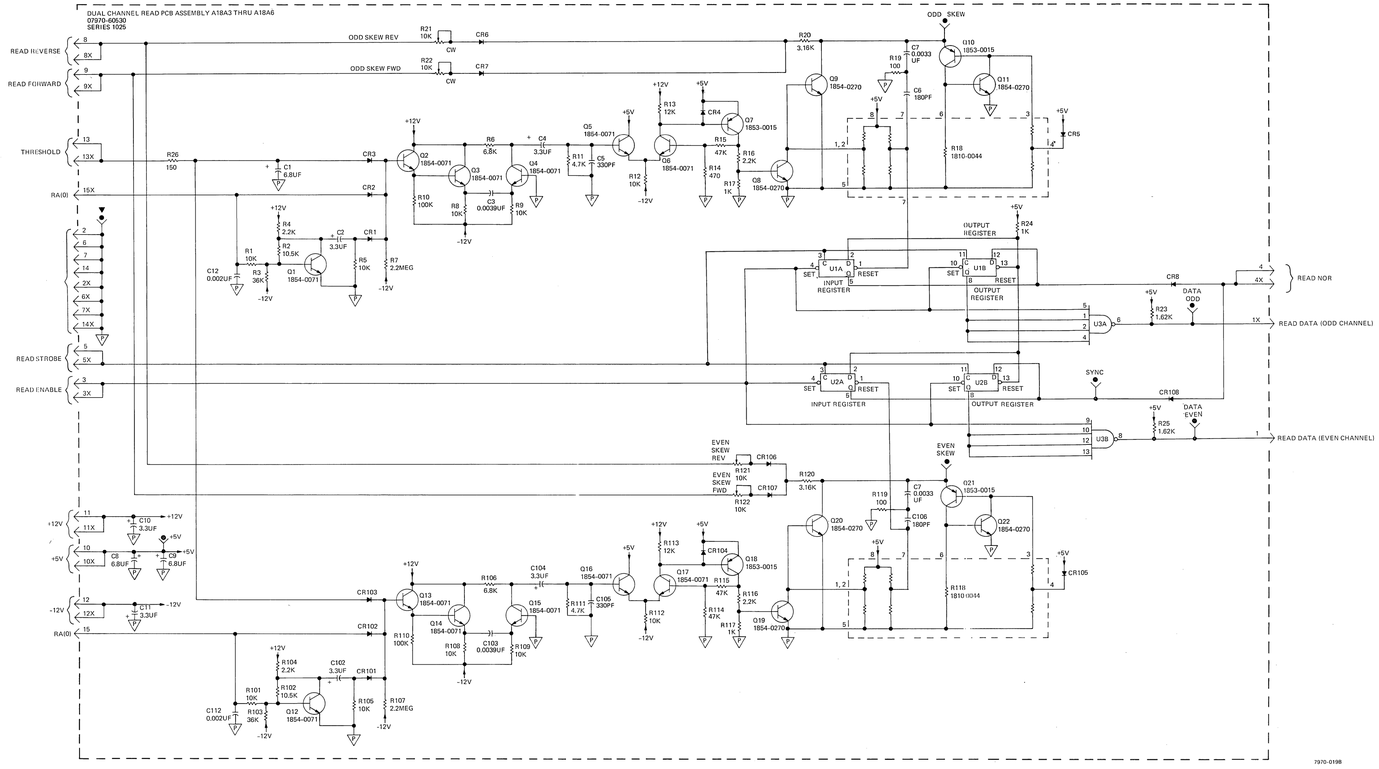


Figure 4-15. Dual-Channel Read Data PC Assembly (21 - 45 ips), Schematic Diagram

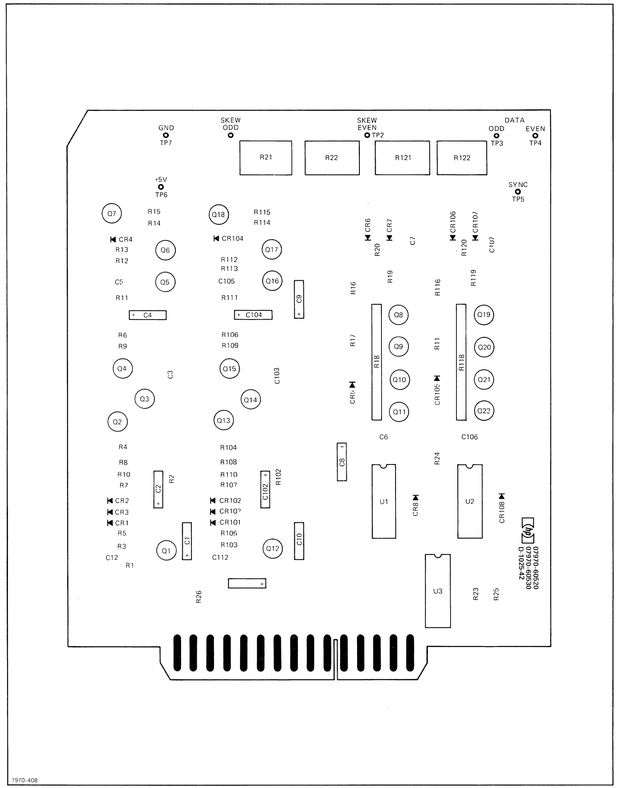


Figure 4-14. Dual-Channel Read Data PC Assembly A18A3 thru A18A6, Parts Location Diagram

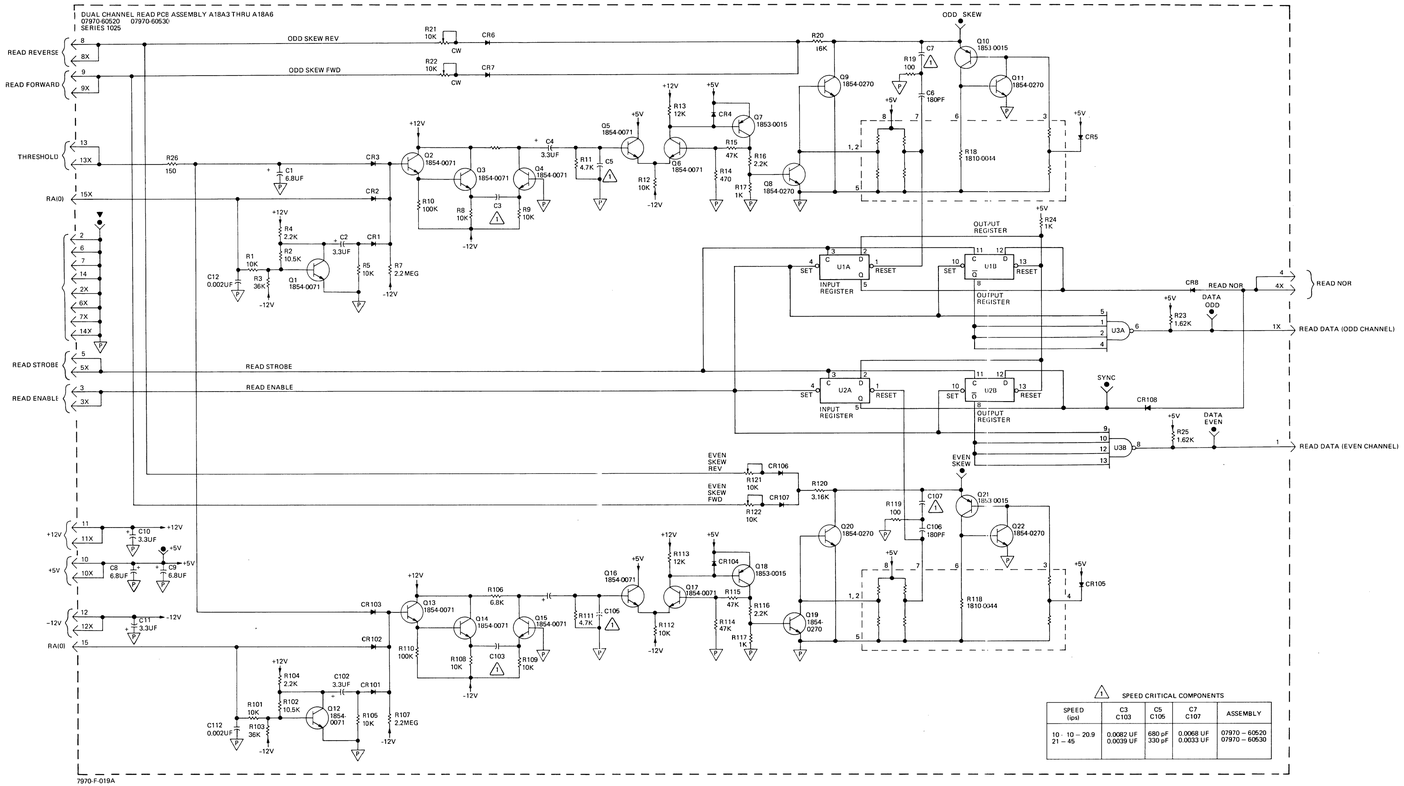


Figure 4-15. Dual-Channel Read Data PC Assembly A18A3 thru A18A6, Schematic Diagram