

SERVICE LETTER

DATE: October 15, 1976

NUMBER: DK3038

PURPOSE

To inform field personnel of the method to be used to measure the asymmetry of D3000 Read/Write chain using the dual one shot Read/Write PCBA, 103751.

SYMPTOMS

Read/Write Errors

1. If so called "Pulse Pairing" effect is extreme, margin for data are somewhat reduced and occasional data errors can result.
2. The "Pulse Pairing" effect is a phenomenon where clock pulses move or are displaced due to stray magnetic fields. The result is shown in figure (1).

EQUIPMENT REQUIRED

1. Oscilloscope having at least a 100 MHz bandwidth and a horizontal module having a delayed sweep mode and a minimum sweep rate of ≤ 50 ns/div.
2. One (1) 10X scope probe, having a comparable bandwidth to the oscilloscope, and a ground lead.
3. Disk Exerciser, Pertec Model DO-1 or equivalent.

TEST PROCEDURE

1. Raise the Logic and Servo PCBA's to the vertical position.
2. Connect disk exerciser to the disk drive under test.
3. Apply power to the drive, when safe, depress start and allow it to come ready.
4. Calibrate the oscilloscope horizontal sweep rate on the scale to be used. The 10MHz clock output on the Logic PCBA (TP13) should be used for this purpose.
5. Connect oscilloscope probe to TP25 on the Read/Write PCBA. Connect ground lead to TP17.
6. Set scope vertical amplifier gain to 0.1V/Div.; use internal trigger on positive slope and normal sync modes.
7. Position Read/Write heads over cylinder address 400_{10} (620_8).
8. Write an all zeros pattern on all surfaces.
9. Select one surface and set exerciser to the read mode. A series of positive going pulses will be displayed on the oscilloscope.

PERTEC

DISTRIBUTION CODE: 6399

SERVICE LETTER

DATE: September 15, 1976

NUMBER: DK3038

- Adjust the horizontal sweep rate (normal sweep mode) and triggering mode until at least four (4) pulses are observed. If pulse-pairing exists, the trigger control can be "fine-tuned" until every other pulse appears as a pair of pulses as shown below:

(Note: Sometimes you can't get it to jitter. Then measuring the time between pulses is required.)

FIGURE (1) All Zeros Pattern results in clocks only as shown.

Pulse Pairing Effect



(Pulse pairing effect causes apparent "jitter" in every other clock.)

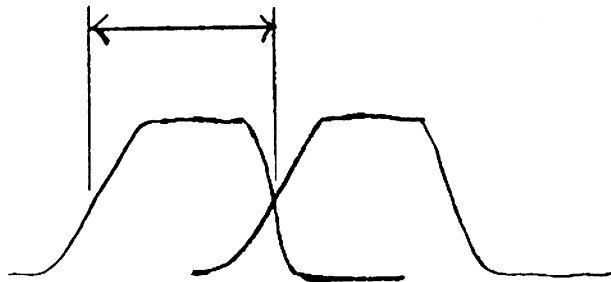
FIGURE (2)

Good Timing



- Using delayed trigger mode, expand one of the pulse pairs to 50 ns/div. sweep rate, or if possible, to 20 ns/div.
- Measure the time interval between the leading edge of these pulses. This interval is defined as the pulse pairing error.

PULSE PAIRING



- Repeat this measurement for each of the remaining heads. The pulse pairing error shall not exceed specifications listed below.
1500 RPM = ≤ 90 NS
2400 RPM = ≤ 56 NS
- If pulse-pairing specifications cannot be met, head replacement is required. Verify that new head(s) are in accordance with this specification.

PERTEC

CUSTOMER SERVICE

PRODUCT SUPPORT