

APPENDIX A

BACKDATING INFORMATION

This backdating appendix makes the *7970B/C Digital Magnetic Tape Units Operating and Service Manual*, serial number prefix 1329, applicable to earlier units. Check the serial number prefix of the tape unit on hand and implement the required changes according to the unit changes listed in the table below.

UNIT CHANGES

SERIAL NO. PREFIX	CHANGE NO.	SERIAL NO. PREFIX	CHANGE NO.
1323	1, 2	1201	1 thru 65
1322	1 thru 4	1153	1 thru 69
1321, 1320	1 thru 11	1152	1 thru 75
1318	1 thru 14	1150	1 thru 76
1305, 1303, 1229	1 thru 15	1138	1 thru 77
1218	1 thru 17	1137	1 thru 83
1219	1 thru 51	1134	1 thru 86
1208, 1207	1 thru 57	1124	1 thru 88
1206	1 thru 61	1120	1 thru 89

ASSEMBLY CHANGES

REF DESIG	DESCRIPTION	HP PART NO.	SERIES	CHANGE NO.
A7	Reel Servo PCA	07970-62173	1323	1, 2
A21	Power Regulator PCA	07970-61010	1305	3, 4
A9	Capstan Servo PCA	07970-62172	1207	5 thru 11
A7	Reel Servo PCA	07970-62173	1320	12, 13, 14
A7	Reel Servo PCA	07970-62173	1219	12, 13, 14
A15	Read Preamplifier PCA	07970-60500	1218	15
A20A1	Power Distribution PCA	07970-61020	1137	16, 17
A16	Control and Status PCA	07970-61080	----	23
----	Door Interlock Switch	07970-61030	----	18, 21, 22
A18A1	Read Control PCA	07970-60550	1040	29, 30
A18A1	Read Control PCA	07970-62170	1040	29, 30, 35
A15	Read Preamplifier PCA	07970-60500	1201	27, 33, 34
A18A3 thru A18A6	Read Data PCA	07970-60530	1025	19, 24, 25, 26, 28, 31, 32, 38, 39, 42, 43, 44, 46, 47, 51

ASSEMBLY CHANGES (Continued)

REF DESIG	DESCRIPTION	HP PART NO.	SERIES	CHANGE NO.
A18A2	Read Data PCA	07970-60570	1025	19, 24, 25, 26, 28, 31, 37, 42, 43, 44, 45, 49
A18A2	Read Data PCA	07970-62167	----	19, 24, 25, 26, 28, 31, 36, 42, 43, 44, 45, 48
A18A3 thru A18A6	Read Data PCA	07970-62166	----	19, 24, 25, 26, 28, 31, 42, 43, 44, 45, 50
A14	Write Interconnect PCA	07970-62165 07970-60300	1035	21, 40, 41
A21	Power Regulator PCA	07970-61010	1138	55, 56
A7	Reel Servo PCA	07970-62024	1207	54, 57
----	Interface Connector, 48-pin	1251-0335	----	52, 53
A9	Capstan Servo PCA	07970-62023	1206	60, 61
A7	Reel Servo PCA	07970-62024	1206	58, 59
A21	Power Regulator PCA	07970-61010	1047	78 thru 83
A20	Power Distribution PCA	07970-61020	1120	84 thru 86
A17A1	Write Control PCA	07970-60240	1047	87, 88
A15	Read Preamplicifier PCA (21-45 ips)	07970-62000	1025	66 thru 69
A15	Read Preamplicifier PCA (10-20.9 ips)	07970-60500	1025	66 thru 69
A11	Control Switch Assembly	07970-62089	1148	62 thru 65
A10	Write Enable Assembly	07970-62122	----	70 thru 75

CHANGE

DESCRIPTION

- 1 Part 2, page 6-37. Change Q3 and Q7 part nos. from 1853-0323 (2N4900) to 1853-0328 (2N6211). Change Q4 and Q8 part nos. from 1854-0399 (2N4912) to 1854-0282 (2N3583).
- 2 Part 2, page 7-9, figure 7-7. Change PCA series no. from 1329 to 1320.
- 3 Part 2, page 7-3, figures 7-1 and 7-2.
 - a. Delete resistor A21R40 and diode A21CR14.
 - b. Change A21R8 and A21R19 to 5.1k.
 - c. Add connection between anode of A21CR7 and base of A21Q5; delete connection between A21Q5 base and cathode of A21CR8.
 - d. Add connection between cathode of A21CR8 and base of A21Q11; delete connection between A21Q11 base and anode of A21CR8.
 - e. Change PCA series no. from 1305 to 1138.

CHANGEDESCRIPTION

- 4 Part 2, pages 6-40 and 6-41.
- a. Change item 17 from 2.4k, part no. 0683-2425 to 5.1k, part no. 0683-5125.
 - b. Delete items 60 and 61.
- 5 Part 2, page 7-11. Replace figures 7-9 and 7-10 with figures 7-9 and 7-10 at the back of this appendix.
- 6 Part 2, section 6. Replace pages 6-31 through 6-34 with pages 6-31 through 6-34 at the back of this appendix.
- 7 Part 2, page 6-7. Change part no. of item 87 from 07970-62172 to 07970-62023.
- 8 Part 2, page 2-6. Replace paragraph 2-49 with the following:
- 2-49. When power is removed or tape tension is lost, the return from the capstan motor to the current sense resistor is opened by a relay located on the reel servo printed-circuit assembly.
- 9 Part 2, page 2-5, figure 2-4. Delete switch Q20 circuit.
- 10 Part 2, page 2-4. Replace figure 2-3 with figure 2-3 at the back of this appendix.
- 11 Part 2, page 2-3, Replace paragraph 2-25 with the following:
- 2-25. At initial power-on, the reel servo and capstan servo circuits are disabled and tension limit switch circuits are open. The normally closed contacts of the LOAD switch prevent the relay driver (Q13) located on the reel servo PCA from conducting. (See figure 2-3.) When the LOAD switch is pressed, the +5 volts through R9 and R103 forward bias Q13 and energizes relay K1. This enables the reel and capstan servo circuits. As tension is established, the tension limit switches provide +5 volts through R15 to keep Q13 conducting. The +5 volts from the limit switches also forward bias Q4 to generate the Tension signal. When tape tension is lost, Q4 is reverse biased and all control and status control flip-flops except Rewind (U6B) are cleared. Rewind flip-flop U6B is operated in an inverted mode (the flip-flop is cleared to initiate rewind).
- 12 Part 2, page 6-8. Change item 93 part no. 07970-62173 to 07970-62024.
- 13 Part 2, page 7-9. Replace figures 7-7 and 7-8 with figures 7-7 and 7-8 at the back of this appendix.
- 14 Part 2, pages 6-35, 6-36, and 6-37/6-38. Replace pages 6-35, 6-36, and 6-37/6-38 with pages 6-35, 6-36, 6-37, and 6-38 at the back of this appendix.
- 15 Part 3, page 3-5. Change item 5 part no. from 0160-0911 to 0160-0157.
- Part 3, page 4-5, figures 4-3 and 4-4. Change PCA series no. from 1318 to 1201.
- Part 2, page 7-5. In figure 7-4, delete connection between A11J3 pin 3 and A11J3 pin 6. In figures 7-3 and 7-4, change PCA series no. to 1303.

<u>CHANGE</u>	<u>DESCRIPTION</u>
16	Part 2, page 7-3, figures 7-1 and 7-2. Delete diodes CR8 and CR9 and change PCA series no. from 1229 to 1137.
17	Part 2, pages 6-44 and 6-45. Delete item 22 (CR8, CR9).
18	Part 5, page 4-17. <ol style="list-style-type: none">In figure 4-14, delete reference to 21-45 ips tape speed and add 07970-60520 to PCA.Replace figure 4-15 with figure 4-15 at the back of this appendix.
19	Part 5, page 4-15. Delete figures 4-12 and 4-13.
20	Part 5, page 4-13. <ol style="list-style-type: none">In figure 4-10, delete reference to 21-45 ips tape speed and add part no. 07970-60560 to PCA.Replace figure 4-11 with figure 4-11 at the back of this appendix.
21	Part 5, page 4-11. Delete figures 4-8 and 4-9.
22	Part 5, page 3-23. <ol style="list-style-type: none">Add to index no. 3-6: 07970-60520, Read Data PC Assembly A18A3 thru A18A6, dual-channel, 10-20.9 ips.Add to existing item 24: used only on 07970-60530.Add under item 24: 0160-0159, Capacitor, fxd, 0.0068 μF, 10% (C7, C107) (used only on 07970-60520).Add to existing item 31: used only on 07970-60530.Add to item 31: 0160-0160, Capacitor, fxd, 0.0082 μF, 10% (C3, C103) (used only on 07970-60520).
23	Part 5, pages 3-21 and 3-22. Delete reference to 21-45 ips tape speed.
24	Part 5, section 5. <ol style="list-style-type: none">Replace page 3-12 with page 3-12 at the back of this appendix.Replace page 3-13 with page 3-13 at the back of this appendix.Delete pages 3-14, 3-15/3-16, 3-17, 3-18 and 3-19/3-20.
25	Part 5, page 3-7. <ol style="list-style-type: none">Item 17: Replace reference to figures 3-5 and 3-6 with "figure 3-5."Item 18: Replace reference to figures 3-7 and 3-8 with "figure 3-6."
26	Part 5, page 2-4. Replace figure 2-1 with figure 2-1 at the back of this appendix.
27	Part 5, page 1-3. <ol style="list-style-type: none">Replace figure 1-3 with figure 1-3 at the back of this appendix.In paragraph 1-28 delete reference to high gain amplifier and all tape speed qualifications.
28	Part 4, page 4-5, figure 4-3. Change figure 4-3 as shown in figure 4-3 at the back of this appendix.

<u>CHANGE</u>	<u>DESCRIPTION</u>
29	Part 4, page 3-5. Replace figure 3-2 with figure 3-2 at the back of this appendix.
30	Part 3, page 4-17. <ul style="list-style-type: none"> a. In figure 4-14, delete reference to 21-45 ips tape speed and add part no. 07970-60520 to the PCA. b. Replace figure 4-15 with figure 4-15 at the back of this appendix.
31	Part 3, page 4-15. Delete figures 4-12 and 4-13.
32	Part 3, page 4-13. <ul style="list-style-type: none"> a. In figure 4-10, delete reference to 21-45 ips tape speed and add part no. 07970-60560 to the PCA. b. Replace figure 4-11 with figure 4-11 at the back of this appendix.
33	Part 3, page 4-11. Delete figures 4-8 and 4-9.
34	Part 3, page 4-9. <ul style="list-style-type: none"> a. In figure 4-6, change PCA part no. from 07970-62170 to 07970-60540. b. Replace figure 4-7 with figure 4-7 at the back of this appendix.
35	Part 3, page 4-5, figure 4-4. Replace figure 4-4 with figure 4-4 at the back of this appendix.
36	Part 3, page 4-5, figure 4-3. Add series no. A-1201-42.
37	Part 3, page 3-23. <ul style="list-style-type: none"> a. Add to assembly description: "(07970-60520, 10-20.9 ips)". b. Add second entry to item 24 as follows: 0160-0159, Capacitor, fxd, 0.0068 μF (C7, C107) (used on 07970-60520 only). c. Add second entry to item 31 as follows: 0160-0160, Capacitor, fxd, 0.0082 μF (C3, C103) (used on 07970-60530 only).
38	Part 3, section 3. <ul style="list-style-type: none"> a. Delete pages 3-13 through 3-15, and 3-17 through 3-19. b. On pages 3-21 and 3-22 delete: "21-45 ips".
39	Part 3, page 3-11, item 29. Change tape speed references as follows: "10-20.9 ips" to "used only on 07970-60540"; "21-45 ips" to "used only on 07970-60550".
40	Part 3, page 3-11. <ul style="list-style-type: none"> a. Change assembly part no. 07970-62170 to 07970-60540. b. Change item 4 to read: 0698-3132, Resistor, fxd, 261 ohms, 1%, 1/8W (R28, R43).
41	Part 3, page 3-7. <ul style="list-style-type: none"> a. Change item 17 reference to read: figure 3-5. b. Change item 18 reference to read: figure 3-6.
42	Part 3, page 3-5. Replace page 3-5 with page 3-5 at the back of this appendix.

<u>CHANGE</u>	<u>DESCRIPTION</u>
43	Part 3, page 2-4. Replace figure 2-1 with figure 2-1 at the back of this appendix.
44	Part 3, page 1-4, paragraph 1-6. Delete reference to high gain amplifier and the tape speed intervals.
45	Part 3, page 1-2, figure 1-1. Replace figure 1-1 with figure 1-1 at the back of this appendix.
46	Part 2, page 7-7, figure 7-6. <ol style="list-style-type: none">Add line between J5 pin 9 and J3 pin 1; label the line "PSL".Add, in the upper left corner of the PC assembly, part no. 07970-62062, series 1109.
47	Part 2, page 6-8. Delete items 129 through 134.
48	Part 2, page 6-7, item 74. Change item 74 to read: WRITE INTERCONNECT ASSEMBLY A14, part no. 07970-60300.
49	Part 2, page 6-3, figure 6-1. Delete items 129 through 134.
50	Part 1, page 2-12, figure 2-6. Replace figure 2-6 with figure 2-6 at the back of this appendix.
51	Part 1, page 1-1, table 1-2. Delete option 016.
52	Part 2, page 7-9, figure 7-8. <ol style="list-style-type: none">Change resistors A7R49 and A7R52 to 10k.Change resistor A7R50 to 21.5k.Change series no. of Reel Servo PC Assembly to 1102.
53	Part 2, page 7-3. <ol style="list-style-type: none">Change resistor A21R37 to 21.5k.Change resistor A21R38 to 19.6k.Change series no. of Power Regulator PC Assembly to 1138.
54	Part 2, page 6-41. <ol style="list-style-type: none">Change item 48 to 0757-0199, 21.5k.Change item 49 to 0698-3157, 19.6k.
55	Part 2, page 6-37. <ol style="list-style-type: none">Change item 10 to 0757-0442, 10k.Change item 18 to 0757-0199, 21.5k.
56	Part 1, page 2-9. Delete item 7 from the cable connector diagram.
57	Part 1, page 2-9, figure 2-2. Change the cable-and-connector-parts table as follows: <ol style="list-style-type: none">Change part number of 48-pin connector to 1251-0335.Change part number of setscrew to 3030-0143.Delete item 7, polarizing key entry.
58	Part 2, page 7-9, figures 7-7 and 7-8. Change series no. of Reel Servo PC Assembly to 1206.

CHANGE

DESCRIPTION

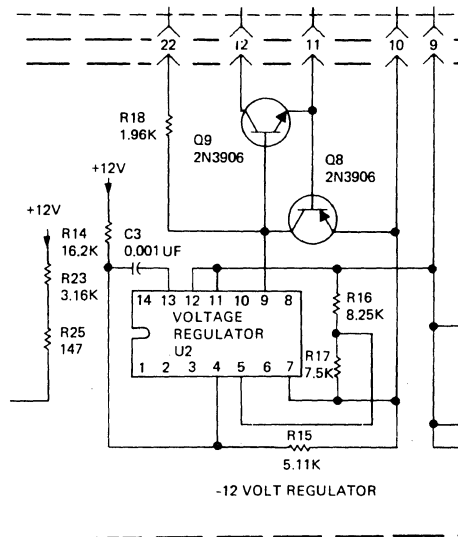
- 59 Part 2, page 6-37. Delete items 47 and 48.
- 60 Part 2, page 7-11, figures 7-9 and 7-10. Change series no. of Capstan Servo PC assembly to 1206.
- 61 Part 2, page 6-34. Delete items 70 and 71.
- 62 Part 2, title page, change series number of printed-circuit assembly 07970-62089 to 1148.
- 63 Part 2, page 6-18, figure 6-7, sheet 2. Delete sheet 2 of figure 6-7 and replace with figure 6-7, sheet 2 attached to this appendix.
- 64 Part 2, page 6-19. Delete page 6-19 and replace with 6-19 attached to this appendix.
- 65 Part 2, page 7-5/7-6, figures 7-3 and 7-4. Delete Q6, R13, R12, and C1 from schematic and parts location diagram of control switch assembly A11. Change series number of assembly to 1148.
- 66 Part 3, title page. Change series numbers of printed-circuit assemblies 07970-60500 and 07970-62000 to 1025.
- 67 Part 3, page 3-4, figure 3-2. Delete figure 3-2 and replace with figure 3-2 (sheet 1 of 2) and figure 3-2 (sheet 2 of 2), pages 3-4 and 3-4A attached to this appendix.
- 68 Part 3, page 3-5. Delete page 3-5 and replace with page 3-5 attached to this appendix.
- 69 Part 3, page 4-5/4-6, figures 4-3 and 4-4. Delete page 4-5/4-6 and replace with page 4-5/4-6 attached to this appendix.
- 70 Part 2, page 5-2, paragraph 4-16. Change step "c" as follows:
 Tighten switch S1 mounting screws and loosen switch S2 mounting screws. Manually re-track the sensing finger approximately 1/8-inch from the face of the turntable. With power removed, adjust the position of S2 until an audible click indicates that the switch has closed.
- 71 Part 2, page 5-3, figure 5-2. Delete figure 5-2 and replace with figure 5-2 attached to this appendix.
- 72 Part 2, page 6-6. Change part number of item -36 to 07970-62022.
- 73 Part 4, page 3-2, figure 3-1. Delete figure 3-1 and replace with figure 3-1 attached to this appendix.
- 74 Part 4, page 3-3/3-4. Delete page 3-3/3-4 and replace with page 3-3/3-4 attached to this appendix.
- 75 Part 4, page 4-3/4-4. Change part number of write enable assembly A10 to 07970-62022.
- 76 Part 2, page 6-6. Delete items 46 through 53 and replace with the following:

-46	07970-00120	. BRACKET, limit switch, upper	1
-47	0380-0016	. SPACER (AP)	1
-48	3050-0002	. WASHER, flat (AP)	1
-49	2190-0034	. WASHER, lock, helical (AP)	2
-50	2680-0099	. SCREW, no. 10-32, 0.375-inch, pozi (AP)	1
-51	2680-0103	. SCREW, no. 6-32, 0.5-inch, pozi (AP)	1
-52	0403-0163	. BUMPER, stop (AP)	1
-53	Deleted		

CHANGE

DESCRIPTION

- 77 Cover door assembly, part number 07970-60160, on serial number prefix 1138 and earlier are fabricated. Cover door assembly on serial number prefix 1150 and later are cast. Assemblies are interchangeable.
- 78 Part 2, title page. Change series of printed-circuit assembly 07970-61010 to 1047.
- 79 Part 2, page 6-39, figure 6-14. Delete figure 6-14 and replace with figure 6-14 attached to this appendix.
- 80 Part 2, page 6-40. Delete page 6-40 and replace with page 6-40 attached to this appendix.
- 81 Part 2, page 6-41. Delete page 6-41 and replace with page 6-41 attached to this supplement.
- 82 Part 2, page 7-3/7-4, figure 7-1, power regulator parts location diagram. Delete CR15, CR16, and CR17. Add R17 between R15 and U2.
- 83 Part 2, page 7-3/7-4, figure 7-2, power regulator PC assembly schematic diagram. Change series number of assembly to 1047. Change -12 volt regulator circuit as follows:



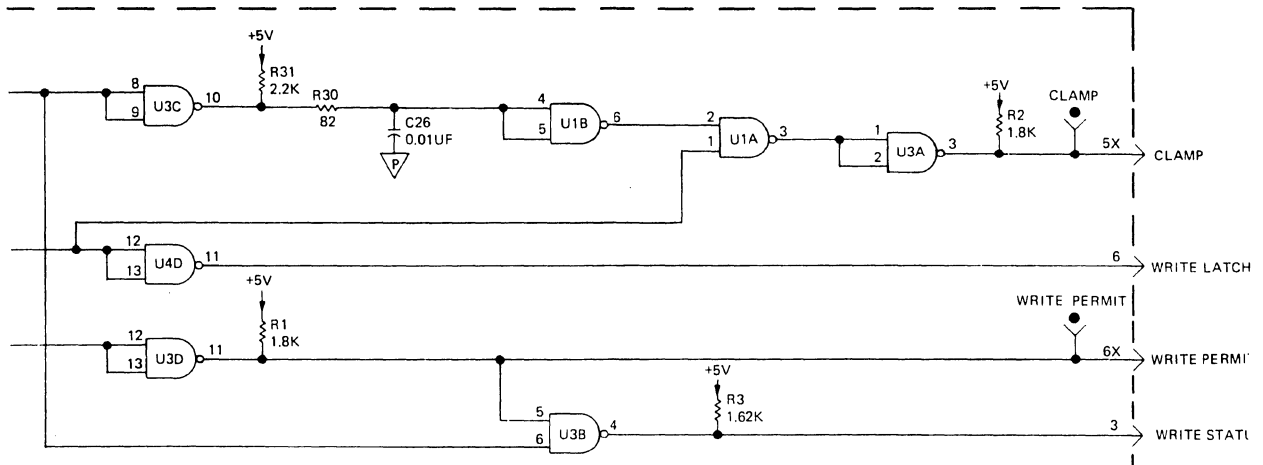
- 84 Part 2, title page. Change series number of printed-circuit assembly 07970-61020 to 1120.
- 85 Part 2, page 6-45. Change part number of item 11 to 0188-1665. Change value of item 11 to 0.82Ω.
- 86 Part 2, page 7-3/7-4, figure 7-2, power distribution PC assembly schematic diagram. Change value of R9 to 0.82Ω.
- 87 Part 4, title page. Change series number of printed-circuit assembly 07970-60240 to 1047.

CHANGE

DESCRIPTION

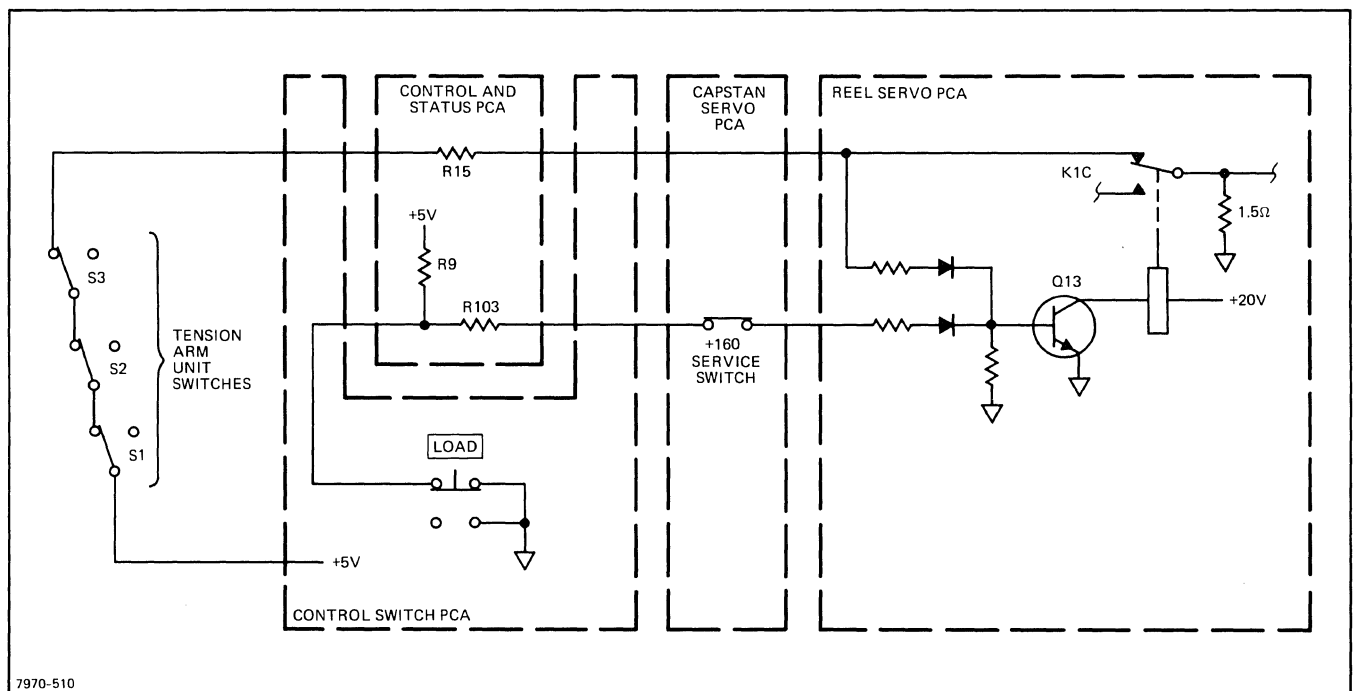
88

Part 4, page 4-7/4-8, figure 4-5. Change series number of assembly to 1047. Change write latch circuit as shown below.



89

Part 2, page 6-8. Change part number of item -97 to 1390-0174.



7970-510

Figure 2-3. Tension Circuit, Simplified Diagram

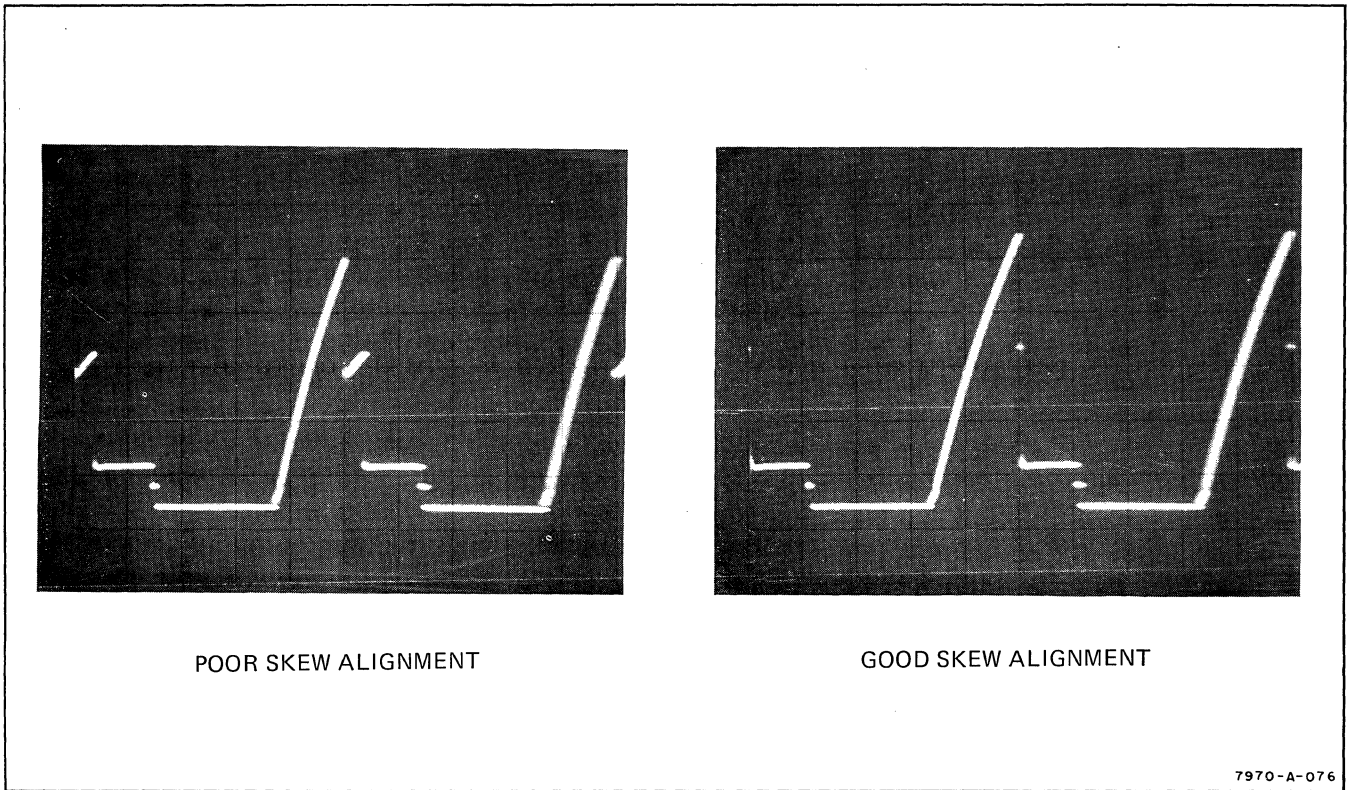


Figure 2-1. Skew Alignment Waveforms

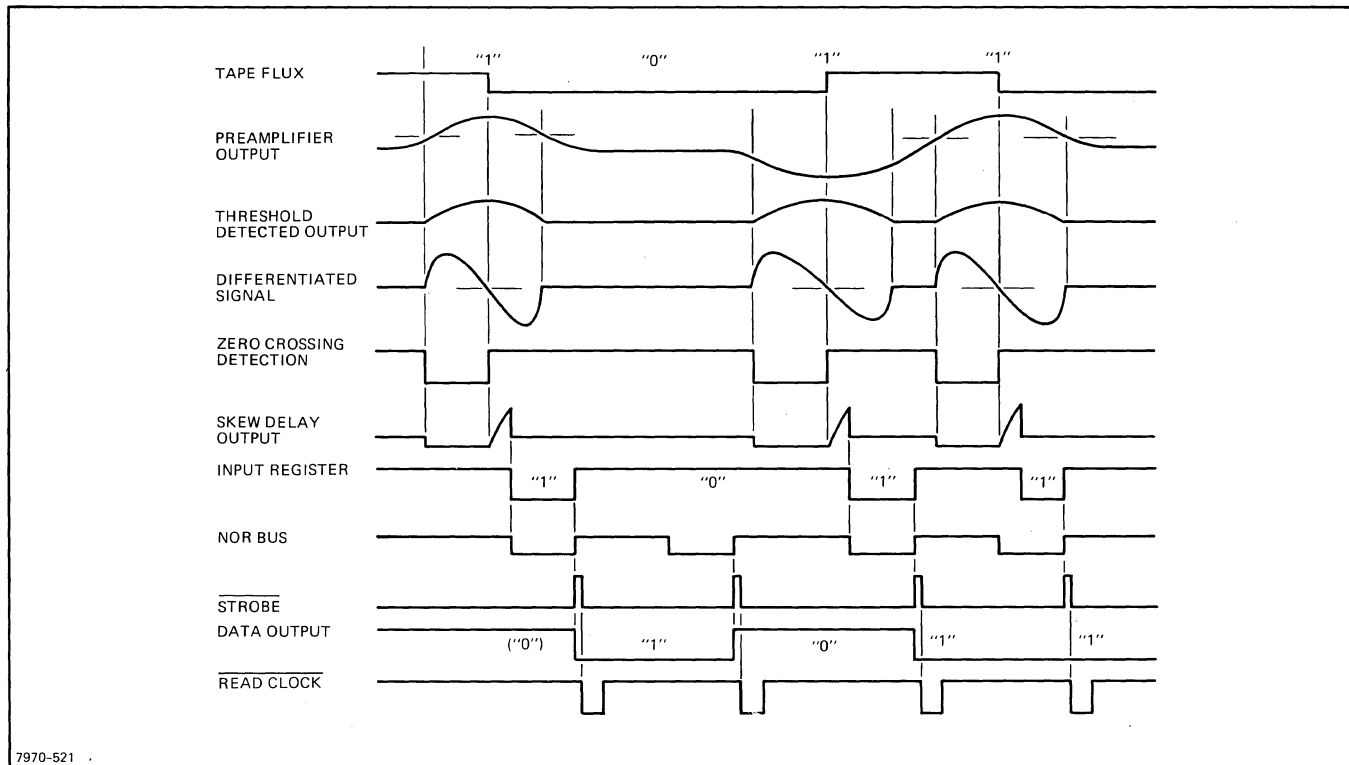


Figure 1-3. Read Data Circuits, Timing Diagram

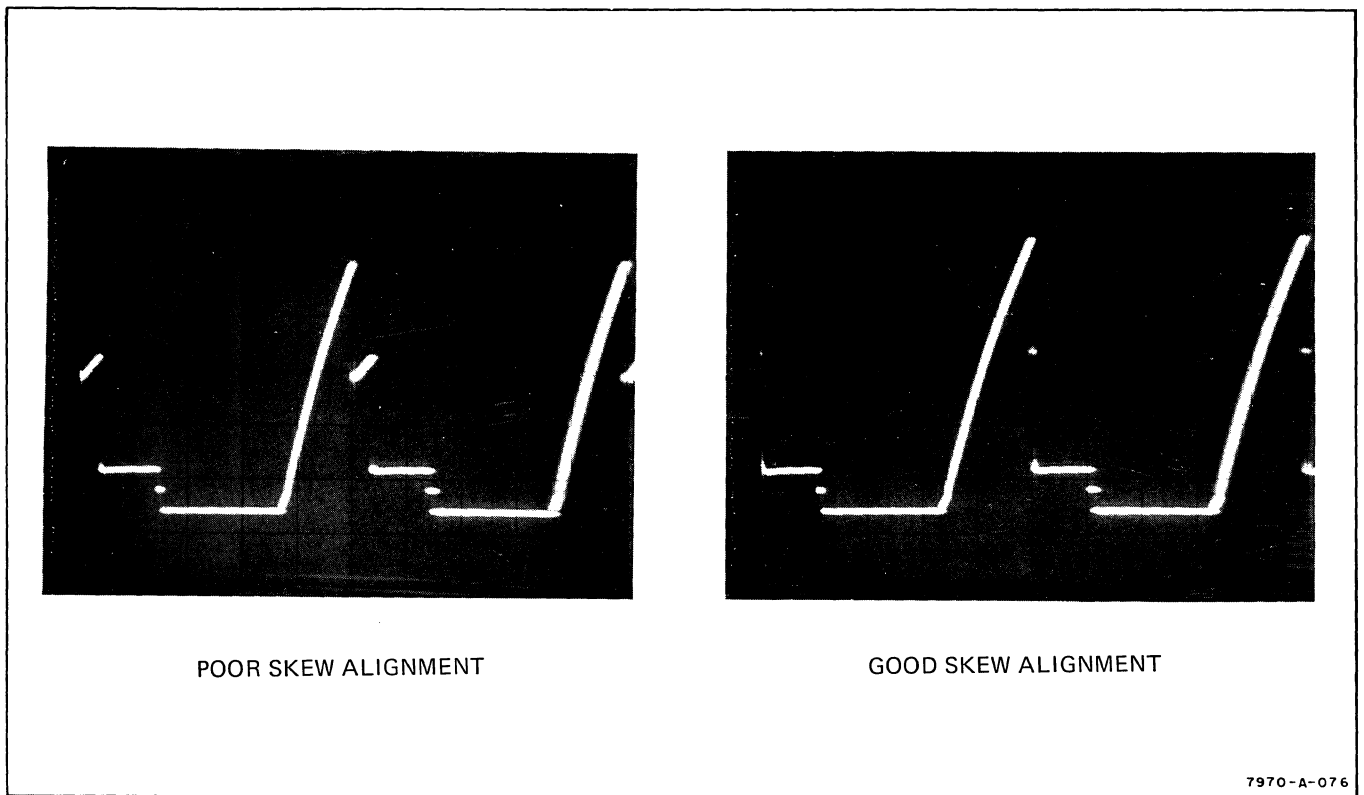


Figure 2-1. Skew Alignment Waveforms

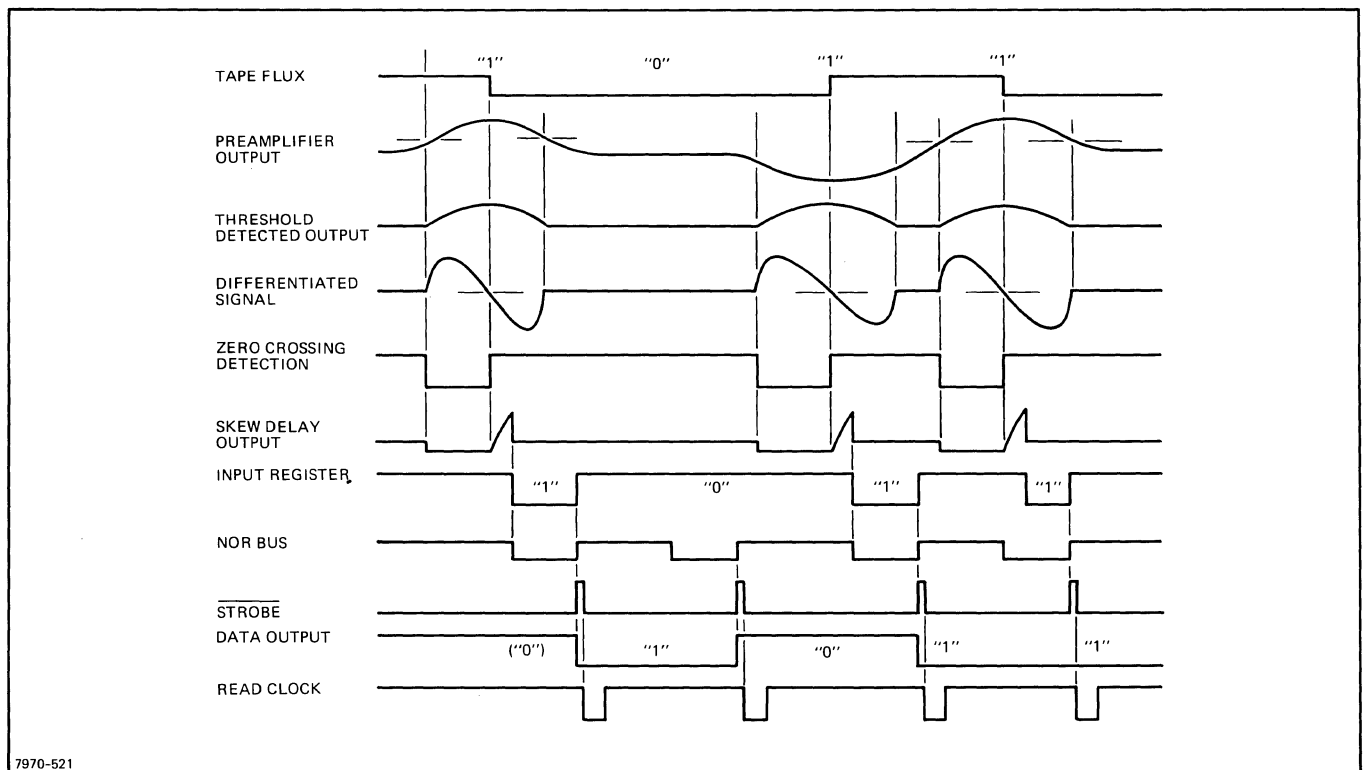


Figure 1-1. Read Data Circuits Timing Diagram

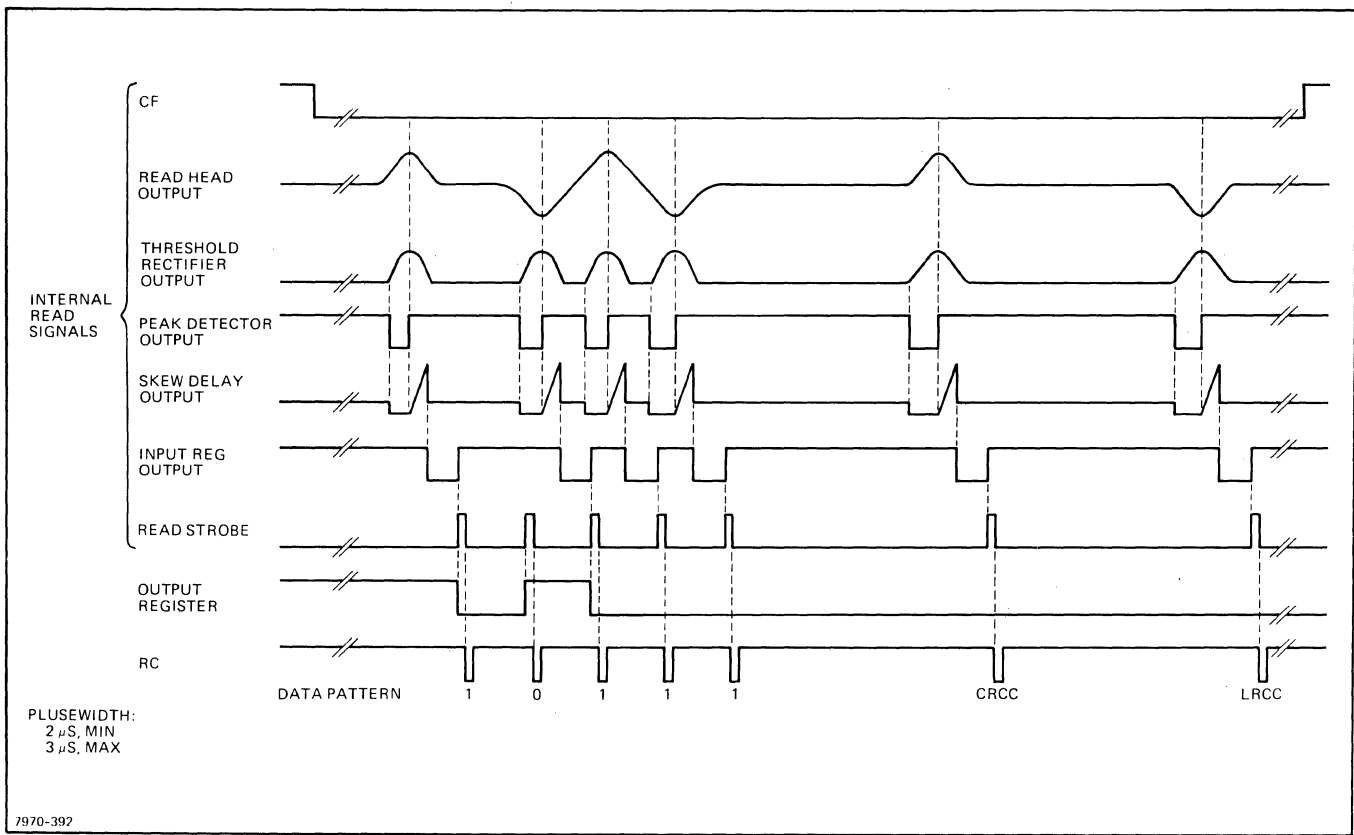


Figure 2-6. Read Waveforms



MANUAL PART NO. 07970-90383
MICROFICHE PART NO. 07970-90820

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