PERTEC

PRODUCT IMPROVEMENT BULLETIN

PERIPHERAL EQUIPMENT DIVISION

8/15/76 Rev. B

TITLE TEMPERATURE COMPENSATION ADJUSTMENT PROCEDURE			PIB NO. DK3050 B
PRODUCT LINE: TAPE [ ] DISK [X] FORMATTER [ ]	EQUIPMENT CHANGED PCBA 103977	MODEL SERIES AFFECTED D3000	EFFECTIVE DATE April 5, 1976

CLASS OF BULLETIN:	ORDER PART KIT NO.	EFFECTIVITY
[ ] IMPROVEMENT [ ] RETROFIT ON FAILURE [ ] RETROFIT RECOMMENDED [X] SERVICE INFORMATION ONLY	N/A	All 200 tpi D3000 Disk Units, fitted with Temperature and Write Compensation PCBA 103977 D342X and D344X from Serial Number 451600651 onwards. This PIB replaces DK3050.

PURPOSE:

To provide the necessary data in the form of test configurations, test procedures and adjustment procedures for the temperature compensation portion of the Temperature and Write Compensation PCBA. This information is not at present included in the current D3000 manual, and will appear in the revised edition, which will be available in April 1976. This portion of the PCBA operates, in conjunction with a thermistor mounted adjacent to the positioner, to provide a signal, which is proportional to temperature and offsets the heads accordingly. Adjustment will be required if the Temperature and Write Compensation PCBA is replaced or if any component in the temperature compensation circuit is changed.

NOTE

All references to test points are on the Temperature-And-Write Compensation PCBA as shown in Figure 1 on Page 7

TEST CONFIGURATION:

(1) The test disk cartridge must be stored for a minimum of 90 minutes at the same ambient temperature as the disk drive prior to insertion in the disk drive.

(2) Insert the test disk cartridge.

(3) Run the disk drive in the READY mode for a minimum of 5 minutes.

(4) Connect a disk exerciser capable of selecting the upper and lower platters and also capable of positioning the heads to any desired cylinder address.

(5) Place a temperature probe adjacent to the thermistor.

Should Additional Information Be Required — Contact
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ATTENTION: PRODUCT SUPPORT MANAGER

Distribution Code 6318

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NOTE

Temperature measuring equipment should have a range from 68° F to 87.8°F (20°C to 31°C) with an error limit not greater than ±1°F (±0.5°C).

(6) Using a Digital Voltmeter, connect the positive test lead to TP4 on the Temperature-And-Write Compensation PCBA, and the common test lead to TP5 (ground, on the same PCBA).

TEST PROCEDURE:

(1) Establish the test configuration described in previous paragraph.

(2) Observe the temperature probe reading.

(3) Position the heads to cylinder addresses (in Table 1) that are within the Temperature range indicated by the observed temperature probe reading.

(4) Observe the voltage readings at TP4 for each cylinder address in Step (3).

NOTE

If any of the voltages in Step (4) are out of tolerance (see Table 1), perform the adjustment procedure in next paragraph.

(5) Proceed with the scaling resistor verification on Page 4.

ADJUSTMENT PROCEDURE:

(1) Note the temperature adjacent to the thermistor.

(2) Move the DVM Positive probe to TP3 on the Temperature-And-Write Compensation PCBA. Maintain the DVM ground lead on TP5.

(3) Adjust R15 on the PCBA to attain a voltage that corresponds to the temperature to the temperature noted in Step (1). See Table 2.

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TABLE 1

TEMPERATURE °C	TEMPERATURE °F	CYLINDER ADDRESS		TCTP4 VOLTAGE	
20	68	64 (100 octal)		+0.432 ± 0.100V	
20	68	128 (200 octal)		+0.217	"
20	68	256 (400 octal)		-0.204	"
21	69.8	64 (100 octal)		+0.346	"
21	69.8	128 (200 octal)	+0.174	~~+0.017~~	"
21	69.8	256 (400 octal)		-0.163	"
22	71.6	64 (100 octal)		+0.260	"
22	71.6	128 (200 octal)		+0.131	"
22	71.6	256 (400 octal)		-0.122	"
23	73.4	64 (100 octal)		+0.174	"
23	73.4	128 (200 octal)		+0.088	"
23	73.4	256 (400 octal)		-0.081	"
24	75.2	64 (100 octal)		~~+0.880~~	" +0.088
24	75.2	128 (200 octal)		+0.045	"
24	75.2	256 (400 octal)		- .040	"
25	77.0	64 (100 octal)		.000	"
25	77.0	128 (200 octal)		.000	"
25	77.0	256 (400 octal)		.000	"
26	78.8	64 (100 octal)		~~-.880~~	" -0.088
26	78.8	128 (200 octal)		- .045	"
26	78.8	256 (400 octal)		+ .040	"
27	80.6	64 (100 octal)		-0.174	"
27	80.6	128 (200 octal)		-0.088	"
27	80.6	256 (400 octal)		+0.081	"
28	82.4	64 (100 octal)		-0.260	"
28	82.4	128 (200 octal)		-0.131	"
28	82.4	256 (400 octal)		+0.122	"
29	84.2	64 (100 octal)		-0.346	"
29	84.2	128 (200 octal)	-0.174	~~-0.017~~	"
29	84.2	256 (400 octal)		+0.163	"
30	86.0	64 (100 octal)		-0.432	"
30	86.0	128 (200 octal)		-0.217	"
30	86.0	256 (400 octal)		+0.204	"
31	87.8	64 (100 octal)		-0.518	"
31	87.8	128 (200 octal)	-0.260	~~-7.185~~	"
31	87.8	256 (400 octal)	+0.245	~~+6.845~~	"

TABLE 1 (continued)

TEMPERATURE °C	TEMPERATURE °F	CYLINDER ADDRESS	TCTP4 VOLTAGE
32	89.6	64 (100 octal)	-0.604 ± 0.100V
32	89.6	128 (200 octal)	-0.305 "
32	89.6	256 (400 octal)	+0.286 "
33	91.4	64 (100 octal)	-0.690 "
33	91.4	128 (200 octal)	-0.348 "
33	91.4	256 (400 octal)	+0.327 "
34	93.2	64 (100 octal)	-0.778 "
34	93.2	128 (200 octal)	-0.391 "
34	93.2	256 (400 octal)	+0.368 "
35	95.0	64 (100 octal)	-0.864 "
35	95.0	128 (200 octal)	-0.434 "
35	95.0	256 (400 octal)	+0.409 "

TABLE 2

°C	°F	TCTP3 VOLTAGE
22.0	71.6	+2.898 to +2.954V
23.0	73.4	+2.970 to +3.030V
24.0	75.2	+3.044 to +3.106V
25.0	77.0	+3.118 to +3.182V
26.0	78.8	+3.198 to +3.262V
27.0	80.6	+3.277 to +3.343V
28.0	82.4	+3.361 to +3.429V
29.0	84.2	+3.440 to +3.510V
30.0	86.0	+3.514 to +3.586V
31.0	87.8	+3.604 to +3.676V

SCALING RESISTOR VERIFICATION:

(1) Move the DVM positive probe to TP2 on the Temperature-And-Write Compensation PCBA.

(2) Adjust R16 on the Temperature-And-Write Compensation PCBA to +1.0V.

(3) Move the DVM positive probe to TP4 on the Temperature-And-Write Compensation PCBA.

SCALING RESISTOR VERIFICATION: (continued)

(4) Using the disk exerciser, refer to Table 3 and check that the voltage at TP4 is within the range specified for each of the cylinder addresses listed.

NOTE

If the voltages on TP4 are not within limits for each cylinder address in Step (4), there may be a component failure in the scaling resistor and/or the cylinder address circuitry.

(5) Proceed with the environment temperature adjustment.

TABLE 3

CYLINDER ADDRESS	TCTP4 VOLTAGE
32 (40 octal)	+1.49 to +1.82V
96 (140 octal)	+0.98 to +1.20V
160 (240 octal)	+0.50 to +0.61V
224 (340 octal)	-0.07 to +0.05V
288 (440 octal)	-0.51 to -0.41V
352 (540 octal)	-1.12 to -0.92V
400 (620 octal)	-1.72 to -1.40V

ENVIRONMENT TEMPERATURE ADJUSTMENT:

NOTE

Location of the heads is not relevant to this adjustment.

(1) Note the temperature reading on the probe adjacent to the thermistor.

(2) Move the DVM positive probe to TP2 on the Temperature-And-Write Compensation PCBA.

(3) Adjust R16 to the voltage (Table 4) corresponding to the temperature reading observed in Step (1).

(4) Remove DVM positive probe from TP2.

(5) Remove DVM negative probe from TP5.

(6) Remove Disk exerciser.

(7) Deenergize disk drive.

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TABLE 4

AIR TEMPERATURE °C	AIR TEMPERATURE °F	TCTP2 VOLTAGE
20	68.0	+0.40V
21	69.8	+0.32V
22	71.6	+0.24V
23	73.4	+0.16V
24	75.2	+0.08V
25	77.0	+0.00V
26	78.8	-0.08V
27	80.6	-0.16V
28	82.4	-0.24V
29	84.2	-0.32V
30	86.0	-0.40V
31	87.8	-0.48V
32	89.6	-0.56V
33	91.4	-0.64V
34	93.2	-0.72V
35	95.0	-0.80V

NOTE

Mechanical CE Alignment (Paragraph 6.13, D3000 manual) must be performed if any temperature compensation adjustments are made.

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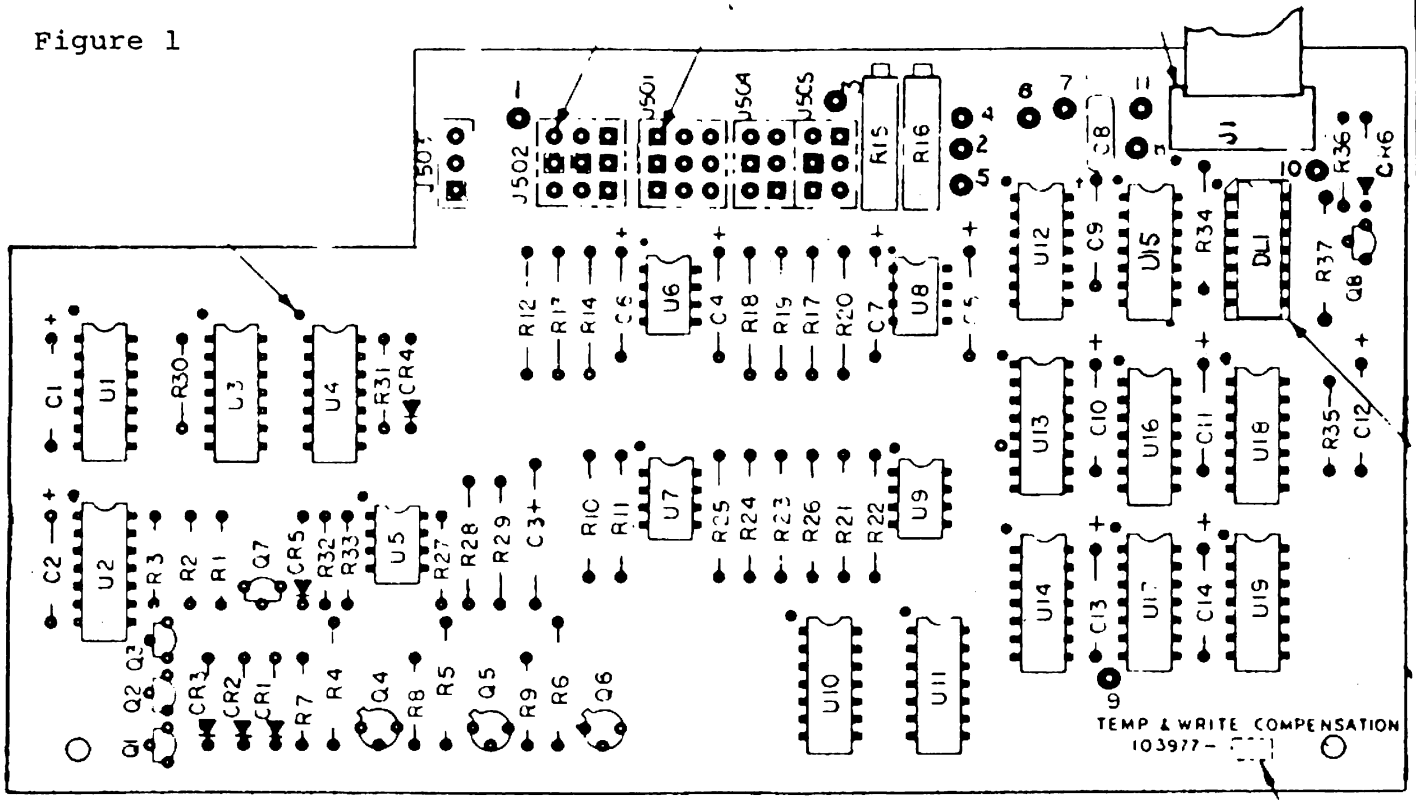
Figure 1



REFERENCE DRAWINGS:
Schematic number 103976 (sheet 1)
Assembly number 103977