

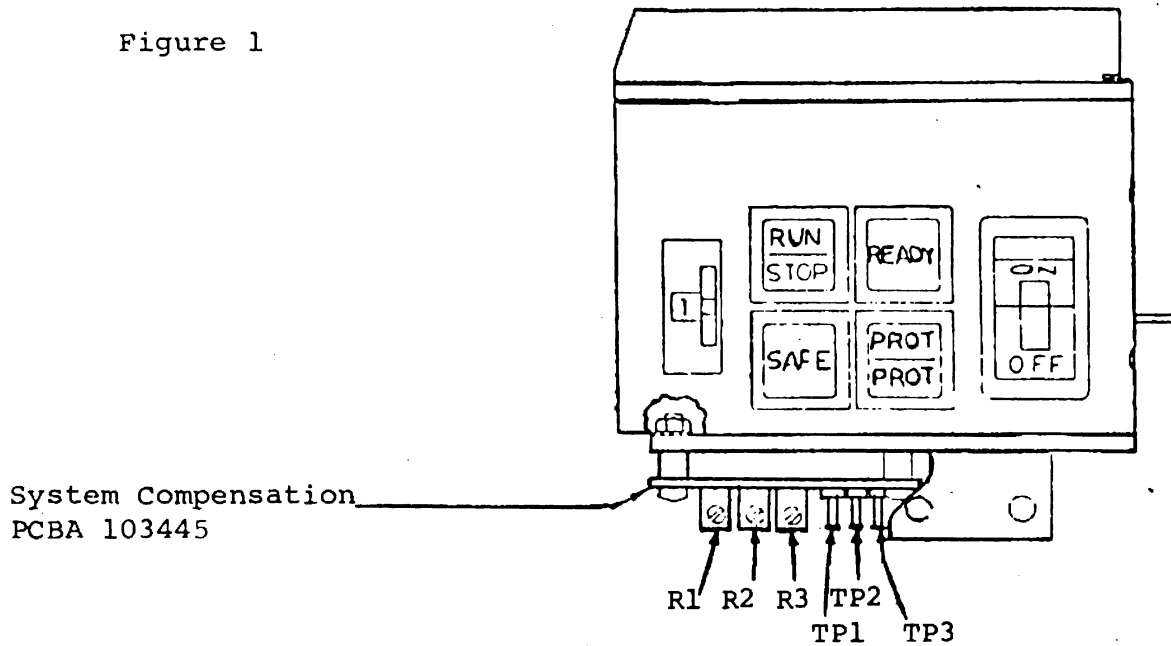
<b>TITLE</b> TEMPERATURE COMPENSATION ADJUSTMENT PROCEDURE FOR UNITS FITTED WITH SYSTEM COMPENSATION PCBA			PIB NO. DK3047.B		
PRODUCT LINE:	TAPE DISK FORMATTER	EQUIPMENT CHANGED PCBA 103450 PCBA 103445	MODEL SERIES AFFECTED D3000	EFFECTIVE DATE April 5, 1976	

<b>CLASS OF BULLETIN:</b>  <input type="checkbox"/> IMPROVEMENT <input type="checkbox"/> RETROFIT ON FAILURE <input type="checkbox"/> RETROFIT RECOMMENDED <input checked="" type="checkbox"/> SERVICE INFORMATION ONLY	<b>ORDER PART KIT NO.</b>  N/A	<b>EFFECTIVITY</b> All units fitted with Temperature Compensation PCBA 103450 and System Compensation PCBA 103445. D342X and D344X up to serial number 451600650.  This replaces PIB DK3047.
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**PURPOSE:**

Earlier versions of the D3000 disk unit, operating at 200 tpi, were fitted with a Temperature Compensation PCBA 103450, fitted alongside the Read/Write PCBA, and a System Compensation PCBA 103445, fitted below the Switch Panel at the front of the unit, as shown in Figure 1.

Figure 1



Should Additional Information Be Required — Contact

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**PERTEC**

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PERTEC 20 K012C(1)

**TITLE**TEMPERATURE COMPENSATION ADJUSTMENT PROCEDURE  
FOR UNITS FITTED WITH SYSTEM COMPENSATION PCBA

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**PURPOSE:** (continued)

These PCBAs operate in conjunction with a thermistor mounted adjacent to the positioner, to provide a signal which is proportional to the temperature and offsets the heads accordingly.

This information is not contained in the current D3000 manual.

This bulletin provides the necessary data in the form of test configurations, test procedures and adjustment procedures for the setting up of the Temperature Compensation System, should this be necessary due to the replacement of any of the component parts of the system.

**NOTE**

All references to test points on the Temperature Compensation PCBA are designated "TCTPX" and are shown in Figure 2; those on the System Compensation PCBA are designated "SCTPX" and are shown in figures 1 and 3.

**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.

**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  $\pm 1^\circ\text{F}$  ( $\pm 0.5^\circ\text{C}$ ).

- (6) Using a Digital Voltmeter, connect the positive test lead to TCTP4 on the Temperature Compensation PCBA, and the common test lead to TCTP17 (ground).

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TEST PROCEDURE:

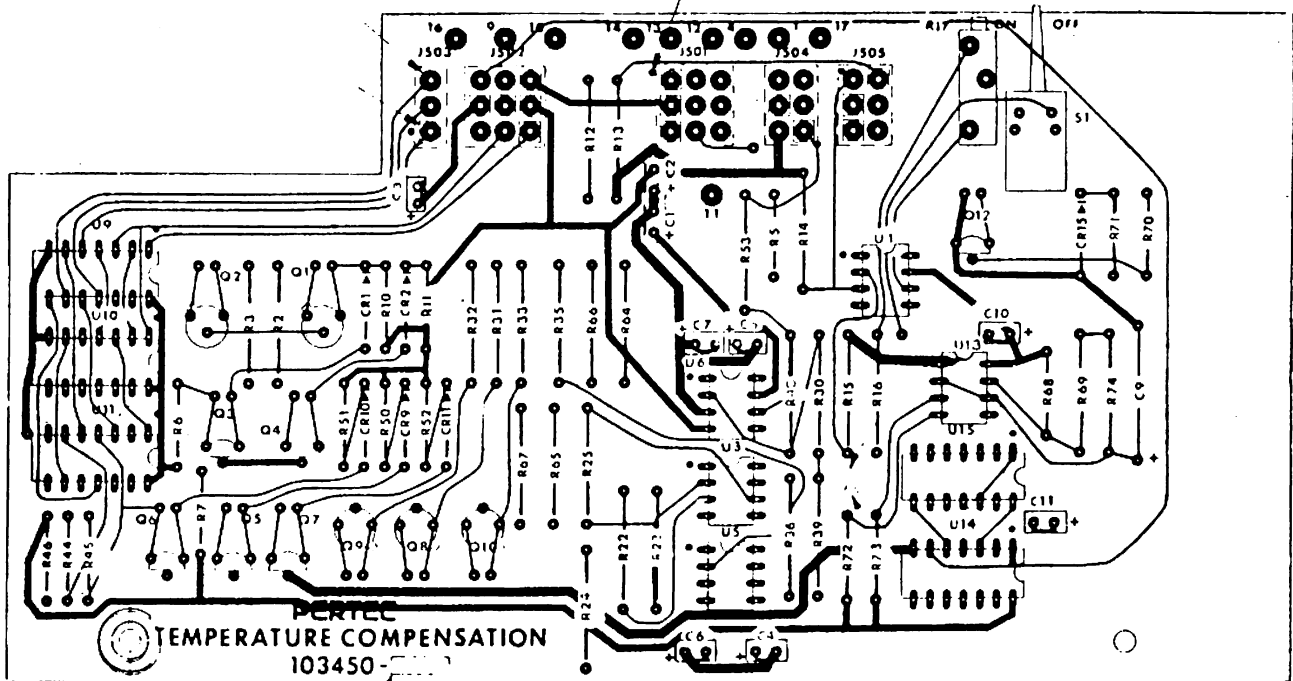
- (1) Establish the test configuration described in previous paragraph.
- (2) Observe the temperature probe reading.
- (3) Position the heads to cylinder addresses (in Table 1) that are within the Temperature range indicated by the observed temperature probe reading.
- (4) Observe the voltage readings at TCTP4 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 6.

Figure 2



**TITLE** TEMPERATURE COMPENSATION ADJUSTMENT PROCEDURE  
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ADJUSTMENT PROCEDURE:

- (1) Note the temperature adjacent to the thermistor.
- (2) Move the DVM positive probe to TCTP1 on the Temperature Compensation PCBA. Maintain the DVM ground lead on TP5.
- (3) Adjust R17 on the PCBA to attain a voltage that corresponds to the temperature noted in Step (1). See Table 2.

TABLE 1

<u>TEMPERATURE</u>		<u>CYLINDER ADDRESS</u>	<u>TCTP4 VOLTAGE</u>	
<u>°C</u>	<u>°F</u>			
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	"
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)	<del>+0.080</del>	+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)	<del>- .080</del>	-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	"

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TABLE 1 continued

<u>TEMPERATURE</u>		<u>CYLINDER ADDRESS</u>	<u>TCTP4 VOLTAGE</u>
<u>°C</u>	<u>°F</u>		
29	84.2	64 (100 octal)	-0.346 ± 0.100V
29	84.2	128 (200 octal)	-0.174 <del>-0.017</del> "
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 <del>-7.185</del> "
31	87.8	256 (400 octal)	+0.245 <del>-6.845</del> "
32	89.6	64 (100 octal)	<del>-0.286</del> "-0.604
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

<u>TEMPERATURE</u>		<u>TCTP1 VOLTAGE</u>
<u>°C</u>	<u>°F</u>	
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

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SCALING RESISTOR VERIFICATION:

- (1) Move the DVM positive probe to TCTP12 on the Temperature Compensation PCBA. (SCTP3 on the System Compensation PCBA.)
- (2) Adjust R3 on the System Compensation PCBA to +1.0V.
- (3) Move the DVM positive probe to TCTP4 on the Temperature Compensation PCBA.
- (4) Using the disk exerciser, refer to Table 3 and check that the voltage at TCTP4 is within the range specified for each of the cylinder addresses listed.

NOTE

If the voltages on TCTP4 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

<u>CYLINDER ADDRESS</u>	<u>TCTP4 VOLTAGE</u>
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 TCTP12 on the Temperature Compensation PCBA. (SCTP3 on the System Compensation PCBA).

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ENVIRONMENT TEMPERATURE ADJUSTMENT (continued):

- (3) Adjust R3 on the System Compensation PCBA to the voltage (Table 4) corresponding to the temperature reading observed in Step (1).
- (4) Remove DVM positive probe from TCTP12 (SCTP3).
- (5) Remove DVM negative probe from TCTP17.
- (6) Remove Disk exerciser.
- (7) Deenergize disk drive.

TABLE 4

<u>AIR TEMPERATURE</u>		<u>TCTP12 (SCTP3) VOLTAGE</u>
<u>°C</u>	<u>°F</u>	
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. R1, R2, SCTP1 and SCTP2 on the System Compensation PCBA are used in the CE Alignment procedure to provide fine adjustment of the heads. R1 is the potentiometer which provides fine electrical adjustments for the lower head of the removeable platter; R2 provides adjustment of the upper head of this platter. Switch S1 on the Temperature Compensation PCBA should normally be in the ON position, except when the initial radial head alignment is carried out.

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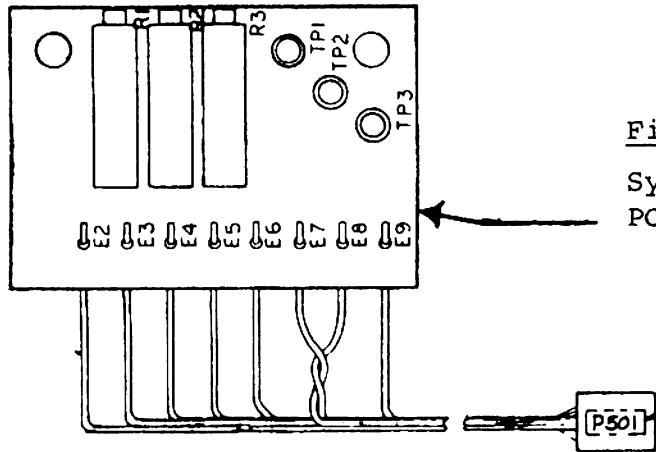


Figure 3

System Compensation  
PCBA 103445

DRAWING REFERENCES:

Schematic - System Compensation	103444
Assembly - " "	103445
Schematic - Temperature Compensation	103449
Assembly " "	103450