

# **BRIAN**

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# **INSTRUMENTS**

**BRIKON 723-4M**

**FDD TESTER/ANALYZER**

**OPERATION AND USE**

**MAY 1994**

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## INTRODUCTION

The **BRIKON 723-4M** is a stand alone Tester/Analyzer for full analog/digital parametric and functional testing of Flexible Disk Drives. The **BRIKON 723-4M** is designed for use in laboratory and/or inspection environments. The dominating features of the **BRIKON 723-4M** are:

<b>HIGH TRANSFER RATE</b>	Supports drives with a transfer rate from 250 KBS. through 1,000 KBS.
<b>BIT JITTER</b>	Measures <b>WINDOW MARGIN</b> and <b>ASYMMETRY</b> with a resolution of 1 nS.
<b>ANALOG/ALIGNMENT</b>	Performs analog performance measurements such as <b>MOTOR START TIME, AMPLITUDE, RESOLUTION, MODULATION</b> and alignment measurements such as <b>TRACK ALIGN, OPTALIGN, AZIMUTH, INDEX TO DATA.</b>
<b>CMOS/TTL INTERFACE</b>	Supports drives with low power CMOS interface or TTL.
<b>EASY TO USE</b>	Simple 5 Row by 16 Column matrix Front Panel with the functions/tests noted on the Front Panel for single button testing.
<b>MINIMUM EYE FATIGUE</b>	Measurements are presented in easy to read number form.

## OPTIONS

Attachable options available for the **BRIKON 723-4M** are:

<b>OPTION R</b>	This <b>ANALOG ATTACHMENT</b> is used to make the precision analog performance and alignment measurements. This capability eliminates the need for scopes, exercisers, charts, graphs, etc. necessary when measuring the analog performance and alignment of the drive. Available in either single or dual channel versions.
<b>ALIGNMENT STANDARDS</b>	The <b>INTELLIGENT SERIES</b> precision analog alignment diskettes are designed specifically for use with the Tester, noticeably extending the measuring range and accuracy compared to previous analog and digital methods.
<b>MULTIPLEXER</b>	This attachment provides eight data testing ports for environments where high volume data testing are required. This option is available in <b>ANALOG/DIGITAL</b> or <b>DIGITAL ONLY</b> configurations.
<b>REMOTE CONTROL</b>	This attachment adds communications capabilities to the Tester through a full duplex, two wire, communications interface. With this, the Tester can be under full program control of the host, including execution of tests, gathering of test results and changing test criteria. In this mode, the Tester can also operate on a stand-alone basis.

## SET UP AND FAMILIARIZATION

This section explains how to set up and prepare the Tester for operation.

### UNPACKING

Unpack the Tester carefully, thoroughly inspecting the instrument for physical damage that may have occurred during shipment. The Tester carton will include the following documentation:

- \* BRIKON 723-4M OPERATOR MANUAL AND PRODUCT SPECIFICATIONS
- \* CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS
- \* OPERATION AND USE OF ANY ORDERED OPTION

**FIGURE 1** illustrates the Rear Panel. Storage trays are provided to house the I/O cables. Note the manner in which the 50 and 34 pin I/O cables are stored in the Tester. The rear feet of the Tester are used to store the D.C. and main power cables for easy transportation. When preparing the Tester for storage or shipment, be sure the cables are correctly stored.

### CHECKING AND TURNING ON POWER

#### **CAUTION**

**Before plugging the A.C. power connector into the wall receptacle, first check the label on the rear panel identification plate to verify that the voltage setting of the Tester is correct.**

A.C. power is switch selectable between 115 and 230 volts. A switch is located inside the Tester on the Power Control Board that is mounted to the Rear Panel. For 115 volt operation, the switch is in the UP position and in the DOWN position for 230 volt operation.

### FRONT PANEL LAYOUT

The Front Panel is comprised of a **5 ROW X 16 COLUMN** pushbutton matrix where each intersecting coordinate may house a test function (see **FIGURE 2**). To select a function, first depress the Row Key where the desired test is located. The selected Row LED blinks, indicating the Row is selected and available. Next, depress the Column Key that intersects the desired Test. If the Tester requires more information about the Test (i.e. test track, etc.) the Tester presents a blinking number in the Display for the operator to change, if desired, and **ENTER**. If no additional information is required, the selected Test automatically begins.

REAR PANEL LAYOUT  
BRIKON 723-4M

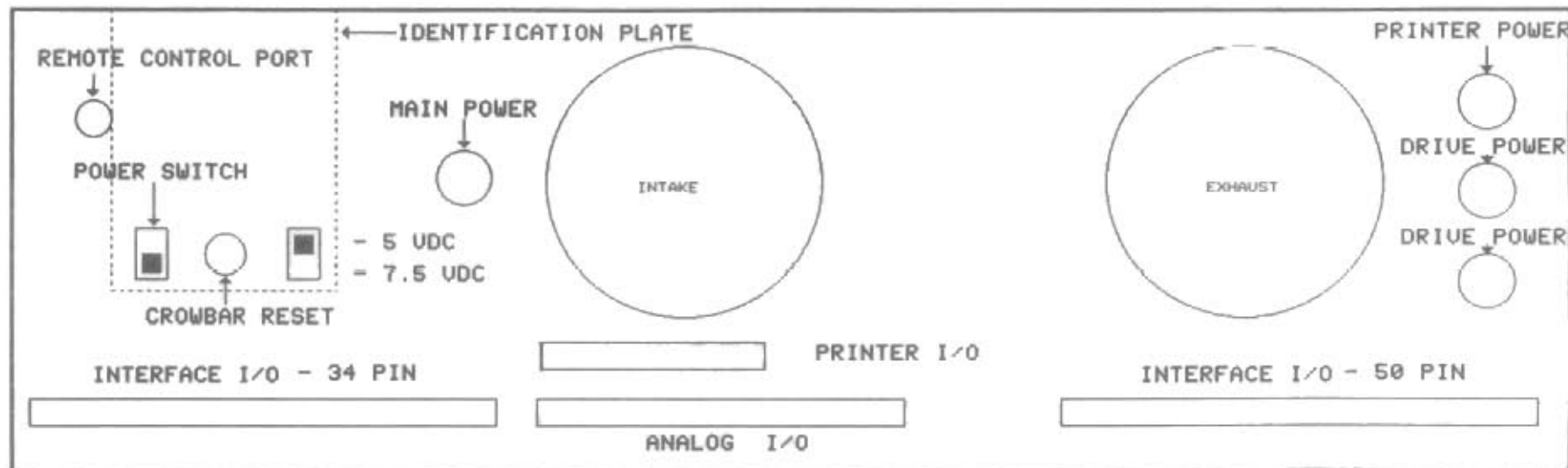


FIGURE 1

<b>BRIAN</b> INSTRUMENTS, INC.		
REAR PANEL LAYOUT		
D	BRIKON 723-4M	REV. A
DATE: JULY 1990	SHEET 1 OF 1	

FRONT PANEL LAYOUT  
BRIKON 723-4M

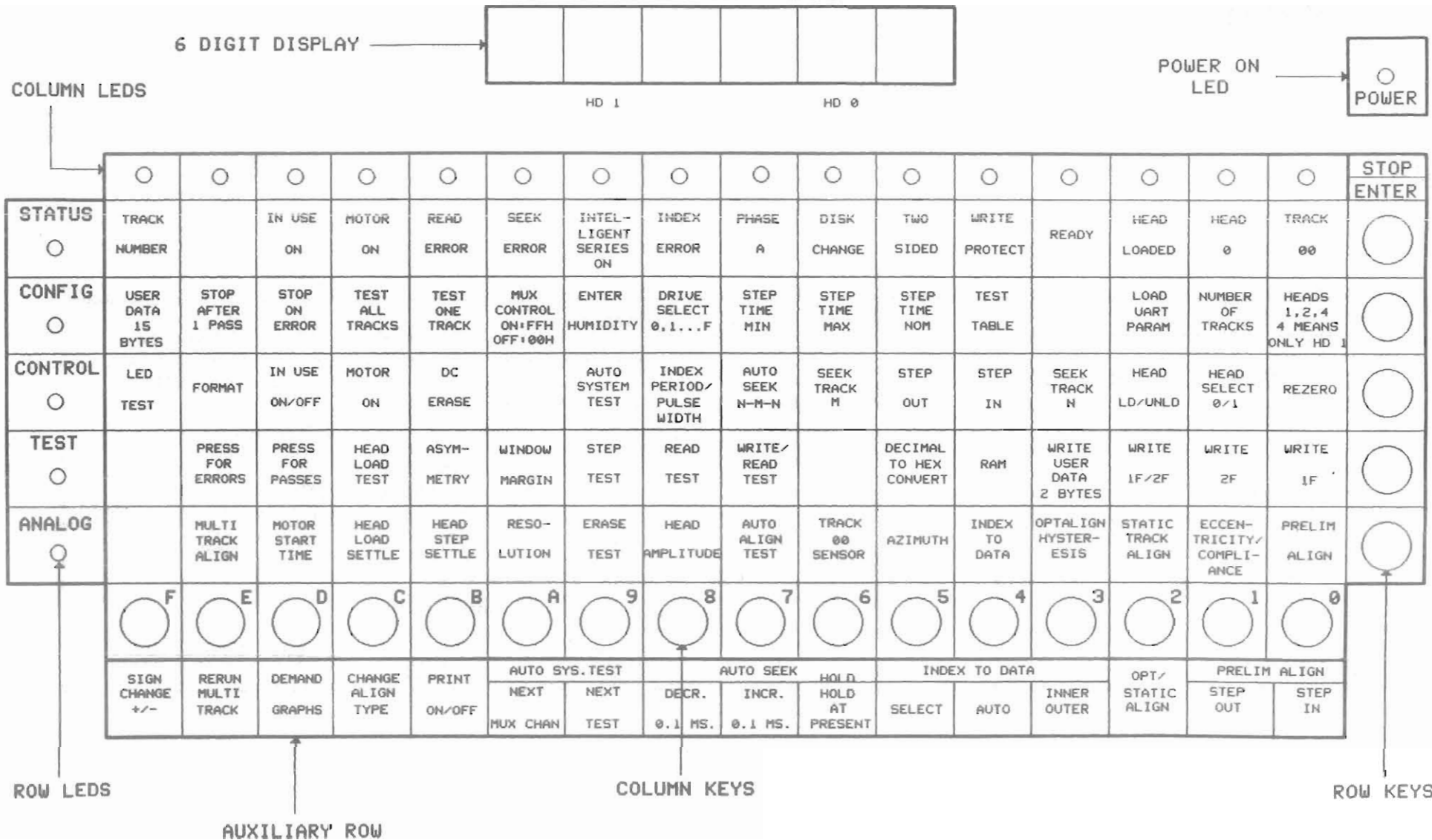


FIGURE 2

<b>BRIAN</b> INSTRUMENTS, INC.		
FRONT PANEL LAYOUT		
D	BRIKON 723-4M	REV: C
DATE: MAY 1984	SHEET 1 OF 1	



## TEST TABLES

The **BRIKON 723-4M** has 20 pre-configured **TEST TABLES** to select from and are numbered **00 - 19**. Each **TEST TABLE** houses the drive configuration and pass/fail criteria for the most popular drive styles. The drive styles for each **TEST TABLE** are as follows:

TEST TABLE	DRIVE STYLE					
	SIZE INCHES	SPEED RPM	DATA RATE KBS	TRACKS	HEADS	UNFORMATTED CAPACITY
00	8	360	500	77	2	1.6 MB
01	5 1/4	300	250	40	2	0.5 MB
02	5 1/4	300	250	80	2	1.0 MB
03	5 1/4	360	500	80	2	1.6 MB
04	3 1/2	300	250	80	2	1.0 MB
05	3 1/2	300	500	80	2	2.0 MB
06	3 1/2	600	500	80	2	1.0 MB
07	3 1/2	300	1000	80	2	4.0 MB
08	3 1/2	300	500	80	2	3.2 MB
09	3 1/2	300	1000	80	2	4.0 MB
10	3 1/2	300	1000	80	2	4.0 MB
11	3 1/2	300	1000	80	2	4.0 MB
12	3 1/2	300	1000	80	2	4.0 MB
13	3 1/2	300	1000	80	2	4.0 MB
14	3 1/2	300	1000	80	2	4.0 MB
15	3 1/2	300	1000	80	2	4.0 MB
16	3 1/2	300	1000	80	2	4.0 MB
17	3 1/2	300	1000	80	2	4.0 MB
18	3 1/2	300	1000	80	2	4.0 MB
19	3 1/2	300	1000	80	2	SONY 4MEG

Other major Tester configurations are available, suited for applications beyond the commercial audience. Because of this, the **TEST TABLE** layout may be different than noted above. For details of the Configuration Parameters for each **TEST TABLE**, refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTION** document that comes with the Tester.

When power is first applied, the Tester activates the **CONFIGURATION** Row (**CONFIGURATION** Row LED is *On*). **STATUS** Row LED 4 is blinking, indicating the **TEST TABLE** function is being presented and the Display is blinking the current **TEST TABLE**. Use the Column Keys to select the desired **TEST TABLE** number and depress the **ENTER** Key. At this point an automatic prompting sequence activates by selecting and presenting the values for the next parameter function (**NUMBER OF HEADS**) and so on. This prompting sequence may be exited any time by depressing any Row Key except **ENTER** where the current function is stored and the Tester advances to the selected Row ready for a function to be selected in that Row. When in any Row other than **CONFIGURATION** is selected, the **STATUS** Row is active, presenting drive and error status. Following the completion of a Test, the Status Row is also active. To exit a Test, depress any Row Key. The current test stops and advance to the selected Row with the Tester *Idle* (Row LED blinking) in that Row.

## CONTROLS AND INDICATORS

<u>CONTROL/INDICATOR</u>	<u>DESCRIPTION</u>
<b>POWER INDICATOR</b>	Illuminates when power is applied to the Tester.
<b>DIGITAL DISPLAY</b>	A six digit alphanumeric display that presents test results, track status, error status and is used when entering operator information. A blinking Display prompts the operator to perform an <b>EDIT/ENTER</b> function. A non-blinking Display means that a test track or test result is being displayed.
<b>COLUMN INDICATORS</b>	The top Row of indicators serve a dual purpose: <ol style="list-style-type: none"><li>1. If the <b>STATUS</b> Row indicator is also <b>ON</b>, drive status is being presented. The <b>STATUS</b> Row indicators will identify the status being presented.</li><li>2. When a test is in progress, only one Column indicator will be <b>ON</b>. This will be the one above the test in progress.</li></ol>
<b>ROW INDICATORS</b>	There are five Rows of operation: <b>STATUS</b> , <b>CONFIGURATION</b> , <b>CONTROL</b> , <b>TEST</b> , and <b>ANALOG</b> . A Row indicator has two <b>ON</b> states. <ol style="list-style-type: none"><li>1. A Row indicator will <b>BLINK</b>, indicating that the Row is active and available for a test in that Row to be performed by selecting a test through the Column Keys.</li><li>2. When a Row indicator is <b>ON</b> but not blinking, it means that a function in that Row is active as indicated by a Column indicator which is also <b>ON</b>.</li></ol>
<b>COLUMN KEYS</b>	These Keys are located along the bottom of the Front Panel. These Keys are used to select a test when a Row indicator is blinking, or to <b>EDIT/ENTER</b> configuration values or test tracks when the Display is blinking.
<b>ENTER KEY</b>	This Key is the <b>RED</b> Key located in the upper right corner of the Front Panel and is used to store a value. This Key is also used to advance the prompting sequence during the Configuration sequence.
<b>ROW KEYS</b>	These are the four blue Keys located along the right side of the Front Panel. These Keys are used to select a Row of operation. The Row indicator will blink when the Row has been successfully selected. These Keys are also used to exit a test in progress.
<b>AUXILIARY ROW</b>	These utility functions are used as background capabilities while specific Front Panel functions are operating as noted by the bezel strip located below the Column Keys. They are used to enhance and extend the use of Front Panel functions.

# PRODUCT SPECIFICATIONS

## SPECIFICATION

## CHARACTERISTICS

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### OPERATIONAL

CONTROL

Z-80 Microprocessor

MEMORY

32K x 8 EPROM

32K x 8 RAM

MTBF

8000 POH

MTTR

0.5 HR.

DESIGN LIFE

Seven years or 20000 hrs.

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### ENVIRONMENTAL

TEMPERATURE, OPERATING

+10 TO +45 C

TEMPERATURE, STORAGE

-40 TO +70 C

HUMIDITY, OPERATING

0% TO 95% (no condensation)

HUMIDITY, STORAGE

0% TO 95% (no condensation)

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### PHYSICAL

HEIGHT

5.5 in. (14.0 cm)

WIDTH

12.0 in. (30.5 cm)

DEPTH

11.6 in. (29.5 cm)

WEIGHT

20 lbs. (6.8 kg)

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### POWER

INPUT

115VAC +/- 10%, 47-63HZ, 1.5 AMP MAX.  
230VAC +/- 10%, 47-63HZ, 0.75 AMP MAX.  
100VAC +/- 10%, 47-63HZ, 2.0 AMP MAX.  
(OPTIONAL)

OUTPUT

+5VDC, +/- 5%, 3.0 AMPS MAX.  
+12VDC, +/- 5%, 3.0 AMPS (SURGE)  
2.0 AMPS (CONTINUOUS)

---

### INTERFACE

SIGNAL SENSE

LOW TRUE

OUTPUT DRIVERS

OPEN COLLECTOR (7438)

INPUT RECEIVERS

1K to +5VDC. INPUT DEVICE - 74LS367

DRIVE TERMINATION

150-1K OHMS TO +5 OR 220/330 TO  
+5/GND

\*\* I/O CABLE LENGTH

6 FT.

\*\* Some drives with low power CMOS Interface may not drive this cable length due to restrictions of the drive. The UNIDAPT 4000, supplied with the Tester is required in these cases.

## TESTER INTERFACE PIN ASSIGNMENTS

### CONTROL INTERFACE - 34 PIN

<u>PIN</u>	<u>I/O</u>	<u>SIGNAL NAME</u>
2	---	NOT USED
4	OUT	IN USE
6	OUT	SEL 3
8	IN	INDEX
10	OUT	SEL 0
12	OUT	SEL 1
14	OUT	SEL 2
16	OUT	MOTOR ON
18	OUT	DIRECTION IN
20	OUT	STEP
22	OUT	WRITE DATA
24	OUT	WRITE
26	IN	TRACK 00
28	IN	WRITE PROTECT
30	IN	READ DATA
32	OUT	SIDE 1 SELECT
34	---	NOT USED

ALL ODD PINS ARE GROUND

### CONTROL INTERFACE - 50 PIN

<u>PIN</u>	<u>I/O</u>	<u>SIGNAL NAME</u>
2	OUT	LO CURRENT
4	---	NOT USED
6	---	NOT USED
8	---	NOT USED
10	IN	TWO SIDED
12	IN	DISK CHANGE
14	OUT	SIDE 1 SEL
16	OUT	IN USE
18	OUT	HEAD LOAD
20	IN	INDEX
22	IN	READY
24	IN	SECTOR
26	OUT	SEL 0
28	OUT	SEL 1
30	OUT	SEL 2
32	OUT	SEL 3
34	OUT	DIRECTION IN
36	OUT	STEP
38	OUT	WRITE DATA
40	OUT	WRITE
42	IN	TRACK 00
44	IN	WRITE PROTECT
46	IN	READ DATA
48	---	NOT USED
50	---	NOT USED

ALL ODD PINS ARE GROUND

## INTRODUCTION

The UNIDAPT 4000 is an externally mounted P.C.B. Assembly that is used in conjunction with BRIKON 723 or QUICKLIGN 123 Series of FDD Testers to extend the range of testing to include the following classes of Flexible Disk Drives:

- \* 3 1/2", 300 RPM, 1,000 KBS transfer rate (4 MEG), requiring two lines of DENSITY SELECT and MEDIA ID.
- \* 3 1/2", 300/600 RPM, 250/500 KBS transfer rate, 40 Pin I/O (power on I/O).
- \* 3 1/2", 300 RPM, 250/500 KBS transfer rate, 26 Pin I/O (integrated I/O and power).
- \* 5 1/4", 180 RPM, 500 KBS transfer rate.
- \* All the above configurations with CMOS/TTL Interface

The UNIDAPT 4000 is attached to the Tester through the 50 Pin I/O and 4 Pin Power provided by the Tester. The 34 Pin drive I/O cable from the UNIDAPT 4000 is provided through a ribbon cable that has both pin style and card edge connectors. The 40 Pin I/O is card edge style only. The 26 Pin I/O is pin style. External drive Power is provided through a 4 Pin, 5 1/4" style connector with 3 1/2" adaptor included to support conventional drives.

## SWITCHES

Because many popular drives, particularly 4 MEG, have additional Interface requirements, the UNIDAPT 4000 includes several switches and are used to support the most popular Interface variations (see FIGURE 3) and are explained below:

- S0 DENSITY 0 LEVEL - This switch is used to control the state of Pin 2 on both the 34 Pin and 40 Pin Interface.
- S1 DENSITY 1 SELECT - This switch is used to control which Interface Pin is used for the DENSITY 1 signal on 4 MEG drives. Pins 6 or 33 may be selected. When 33 is selected, Pin 6 becomes DRIVE SELECT 3. When Pin 6 is selected, Pin 33 may become MEDIA ID 0 based on the setting of S3.
- S2 DENSITY 1 LEVEL - This switch is used to control the state of Pins 6 or 33, based on the setting of S1.
- S3 MEDIA ID SELECT - This switch is used to control the Interface pair used for MEDIA ID 0/1 on 4 MEG drives. This switch selects between the pair of 17/27 or 29/33.
- S4 READY/DISK CHANGE - This switch is used to match the signal configuration of Pin 34 on the 34 Pin Interface. Drives have this Pin designated either READY or DISK CHANGE and in some cases is jumper selectable on the drive.
- JP1 180 RPM CONTROL - This jumper block is used to control the state of Pin 3 of the 34 Pin Interface. When jumpered between Pins 1/2, Pin 3 of the Interface is at Ground. When jumpered between Pins 3/4, Pin 3 of the Interface is open, being pulled up or down by the drive. Some drives use this Pin, instead, as a Density Control Pin.

I/O POWER - Both 26 and 40 Pin I/O's have power applied to the drive through the I/O as follows:

40 PIN INTERFACE		26 PIN INTERFACE	
VOLTAGE	PINS	VOLTAGE	PINS
+5VDC	38	+5VDC	1,3,5,7
+12VDC	40	+12VDC	NONE

LED 0/1 - These LED's indicate the states of MEDIA ID 0 and MEDIA ID 1 respectively. When the incoming signal is *high* the LED is *On*.

UNIDAPT 4000 LAYOUT

NOMENCLATURES

- J1 = 50 PIN I/O FROM TESTER
- J2 = 34 PIN I/O TO DRIVE
- J3 = 40 PIN I/O TO DRIVE
- J4 = 26 PIN I/O TO DRIVE
- J5 = EXTERNAL POWER TO DRIVE
- J6 = POWER FROM TESTER
- JP1 = 180 RPM CONTROL
- S0 = DENSITY 0 LEVEL (HI/LO)
- S1 = DENSITY 1 PIN SELECT (6/33)
- S2 = DENSITY 1 LEVEL (HI/LO)
- S3 = MEDIA ID PIN CONTROL (17/27, 29/33)
- S4 = READY/DISK CHANGE CONTROL
- LED 0 = STATE OF MEDIA ID 0
- LED 1 = STATE OF MEDIA ID 1

SIGNALS 34 PIN I/O

- 2 SEE S0 (DENSITY 0)
- 4 IN USE
- 6 SEE S1,S2 (DENSITY 1/SEL 3)
- 8 INDEX
- 10 DRIVE SELECT 0
- 12 DRIVE SELECT 1
- 14 DRIVE SELECT 2
- 16 MOTOR ON
- 18 DIRECTION IN
- 20 STEP
- 22 WRITE DATA
- 24 WRITE GATE
- 26 TRACK 00
- 28 WRITE PROTECT
- 30 READ DATA
- 32 SIDE 1 SELECT
- 34 SEE S4 (READY/DISK CHANGE)
- 3 SEE JP1 (180 RPM CTRL)
- 17 SEE S3
- 27 SEE S3
- 29 SEE S3
- 33 SEE S1,S3 (DENSITY 1/MEDIA ID 1)
- ALL OTHER ODD PINS GROUND

SIGNALS 26 PIN I/O

- 2 INDEX
- 4 DRIVE SELECT 0
- 6 DISK CHANGE
- 8 READY
- 10 MOTOR ON
- 12 DIRECTION IN
- 14 STEP
- 16 WRITE DATA
- 18 WRITE GATE
- 20 TRACK 00
- 22 WRITE PROTECT
- 24 READ DATA
- 26 SIDE 1 SELECT
- 1,3,5,7 +5 VDC
- 9,11 NO CONNECTION
- ALL OTHER ODD PINS GROUND

SIGNALS 40 PIN I/O

- 2 SEE S0 (DENSITY SELECT)
- 4 READY
- 6 DRIVE SELECT 3
- 8 INDEX
- 10 DRIVE SELECT 0
- 12 DRIVE SELECT 1
- 14 DRIVE SELECT 2
- 16 MOTOR ON
- 18 DIRECTION IN
- 20 STEP
- 22 WRITE DATA
- 24 WRITE GATE
- 26 TRACK 00
- 28 WRITE PROTECT
- 30 READ DATA
- 32 SIDE 1 SELECT
- 34 DISK CHANGE
- 36 FRAME GROUND
- 38 +5 VDC
- 40 +12 VDC
- 3 NO CONNECTION
- 35 FRAME GROUND
- ALL OTHER ODD PINS GROUND

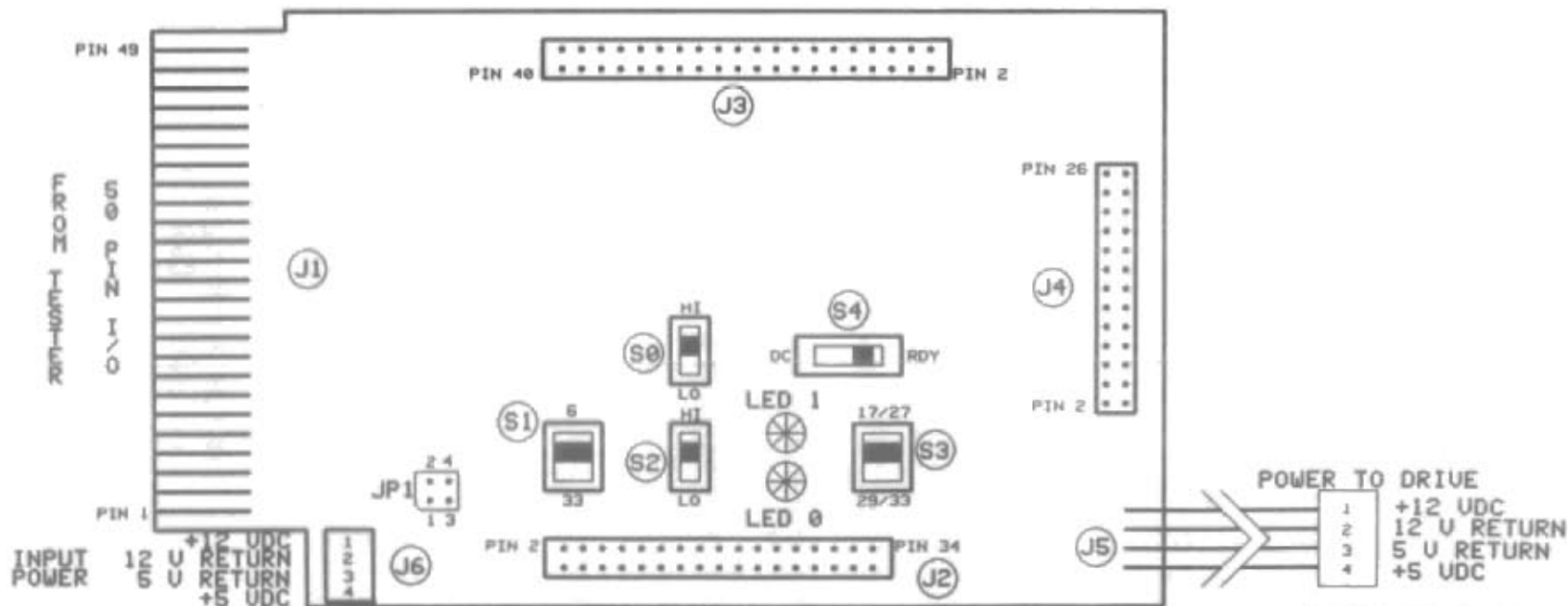


FIGURE 3  
10

**BRIAN**  
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UNIDAPT 4000 LAYOUT

D	BRIKON-QUICKLIGN	REV. A
DATE:	JANUARY 1992	SHEET 1 OF 1

## STATUS ROW FUNCTIONS

This Row of LED's is used to present drive and error status at the conclusion of a test or when the Tester is in an *Idle* state.

### **TRACK NUMBER IN DISPLAY** (Column F)

Indicates the Display is presenting the current track number.

### **IN USE ON** (Column D)

Indicates the In Use line is active.

### **MOTOR ON** (Column C)

Indicates the Motor On line is active (on 34 pin interface).

### **READ ERROR** (Column B)

Indicates a read error has occurred. This error can occur during the **READ**, **WRITE/READ** and **AUTO SYSTEM TESTS**.

### **SEEK ERROR** (Column A)

Indicates a Seek error has occurred. This error can occur during any Seek Test.

### **INTELLIGENT SERIES ON** (Column 9)

Indicates that the **INTELLIGENT SERIES** alignment diskette measuring style is active.

### **INDEX ERROR** (Column 8)

Indicates an Index error has occurred. This results when the Pulse Width or the Period is too large. A successful **INDEX PERIOD/PULSE WIDTH** Test must occur to reset.

### **MOTOR PHASE A** (Column 7)

Indicates that phase A of the drive positioning motor is active. This function is used during the **PRELIMINARY TRACK ALIGN** Test to verify that Phase A and the Track 00 track of the alignment diskette are in coincidence.

### **DISK CHANGE** (Column 6)

Indicates the Disk Change line is active (on 50 pin interface).

### **TWO SIDED** (Column 5)

Indicates that the Two Sided line is active (on 50 pin interface).

### **WRITE PROTECT** (Column 4)

Indicates the Write Protect line is active.

### **READY** (Column 3)

Indicates the Ready line is active.

### **HEAD LOADED** (Column 2)

Indicates the Head Load line is active.

### **HEAD 0** (Column 1)

When ON, indicates that Head 0 is active. When OFF, indicates Head 1 is active.

### **TRACK 00** (Column 0)

Indicates the Track 00 line from the drive is ON.

## CONFIGURATION ROW

This Row is used to modify basic drive configuration parameters and to set the style of testing to be performed. The following explains the purpose and operation of each Configuration function.

### NUMBER OF HEADS (KEY 0)

This function is used to select which of the heads are to be tested. If 1 is selected, only the bottom head is tested. If 2 is selected, both bottom and top heads are tested. If 4 is selected, only the top head is tested.

#### PROCEDURE

Configuration Row Indicator - BLINKING  
Display Reading - BLANK

Depress Column Key 0. The Display blinks the current value. Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing ENTER stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except ENTER stores the value and advances to the selected Row.

### NUMBER OF TRACKS (KEY 1)

This function is used to select the number of tracks per surface to be tested. The selection range is from 1 through 255. The most popular drive styles have 40, 77 or 80 tracks.

#### PROCEDURE

Configuration Row Indicator - BLINKING  
Display Reading - BLANK

Depress Column Key 1. The Display responds by blinking the current NUMBER OF TRACKS. Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing ENTER stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except ENTER stores the value and advances to the selected Row.

### LOAD UART PARAMETERS (KEY 2)

This function is used to change the programmable settings of the UART functions when using the Remote Control feature (OPTION R/C). The parameters that may be altered are Parity, Number of Data Bits, and Baud Rate. If the UART setting is to be changed, proceed to the RAM function, where the parameter is modified. Then proceed to the LOAD UART PARAMETERS function and ENTER to load the new value for use by the UART. Refer to the CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS for RAM location and setting details.



## **TEST TABLE**

(KEY 4)

This function is used to select the style of drive to be tested. The **BRIKON 723-4M** includes 20 **TEST TABLES** from which to choose (numbered **00-19**). In addition to the general drive control parameters (number of heads, number of tracks, etc.) each **TEST TABLE** also includes such parameters as test tracks, and pass/fail limits. Please refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** that accompany the Tester. The first page of this document identifies which drive style is assigned to each **TEST TABLE**. Subsequent pages identify the setting of each modifiable parameter. When power is first applied to the Tester, self diagnostics are performed. If successful, the **CONFIGURATION Row** is activated and the current **TEST TABLE** blinks in the Display.

### **PROCEDURE**

Configuration Row Indicator - ON  
Column 0 indicator - BLINKING  
Display Reading - CURRENT VALUE

Use the Column Keys to select the desired **TEST TABLE**. The Display responds by blinking the selected value. Depressing **ENTER** stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except **ENTER** stores the value and advances to the selected Row.

## **STEP TIME NOMINAL**

(KEY 5)

This function is used to select the normal step time of the drive. The selection range is from 0.1 ms. through 99.9 ms..

### **PROCEDURE**

Configuration Row Indicator - BLINKING  
Display Reading - BLANK

Depress Column Key 5. The Display responds by blinking the current value. Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing **ENTER** stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except **ENTER** stores the value and advances to the selected Row.

## **STEP TIME MAXIMUM/MINIMUM**

(KEYS 6,7)

These functions are used to set the starting and ending step times for the **STEP TEST (TEST Row, Key 9)** and **AUTO SEEK N-M-N (CONTROL Row, Key 7)**. The selection range is 0.1 mS. through 99.9 mS.

### **PROCEDURE**

Configuration Row Indicator - BLINKING  
Display Reading - BLANK

Depress Key 6,7. The Display blinks the current value. Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing **ENTER** stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except **ENTER** stores the value and advances to the selected Row.

## DRIVE SELECT

(KEY 8)

This function is used to match the select code of the Tester and drive to be tested. The setting is entered as a Hexadecimal value to extend the range of the Tester. Please use the following guide:

<u>DRIVE SELECT CODE</u>	<u>TESTER SETTING</u>
0	1
1	2
2	4
3	8
ALL	F

### PROCEDURE

Configuration Row Indicator - BLINKING

Display Reading - BLANK

Depress Column Key 8. The Display responds by blinking the current SELECT value. Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing ENTER stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except ENTER stores the value and advances to the selected Row.

## ENTER HUMIDITY

(KEY 9)

This function is used to set the current humidity for use with the INTELLIGENT SERIES alignment diskettes. This is used to correct for movement of the precision alignment signals due to changes in humidity of the testing environment. This function is valid only for those Testers equipped with the INTELLIGENT SERIES alignment diskette controls. This is determined by the Status Row function INTELLIGENT SERIES ON located in the STATUS Row, Column 9. If OFF, the SET HUMIDITY function is inactive and presents NA NA in the Display. If ON, the SET HUMIDITY function blinks 50 %. Use the Column Keys to change the Humidity, using a standard humidity gauge as a reference. The precision of correction is based on the precision of the humidity gauge.

### PROCEDURE

Configuration Row Indicator - BLINKING

Display Reading - BLANK

Depress Column Key 9. The Display blinks the current Humidity setting. Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing ENTER stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except ENTER stores the value and advances to the selected Row.

## MUX CONTROL

(KEY A)

This function is used to control the ports of operation for the EIGHT PORT MULTIPLEXER attachment. The value is in HEX and the setting range is from 00 through FF. When 00 is selected, the Mux is turned OFF. When 01 through FF is inserted, the mux ports selected are activated for testing.

00 = 0000 0000 in binary (all ports OFF)

FF = 1111 1111 in binary (all ports ON)

AA = 1010 1010 in binary (odd ports on)

## MUX CONTROL (Cont'd)

### PROCEDURE

Configuration Row Indicator - BLINKING  
Display Reading - BLANK

Depress Column Key A. The Display responds by blinking the current MUX CONTROL value (normally 00). Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing **ENTER** stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except **ENTER** stores the value and advances to the selected Row.

## TEST ONE/ALL TRACKS

(KEYS B,C)

These functions are used to control testing style for the **WRITE/READ** and **READ** Tests and are alternate action settings (when one is **ON**, the other is **OFF**). This function is useful when performing media/head wear testing against data. The active function blinks *brightly*. When testing in the **TEST ONE TRACK** mode, first position the heads to the desired test Track (**SEEK** functions in the **CONTROL** Row). In this mode the number of passes of the test is controlled by the **NUMBER OF TRACKS** function (**CONFIGURATION** Row, Key 1). If in the **TEST ALL TRACKS** mode, each track is tested once in each direction.

Please note that the **STOP ON ERROR** and **STOP AFTER 1 PASS** functions are also presented at this time. This is provided as a convenience so that the testing style combinations can be selected simultaneously. See **STOP ON ERROR** and **STOP AFTER 1 PASS** details for function explanation.

### PROCEDURE

Configuration Row Indicator - BLINKING  
Display Reading - BLANK

Depress Keys B,C. The LED's above these functions are blinking either *brightly* or *dimly*. Use Column Keys B,C to control the desired function. When *brightly* blinking, the function is **ON**. Any time the **STATUS** Row is **ON**, the state of these functions is presented. Depressing **ENTER** stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except **ENTER** stores the value and advances to the selected Row.

## STOP ON ERROR

## STOP AFTER 1 PASS

(KEYS D,E)

These functions, along with **TEST ONE/ALL TRACKS** are presented simultaneously. When **STOP ON ERROR** is **ON**, a Test halts when an error occurs and is printed. When **OFF**, the error is printed, but the Test continues to completion.

When **STOP AFTER ONE PASS** is **ON**, each Test halts after completion. When **OFF**, a Test halts only after a Row Key is depressed.

## STOP AFTER 1 PASS (Cont'd)

### PROCEDURE

Configuration Row Indicator - BLINKING  
Display Reading - BLANK

The **ON** (blink *brightly*) or **OFF** (blink *dimly*) state of the each function is determined by the LED above the function. Column Key **D** controls the state of **STOP ON ERROR**. Column Key **E** controls the state of **STOP AFTER 1 PASS**. Depressing **ENTER** stores the value and advances the auto prompting Configuration sequence. Depressing any Row Key except **ENTER** stores the value and advances to the selected Row.

## USER DATA 15 BYTES

(KEY F)

This function is used to activate and select a repeating 15 byte data pattern that is used during the **WRITE/READ** and **WINDOW MARGIN** Tests. When this function is activated, the **WRITE/READ** Test will replace the **MFM-1** data bytes with those selected by this function. When **WINDOW MARGIN** testing is performed under these conditions, the normal bit doublets/triplets are replaced with the selected Hex bytes. It must be noted that the byte scheme selected may normally produce Clock bits. In this manner a specific byte pattern can be analyzed for proper data operation.

The state of the LED above this function determines the **ON** (blink *brightly*) or **OFF** (blink *dimly*) state of the function. When **OFF**, depressing the **ENTER** Key stores the function state and advances the auto prompting Configuration sequence. When **ON**, depressing the **ENTER** Key stores the function state and the Display presents the first three bytes for selection (**01.02.03**). Use the Column to insert the first three bytes. The Display responds by echoing the selection. Depressing the **ENTER** Key stores the first three bytes and causes the Display to present the next three bytes (**04.05.06**) for selection. This process is repeated until the last three bytes (**13.14.15**) are selected at which time the function exits to the next parameter function or selected Row.

### PROCEDURE

Configuration Row Indicator - BLINKING  
Display Reading - BLANK

Depress Key **F**. Use Column Key **F** to control the **ON/OFF** state. If **ON** (blink *brightly*), depressing the (**ENTER**) Key activates the function and the Display presents the first three bytes for selection. Use the Column Keys to select the bytes and **ENTER**. The next three bytes are presented. This process is repeated until all 15 bytes are stored at which time the function exits.

# CONTROL ROW FUNCTIONS

This Row houses the exerciser and utility control functions.

## REZERO (KEY 0)

This function is used to automatically position the heads to Track 00. The Spindle Motor is turned ON, the Direction line is set to the OUT direction and step pulses (up to 255) are issued at STEP TIME NOM. until the Track 00 Line goes true. The heads are then stepped IN by one track and back OUT until Track 00 is goes true again (this is to accommodate some drives that require this action). If the operation is successful, the Display presents 0 as the track number. If unsuccessful, the Display precedes the zero with dashes (- - - 0), indicating that Track 00 was not found. The SEEK ERROR LED in the STATUS Row is ON, verifying the seek error condition. Any seek operations performed under these conditions may fail. A successful REZERO must be performed to clear the error. Whether successful or not, once the function is complete, the Tester automatically goes to an *Idle* state in the CONTROL Row.

### PROCEDURE

Control Row Indicator - BLINKING  
Display Reading - CURRENT TRACK VALUE

Depress Key 0. The Tester automatically performs the function and reports the successful or unsuccessful STATUS as described above. Upon completion, the Tester is *Idle* in the CONTROL Row, ready for another function to be performed.

## HEAD SELECT 0/1 (KEY 1)

This function is used to manually select between Head 0 and Head 1. This is used as a controlling function in conjunction with DC ERASE, WRITE 1F, WRITE 2F, WRITE 1F/2F, and WRITE USER DATA. The HEAD 0 LED in the STATUS Row indicates the currently selected Head. If ON, Head 0 is selected; if OFF, Head 1 is selected.

### PROCEDURE

Control Row Indicator - BLINKING  
Display Reading - CURRENT TRACK VALUE

Depress Key 1. The state of the HEAD 0 Status LED indicates the Head selected as explained above. Once complete, the Tester is *Idle* in the CONTROL Row.

## HEAD LOAD/UNLOAD

(KEY 2)

This function is used to independently load and unload the heads on 8" drives that have an independent Head Load interface signal. Each depression of Key 2 alternately loads and unloads the Heads. The **HEAD LOADED** LED in the **STATUS** Row indicates the state of the signal. When **ON**, the Head is loaded.

### PROCEDURE

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Key 2. The state of the **HEAD LOADED** Status LED indicates whether the Head is loaded or unloaded, as explained above.

## SEEK TRACK N

(KEY 3)

This function is used to position the heads to a specific Track. The Display blinks the current value. Use the Column Keys to select the desired Track and **ENTER**. The Spindle Motor is turned **ON** and the heads are stepped to the desired Track at **STEP TIME NOM.**. When complete, the Tester is *Idle* in the **CONTROL** Row and the Display presents the current Track value. If unsuccessful, the Track value is preceded by dashes (- -) and the **SEEK ERROR** Status LED is **ON**. A successful **REZERO** is required to clear the dashes and error Status.

### PROCEDURE

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Key 3. The Display blinks the current Track value. Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing **ENTER** stores the value and steps the heads to the selected Track. Upon completion, the Display presents the selected Track, update the **STATUS** Row and be *Idle* in the **CONTROL** Row.

## STEP IN/STEP OUT

(KEYS 4,5)

These functions are used to step the heads a single track at a time in either direction. Each depression of the Key steps the heads one track in the direction selected at **STEP TIME NOM.**. **STEP IN** is toward the Spindle and **STEP OUT** is toward Track 00. The Display updates as the heads change tracks. If unsuccessful, dashes precede the Track value and the **SEEK ERROR** LED in the **STATUS** Row is **ON**. A successful **REZERO** is required to clear the error. Upon completion, the Tester is *Idle* in the **CONTROL** Row.

### PROCEDURE

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Keys 4 or 5. The heads are moved one step in the direction selected. The Display and **STATUS** Row are updated as explained above. Upon completion, the Tester is *Idle* in the **CONTROL** Row, ready for another function to be performed.

## SEEK TRACK M

(KEY 6)

This function is used to position the heads to a specific track. The Display blinks the current value. Use the Column Keys to select the desired Track and **ENTER**. The Spindle Motor is turned **ON** and the heads are stepped to the desired Track at **STEP TIME NOM.**. When complete, the Tester is *Idle* in the **CONTROL** Row and the Display presents the current Track value. If unsuccessful, the Track value is preceded by dashes (- - -) and the **SEEK ERROR** Status LED is **ON**. A successful **REZERO** is required to clear the dashes and error Status.

### PROCEDURE

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Key 6. The Display blinks the current Track value. Use the Column Keys to select the desired value. The Display responds by blinking the selected value. Depressing **ENTER** stores the value and steps the heads to the selected Track. Upon completion, the Display presents the selected Track, update the **STATUS** Row and be *Idle* in the **CONTROL** Row.

## AUTO SEEK N-M-N

(KEY 7)

This exerciser function is used to cause the positioning system to continuously seek between two selected Tracks. This function is useful when measuring mechanical resonance and turnaround characteristics of the drive. The Display first blinks the current value for **TRACK N**. Use the Column Keys to select the desired value and **ENTER**. The Heads are moved to that Track and the Display now blinks the current value for **TRACK M**. Use the Column Keys to select the second Track and **ENTER**. The heads are now alternately stepped, on a continuous basis, between the two selected Tracks at **STEP TIME NOM**.

The Tester has three **AUXILIARY** functions that may be selected, once the function is started and are identified as **INCREMENT BY 0.1 mS.**, **DECREMENT BY 0.1 mS.**, **HOLD AT PRESENT**. They are explained in detail in the **AUXILIARY FUNCTION** Section. Briefly, the **STEP TIME** can be automatically incremented or decremented in 0.1 mS. steps after each N-M-N seeks. The upper and lower limits of the increment and decrement are set in **STEP TIME MAX.** and **STEP TIME MIN.**. When either of these limits are reached, the Tester automatically changes the increment to decrement and vice versa, keeping the Step Times within the selected band of operation. At any time during this, **HOLD AT PRESENT** can be activated, at which time the Tester momentarily halts to present the current Step Time in the Display and then continues the N-M-N seek process at that Step Time.

This function operates continuously once started and is stopped by depressing any Row Key. The Tester halts, *Idle* in the selected Row, presenting current **STATUS** information and updating the Display with the current Track value.

It is recommended that Track 00 be selected as one of the test Tracks. In this manner, seek errors may be detected and presented in the **STATUS** Row (**SEEK ERROR**) and Display (- - -). A **REZERO** must be successfully performed to clear these error conditions.

## INDEX PERIOD/PULSE WIDTH

(KEY 8)

This function measures the **PERIOD** and **PULSE WIDTH** of the Index signal produced by the drive. Both measurements are presented in **milliseconds** and resolved to 0.1 mS. When started, the drive is Selected, the Spindle Motor is turned ON (with a 1 second Motor On delay) at which time the Tester measures and Displays the **PERIOD** in the right four digits. The printer is ON to record the measurement results. To suppress printing, depress **PRINT ON/OFF (AUXILIARY Row, Key B)**. The Display is updated each revolution so that adjustments may be made conveniently. To Display the **PULSE WIDTH**, depress **Key 8** and the **PULSE WIDTH** measurement is presented in the right two digits. Each depression of **Key 8** alternates the Display information. Regardless of the Display information, the printer outputs both measurements. The measurement range of **PERIOD** is 0.1 mS. - 999.9 mS.

This measurement has pass/fail parameters that may be modified. Refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** for details.

### PROCEDURE

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress **Key 8**. The measurement automatically begin as explained above at the current Track. Depress **Key B** to control the print output. Depress **Key 8** to alternate the Display information between **PERIOD** and **PULSE WIDTH**. The printer output is constructed as follows:

P INDEX PW:002.1P PER:200.1P  
F INDEX PW:002.1P PER:181.5F

## AUTO SYSTEM TEST

(KEY 9)

This function provides a complete system level digital qualification test by combining data integrity tests together in an automatic test sequence so that drives may be qualified at the system level without operator intervention. The Tests that are performed are:

INDEX PERIOD/PULSE WIDTH TEST  
READ TEST  
WINDOW MARGIN TEST  
STEP TEST  
ASYMMETRY TEST  
WRITE/READ TEST

As preset from the factory, each Test is performed a certain number of times, yielding high drive confidence and low test times. To add flexibility and versatility, each individual Test may be performed from 0 to 15 times each. In addition, pass/fail limits may also be modified as well as the test Tracks. The results of each Test are recorded on the printer after each pass of a Test, including failure detail. For details of these controls, refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** that accompanies the Tester. The printer is preset to the ON position and printing may not be suppressed. The printer output is constructed as follows.



AUTO SYSTEM TEST (Cont'd)

P INDEX PW:1.8P PER:200.4P

P INDEX PW:1.8P PER:200.3P

P INDEX PW:1.8P PER:200.4P

P READ

P WM D0:0650P C0: P D1:0625P C1: P

P WM D0:0652P C0: P D1:0624P C1: P

P WM D0:0650P C0: P D1:0625P C1: P

P STEP 03.0

P ASY 0:0105P 1:0136P

P ASY 0:0102P 1:0133P

P ASY 0:0104P 1:0135P

P W/R

At the conclusion of the **AUTO SYSTEM TEST**, a summary line is printed identifying the pass/fail and the test configuration of the drive. The summary line is constructed as follows:

**PR004SPPPPPPP2 080 2 030 035 030 50 =**

P = PASS AUTO SYSTEM TEST  
R0 = DRIVE SELECT  
04 = TEST TABLE SELECTED  
S = SYSTEM TESTING (A = ANALOG TESTING)  
P = PASS INDEX PERIOD PULSE WIDTH  
P = PASS WRITE/READ TEST  
P = PASS WINDOW MARGIN  
P = PASS ASYMMETRY  
P = PASS STEP TEST  
P = PASS READ TEST  
P = NOT USED  
P = NOT USED  
2 = NUMBER OF HEADS  
080 = NUMBER OF TRACKS  
2 = DENSITY SETTING  
030 = STEP TIME NOMINAL  
035 = STEP TIME MAX (STEP TEST)  
030 = STEP TIME MIN (STEP TEST)  
50 = UPPER BYTE CONTROL (SEE CONFIGURATION  
WORK SHEET AND PROGRAMMING INSTRUCTIONS).

## DC ERASE (KEY B)

This function is used to activate the erase structure of the heads without data being passed through the R/W coils. This is useful when preparing a diskette for overwrite testing or analyzing the performance of the erase coils. If the **STOP AFTER 1 PASS** Configuration function is **On**, the **DC ERASE** is performed for one revolution, halts and returns to the **CONTROL** Row in an *Idle* state. If **OFF**, the **DC ERASE** is continuously performed, until a Row Key is depressed. While operating, the Display presents **ErASE**.

Before operating, position the heads to the desired test Track (**SEEK TRACK N,M**) and select the desired Head (**HEAD SELECT 0/1**).

### PROCEDURE

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Key **B**. The **ERASE** function automatically begins at the current Track and on the current Head as described above. At completion, the Tester is *Idle* in the selected Row.

## MOTOR ON/OFF (KEY C)

This function is used to manually control the spindle motor of the drive. Each depression of Key **C** causes the Spindle Motor to alternately turn **ON** and **OFF**. The state of the Motor On Line to the drive is changed each time the Key is depressed. The **MOTOR ON** Status LED indicates the state of Motor On line. When **ON**, the Motor is On and vice versa.

### PROCEDURE

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Column Key **C**. The state of the Motor On Line to the drive is changed each time the Key is depressed as described above. The **MOTOR ON** Status LED indicates the current state of the Motor On Line. Upon completion, the Tester is *Idle* in the **CONTROL** Row.

## IN USE ON/OFF (KEY D)

This function is used to control the state of the In Use Line to the drive. Each depression of Key **D** causes the In Use Line to alternately be True or False. The **IN USE** Status LED indicates the state of the In Use Line. When **ON**, the In Use Line is True.

### PROCEDURE

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Column Key **D**. The state of the In Use Line to the drive alternates between True and False with each depression of the Key, as explained above. After completion, the Tester remains in the **CONTROL** Row in an *Idle* condition, ready for another function to be performed.

## FORMAT (KEY E)

This function is used to format the test patterns on the diskette for use in the **READ, STEP** and **AUTO SYSTEM TEST**. The Display first blinks a 1, to **FORMAT** each Track. The number may be changed to 2 to **FORMAT** every other Track. Depressing the **ENTER** Key causes the Tester to turn the Spindle Motor **ON**, perform a **REZERO** and begin the Formatting process on Head 0 at Track 00. For this function, the Tester uses the **MFM-2** data pattern. The Format layout and data structure is detailed in **FIGURE 4**. The Tester writes the total Track, including Format and Data Zones on the first revolution and Read/Verify on the second revolution. The heads are advanced to the next Track, written and verified. This process is repeated until all Tracks are Formatted for that Head. The Tester then performs a **REZERO**, selects the other Head (if required) and repeats the **FORMAT** process for that Head. The Display presents **IN USE** while this function is in process. When complete, the Tester halts, *Idle* in the **CONTROL** Row. To halt during operation, depress any Row Key. The Tester halts and advances to the selected Row in an *Idle* state, ready for another function to be performed.

If a data error occurs, the Tester halts at the failing head/track and prints the failure information which includes Track, Head, byte pattern, byte location, bad byte and correct byte. In this manner, detailed analysis of the failing condition can be performed. The **READ ERROR** Status LED is also **ON**. Under these conditions, depressing **ENTER** cause the Tester to present the error information in the Display (see **FIGURE 5**). The construction and presentation of the error information is the same for **FORMAT, READ,** and **WRITE/READ** Tests. Refer to **FIGURE 4** for Format and Data layout.

If other errors, such as Index and Seek, are encountered, the Tester halts, prints the appropriate message and the **STATUS** Row presents the proper error information.

### PROCEDURE

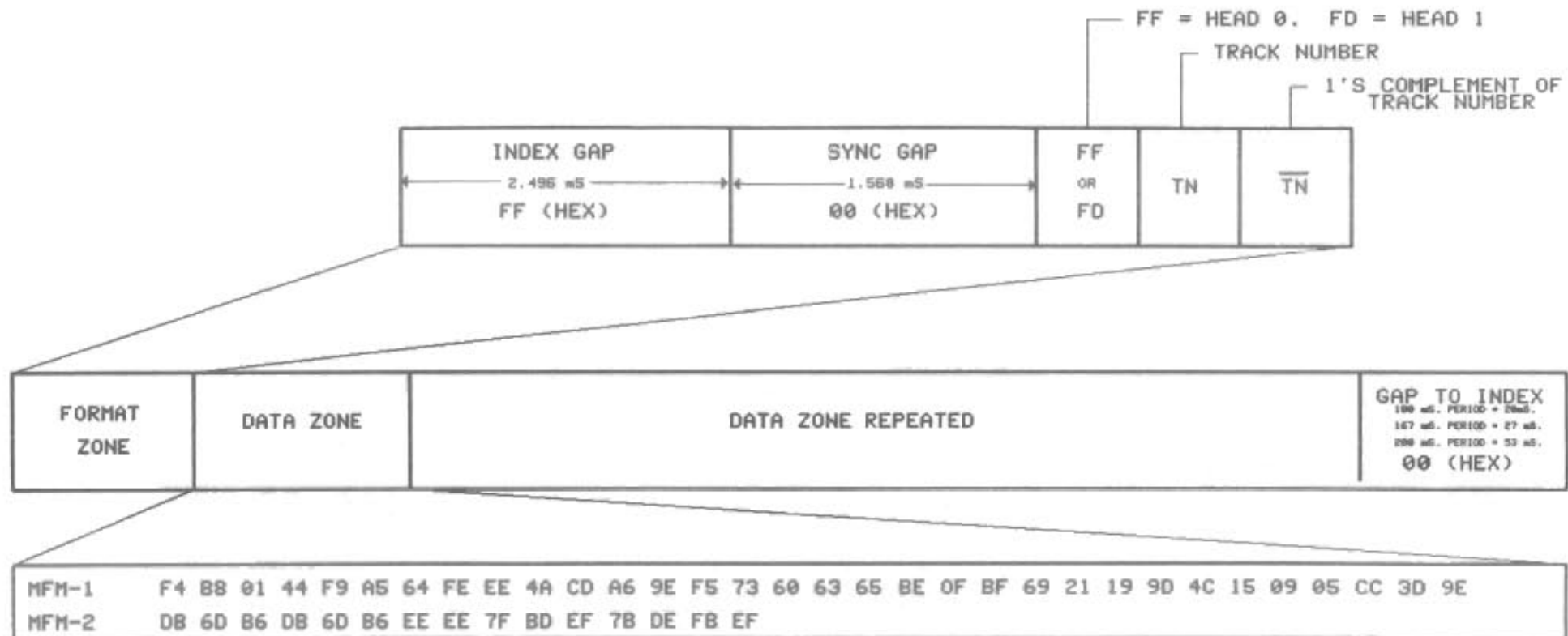
Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Column Key **E**. The Display blinks a 1. Use the Column Keys to change to 2, if desired, and **ENTER**. While the Tester is Formatting the diskette, the Display presents **IN USE**. When complete, the Tester halts, *Idle* in the **CONTROL** Row, ready for another function to be performed. Depressing any Row Key while the Test is in operation causes the Test to halt and advance to the selected Row in an *Idle* state, ready for another function to be performed. If a data error occurs, the printer outputs the failure detail as follows:

**W/RF HD0 TRK078 MFM-2 02122-1 DESBDF**

**W/RF** = WRITE/READ/FORMAT FAILED  
**HD0** = FAILING HEAD  
**TRK078** = FAILING TRACK  
**02122-1** = FAILING BYTE LOCATION AND READ NUMBER (FIRST, SECOND, ETC.)  
**DESBDF** = BYTE FOUND IS **DE** AND SHOULD BE (**SB**) **DF**.

FORMAT AND DATA STRUCTURE  
BRIKON 723-4M



TRACK BYTE TOTALS

INDEX PERIOD	DATA TRANSFER RATE	BYTES
333	500 KBS	16750
200	250 KBS	4312
200	500 KBS	8624
200	1,000 KBS	17250
167	500 KBS	8375
100	500 KBS	4062
100	1,000 KBS	8124

FIGURE 4  
24

**BRIAN**  
INSTRUMENTS, INC.  
626 S. STATE COLLEGE BLVD. FULLERTON, CA.

FORMAT AND DATA STRUCTURE

D	BRIKON 723-4M	REV 1 A
DATE: 1 JULY 1990	SHEET 1 OF 1	

DISPLAY MESSAGE  
 FORMAT...READ...WRITE/READ



HEAD 1      HEAD 0

2d-1 = MFM-1 PATTERN  
 2d-2 = MFM-2 PATTERN



HEAD 1      HEAD 0

FIRST OR SECOND READ

BYTE COUNT FROM END OF SYNC GAP



HEAD 1      HEAD 0

HEX BYTE WRITTEN  
 SHOULD BE

HEX BYTE READ

FIGURE 5  
 25

<b>BRIAN</b> INSTRUMENTS, INC.		
WRITE/READ ERROR MESSAGE		
D	BRIKON/QUICKLIGN	REV. A
DATE	1 JANUARY 1992	SHEET 1 OF 1

## **LED TEST**

(KEY F)

This function is used to verify the correct operation of the Display segments, and Row/Status LED's. All Display segments and LED's are illuminated for 2 seconds for visual verification. Simultaneously, the printer outputs the software version of the Tester. At the conclusion, the Tester remains in the **CONTROL** Row in an *Idle* condition, ready for another function to be performed.

### **PROCEDURE**

Control Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK VALUE**

Depress Column Key **F**. All Display segments and Row/Column LED's go **ON** for two seconds and the printer outputs the software version. At the conclusion the Tester remains in the **CONTROL** Row in an *Idle* condition. Version Numbers are printed as follows:

**723-4M V# 4022 1022 2025 2026 1309**

## TEST ROW FUNCTIONS

This Row contains the digital Write, Write/Read and Bit Jitter measuring tests used for detailed drive analysis.

### WRITE 1F,2F,1F/2F (KEYS 0,1,2)

These functions are used to Write a 1F, 2F, or 1F/2F to the diskette. For **WRITE 1F/2F** the Tester writes alternating bytes at the 1F and 2F frequencies. The frequency that is written is defined below. The state of **STOP AFTER 1 PASS** determines the style of writing. If **ON**, these functions write for a revolution (approximately 105% of a track) and automatically exit. If **OFF**, writing is continuous, until the operator exits via a Row Key.

#### DRIVES RATED MFM DATA TRANSFER RATE

250 KBS.

500 KBS.

1000 KBS.

#### 1F FREQUENCY

62.5 KHZ

125 KHZ

250 KHZ

#### 2F FREQUENCY

125 KHZ

250 KHZ

500 KHZ

These functions operate only with the selected Head. Verify that the desired Head is selected prior to performing these functions. The Display blinks a test Track value (default to Track 10). Use the Column Keys to change as desired. Depressing the **ENTER** Key executes the function with the Display presenting **In USE** while writing. Depressing any other Row Key aborts the function in the selected Row.

#### PROCEDURE

Test Row Indicator - **BLINKING**

Display Reading - **CURRENT TRACK**

Prior to selecting the function, be sure that the desired Head is selected. Use the **HEAD SELECT 0/1** function (**CONTROL** Row, Key 1). Depress Column Key 0,1,2. The Display blinks a test Track value (default to Track 10). Use the Column Keys to change as desired. Depress **ENTER** to execute the function. The Display presents **In USE** while the Write is active. Depress any other Row Key to abort the function in the selected Row. If **STOP AFTER 1 PASS** is **ON**, the selected function operates for a revolution and automatically exits in the Test Row. If **STOP AFTER 1 PASS** is **OFF**, the function operates continuously, until a Row Key is depressed to exit in the selected Row.

## WRITE USER DATA (2 BYTES) (KEY 3)

This function is used to Write a repeatable 2 byte Hex pattern. The Display first blinks the test Track value (default to Track 10). Use the Column Keys to select the desired test Track and **ENTER**. The Display then blinks **00.00** representing the two user selectable bytes. Use the Column Keys to insert the desired pattern, as desired, and **ENTER**, causing the function to be executed. The state of **STOP AFTER 1 PASS** determines the style of writing. If **ON**, these functions write for a revolution (approximately 105% of a track) and automatically exit. If **OFF**, writing is continuous, until the operator exits via a Row Key. While writing, the Display presents **IN USE**. These functions operate only with the selected Head. Verify that the desired Head is selected prior to performing these functions. This function operates only with the selected Head. Verify that the desired Head is selected prior to performing this function. To select the test Head, use the **HEAD SELECT 0/1** function prior to activating this function.

### PROCEDURE

Test Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK**

Prior to selecting the function, be sure that the desired Head is selected. Use the **HEAD SELECT 0/1** function (**CONTROL** Row, Key 1). Depress Column Key 3. The Display blinks a **00.00**. Use the Column Keys to select the desired pattern, and **ENTER**. The Display then blinks a test Track value. Use the Column Keys to change as desired. Depress **ENTER** to execute the function. The Display presents **In USE** while the Write is active. Depress any other Row Key to abort the function in the selected Row. If **STOP AFTER 1 PASS** is **ON**, the selected function operates for a revolution and automatically exits in the Test Row. If **STOP AFTER 1 PASS** is **OFF**, the function operates continuously, until a Row Key is depressed to exit in the selected Row.

## RAM (KEY 4)

This function is used to make temporary changes to those parameters that are not accessible directly through the Front Panel Keys. This is particularly useful when testing unique specifications or during experimentation. When a **TEST TABLE** is selected, all of the parameter contents are read from the EPROM into RAM. This **RAM** function allows addressing the RAM locations where a particular parameter is stored. The contents of the location may be viewed and/or altered. Refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** for the RAM location of the intended parameter to be changed.

### PROCEDURE

Test Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK**

Once the desired **TEST TABLE** has been selected, depress Column Key 4. The Display blinks "0000" in the left section. Refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** for the RAM location of the intended parameter to be changed. Use the Column Keys to select the location value. The Display responds by blinking the selection. Depress the **ENTER** Key. The right two digits in the Display blink the Hex value for that location. If a change is desired, again use the Column Keys to select the new value. The Display responds by blinking the selection. To **STORE** the new value, depress the **TEST** Row Key. The new value is stored and the next location is automatically displayed with the Hex contents blinking. To **EXIT** this function, depress the **CONTROL** Row Key.



## DECIMAL TO HEX CONVERT

(KEY 5)

This is a support function is used in conjunction with the **RAM** function to convert any four digit **DECIMAL** number to the equivalent **HEXADECIMAL** value.

### PROCEDURE

Test Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK**

Depress Column Key **5**. The Display blinks "**0000**" in the right section. Use the Column Keys to insert the decimal value to be converted. The Display blinks the selection. Depress the **ENTER** Key and the resulting hexadecimal value is displayed. To perform chain conversions, depress the **ENTER** Key after each conversion, and "**0000**" will again be in the Display for the next conversion. To exit this function, depress the **CONTROL** Row Key.

## WRITE/READ TEST

(KEY 7)

This test is used to verify the data reliability of the drive under data overwrite conditions. In this test, different data patterns are written and read twice. In this manner data errors due to overwrite noise and excessive jitter may be detected. Up to two data pattern configurations may be written for testing (see **FIGURE 4**). Each of the configurations form a sub-test designated as **MF1M-1** and **MF1M-2** and are linked together to perform multiple Writes and Reads of each Track/Head combination. The parameters that may be controlled are :

### ACTIVE SUB-TESTS

**READ RETRIES**

**ABBREVIATED MODE (EVERY 4TH TRACK)**

Please refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** for details. As shipped standard from the factory, both of these patterns are activated (**MF1M-1**, **MF1M-2**). The **MF1M-1** pattern is written/read on each test Track, with the heads moving **IN**. When the inner test Track is reached, each Track is read again on the way back to Track **00**. Once this process is complete, the **MF1M-2** pattern is overwritten/read in the same manner and so on. Once all of the sub-tests selected have been performed, the Test switches heads and repeats the process on the other Head. During this Test, the Display presents all Zeros (**000000**), counting the number of errors that occur. If a data error occurs, the Display increments the current value by one and the printer prints the error detail. If Retries are invoked, the Tester exhausts these before failing the Test. If the Test reaches conclusion without exceeding the Retry setting, the Test Passes.

The **MF1M-2** subtest is the same as **FORMAT**. In this manner, the final sub-test performed (if selected) during **WRITE-READ TEST** is used to Format the diskette for **READ** or **AUTO SYSTEM TEST**.

## WRITE/READ TEST (Cont'd)

### PROCEDURE

Test Row Indicator - BLINKING  
Display Reading - CURRENT TRACK

Depress Key 7. The Test automatically begins performing Write/Read operations using the first selected data pattern configuration. The Display presents 000000, counting the number of accumulative errors that occur. Once this is complete, the Test continues, except using the next data pattern configuration. This process continues until all selected data patterns have been performed, as described above, for each Head. For this test, the printer is set to the ON position. To suppress printing, depress the PRINT ON/OFF Key once the Test has started. The printer output is constructed as follows.

P W/R

W/R TRK 030 MFM-2 0046-1 AASBFF

F W/R TRK 030 MFM-2 0046-2 AASBFF

F W/R = Failed WRITE/READ Test

TRK 030 = Error occurred at track 30.

MFM-2 = Error occurred on MFM pattern 2.

0046-2 = Error occurred at byte 46 of the second read pass.

AASBFF = Error byte is AA and Should Be FF.

## READ TEST

(KEY 8)

This Test is used to check the basic Read capabilities of the drive. This Test is very useful as a means of data interchangeability of the drive. Using the FORMAT function in conjunction with the alignment capabilities of the Tester, data offtrack data diskettes can be created. Using these offtrack diskettes in conjunction with the READ Test provides enhanced experimentation capabilities when determining bit error rate compared to amount of misalignment.

Each byte of each Track is read twice; one time in each direction for each head. This Read process begins at Track 00 and each byte is read on each Track until the inner track is reached. Once this is complete, the same Read process is performed again, except starting from the inner Track stepping until Track 00 is reached. Again this entire process is repeated if there are two heads. If an error occurs, both the Display and printer output the failure detail.

### NOTE

BECAUSE THIS IS A READ ONLY TEST, IT IS REQUIRED THAT THE DATA DISKETTE BE PRE-WRITTEN USING THE FORMAT FUNCTION (CONTROL ROW, KEY E) PRIOR TO PERFORMING THIS TEST. IF THE DISKETTE IS WRITTEN USING A DRIVE WITH KNOWN ALIGNMENT CHARACTERISTICS, THIS TEST CAN BE USED FOR INTERCHANGEABILITY TESTING.

## READ TEST (Cont'd)

### PROCEDURE

Test Row Indicator - BLINKING  
Display Reading - CURRENT TRACK

Depress Key 8. The Status indicator above this Test is ON, indicating that this Test is active. The Display is filled with "000000", indicating the number of Read errors encountered. If a data error is encountered, the error count in the Display is increased by one and the error information is logged on the printer with the Test continuing until complete. The printer is set to the ON position to record any errors. To disable printing, depress the PRINT ON/OFF Key (Auxiliary Row, Key B). The printer output is presented as follows.

```
P READ
  READ TRK 030 MFM-2 00046-1 AASBFF
F READ TRK 030 MFM-2 00046-2 AASBFF
```

F READ = Failed READ Test  
TRK 030 = Error occurred at track 30.  
MFM-2 = Error occurred on MFM pattern 2.  
0046-2 = Error occurred at byte 46 of the second read pass.  
AASBFF = Error byte is AA and Should Be FF.

### STEP TEST (KEY 9)

This function tests the integrity of the positioning system under changing step rate conditions. To accomplish this, a series of short and long Seek/Read operations are performed in both directions using combinations of short and long seeks. This Test is very useful to determine and verify the positioning performance across potential mechanical resonance points. The Test begins at STEP TIME MAX. (CONFIGURATION Row, Key 6) where the heads are stepped to the first test Track and the track header is read. If correct, the heads are advanced to the next test Track for header verification. This process continues until all test Tracks are verified. The Tester then reduces the Step Time by 0.5 mS. and repeats the above process. This continues until STEP TIME MIN. (CONFIGURATION Row, Key 7) is tested. This constitutes one pass of the Test. If the Test passes, the passing step time is presented in the Display and printer.

If at any time during this Test, the track header is not found or the wrong track header is found, the Test restarts by adding 0.7 Ms. to the failing step time and the Test process begins from there, except as each series of track seek/reads is successfully completed, the Step Time is reduced by 0.1 mS. until the step error reoccurs. Under these conditions, the failing step time presented in the Display and printer.

The selected test Tracks are generated with an algorithm where N is the inner track as established in NUMBER OF TRACKS (CONFIGURATION Row, Key 1). The algorithm is:

Track 00...N x 0.7...N x 1.0...N x 0.3...

## NOTE

BECAUSE THIS IS A READ ONLY TEST, IT IS REQUIRED THAT THE DATA DISKETTE BE PRE-WRITTEN USING THE FORMAT FUNCTION (CONTROL ROW, KEY E) PRIOR TO PERFORMING THIS TEST. IF THE DISKETTE IS WRITTEN USING A DRIVE WITH KNOWN ALIGNMENT CHARACTERISTICS, THIS TEST CAN BE USED FOR INTERCHANGEABILITY TESTING.

## PROCEDURE

Test Row Indicator - BLINKING  
Display Reading - CURRENT TRACK

Depress Key 9. The Test automatically begins by performing the track seek/reads on the pre-selected Tracks at STEP TIME MAX. The Display presents the tested Tracks as they occur. If completed successfully, the Step Rate is reduced and the track seek/reads are repeated again and so on until the target STEP TIME MIN. is reached or the Test fails. The printer and Display present the passing or failing Step Rate at the conclusion of the Test. To exit during the Test, depress any Row Key. To suppress printing, depress the PRINT ON/OFF Key once the Test has started. The printer output is presented as follows.

P STEP 3.0 mS  
F STEP 3.7 mS

## WINDOW MARGIN

(KEY A)

This Test measures the amount of jitter that is in the data stream due to all jitter components and subtracts this jitter content from the precision window reference, yielding the WINDOW MARGIN. (see FIGURE 6). To accomplish this, the heads are positioned to the test Track (operator selectable) and the media is pre-conditioned by writing a random data pattern for four revolutions. This is done so that possible overwrite problems can be detected. The Tester then writes the Track with repeated bit doublets to induce maximum bit jitter. Triplet bits are interspersed among the doublets to form flux reversals, assuring all Asymmetry content is included. This bit stream configuration does not produce Clock pulses in MFM. In this manner, the Tester can verify that the data stream jitter does not run into the Clock time. The Tester responds to this by presenting a WINDOW MARGIN *blank* reading in the Display and printer for Clocks.

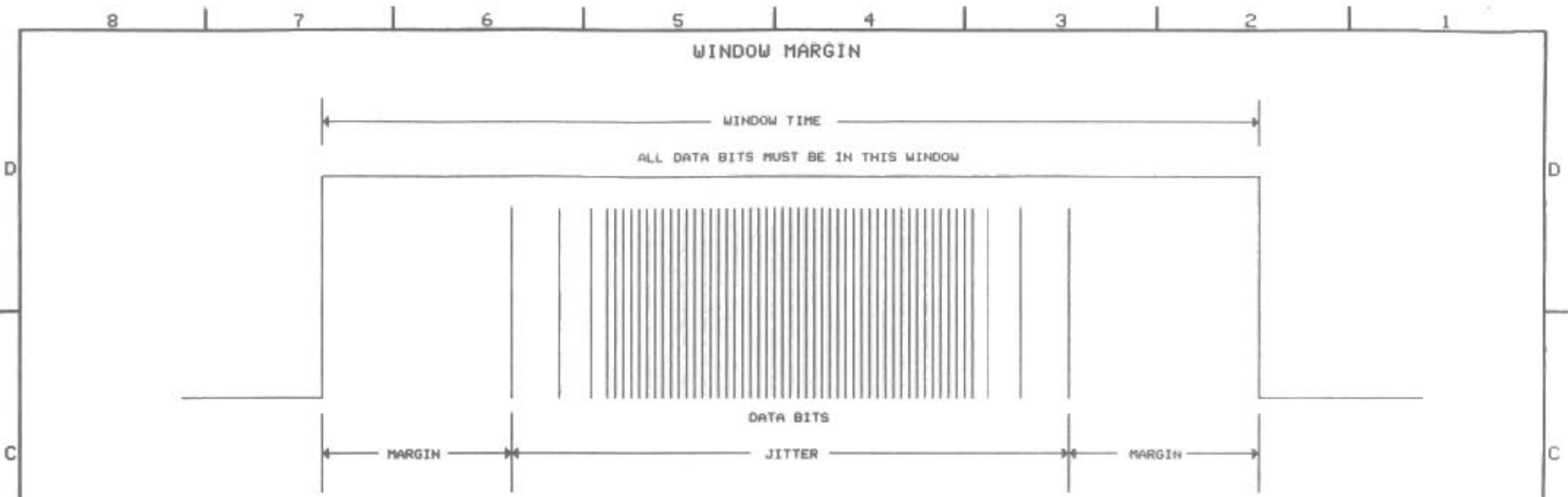
A precision crystal controlled clock reference is used in conjunction with a Programmable One-Shot to detect the location of each bit within the bit cell. For the purpose of providing fast test time, successive approximation techniques are used, requiring only 24 revolutions of sampling per head to attain a measuring resolution of 1.0 nS.. Once this process is complete, the greatest shifted bits (early and late) are subtracted from the reference Window, yielding the Margin. The WINDOW MARGIN for both Data time and Clock time is measured. Window time references are noted below.

DRIVE DATA RATE

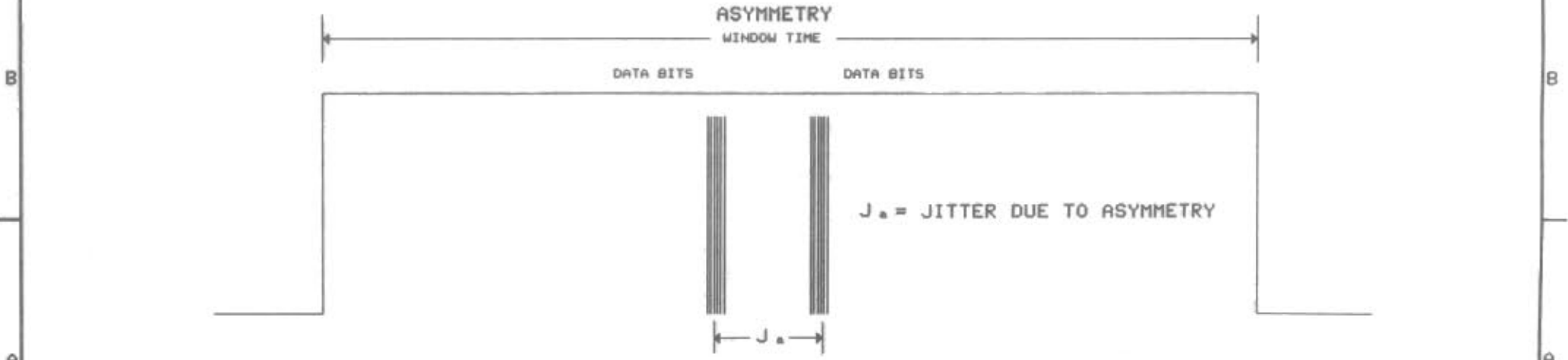
250 KBS.  
500 KBS.  
1,000 KBS.

WINDOW REFERENCE

2000 NS.  
1000 NS.  
500 NS.



<u>DATA TRANSFER RATE</u>	<u>WINDOW TIMES</u>
250 KBS	2,000 NS
500 KBS	1,000 NS
1,000 KBS	500 NS



ASYMMETRY = 2(J<sub>a</sub>)

FIGURE 6  
33

<b>BRIAN</b> INSTRUMENTS, INC.	
WINDOW MARGIN/ASYMMETRY	
D	BRIKON/QUICKLIGN -4M REV. A
DATE: 1 JULY 1958	SHEET 1 OF 1

## WINDOW MARGIN (Cont'd)

For enhanced long term testing, the Tester is equipped with an accumulator and graphics facility that allows up to 255 of these Tests to be performed, with the Tester accumulating all of the measurement information. Once the selected accumulator value is reached, the Tester halts and graphically prints a distribution plot of all the measurements. A separate plot is produced for each Head. Once the plot is produced, the Tester automatically restarts accumulating samples. This process is repeated until halted by depressing any Row Key. This is a very useful function when performing long term drive or media degradation testing where the plotted distribution would broaden, become lower, and unique events occur. As a further enhancement, there are two accumulators that can be set to produce the plot under two separate conditions; either when the total number of samples has reached the selected values or any particular sample value reaching the selected accumulator value. These accumulators are only active when the **STOP AFTER 1 PASS** function is **OFF**. The parameters of control are:

**GRAPH OUT BY TOTAL SAMPLES** - This parameter is used to select the maximum number of total samples to be accumulated before the plot is produced. The selection range is from 1-255.

**GRAPH OUT BY INDIVIDUAL SAMPLE** - This parameter is used to select the number of individual samples to be accumulated before producing the plot or **GRAPH OUT BY TOTAL SAMPLES**, whichever occurs first. The selection range is from 1-255.

**GRAPH ON/OFF** - If this parameter is **OFF**, the accumulators are inactive and the graph is not produced. If **ON**, the accumulators are active and operates as explained above.

Refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** for these parameter settings and RAM locations. If it desired to print the plots without also printing each measurement result, depress the **PRINT ON/OFF** Key once the Test starts. In this manner only plots are printed. The plots for each Head are scaled, with the middle the distribution occurring around the 75% point of the scale. In this manner random unique events may also be produced on the plot (unique events produce lower values). Additionally, the Tester also accumulates measurement values beyond the scale. Although these are not printable within the scale, the Tester presents the number of measurements that were out of scale and notes them below each plot.

### PROCEDURE

Test Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK**

Depress Key A. The Display blinks a test Track number (preset to the inner Track for worse case testing). Use the Column Keys to select the desired value. The Display blinks the selected value. Depressing **ENTER** stores the value and starts the Test. The Tester positions the heads to the desired test Track, preconditions the media with four revolutions of Random Data prior to Writing the bit doublets and triplets and begins the measurement process. The Display presents **IN USE** while the Tester performs the bit sampling (approximately six seconds per head). The Display presents the Window Margin for Head 0 (D0:= DATA margin head 0. C0:= CLOCK margin head 0) followed by the measurements for Head 1 (D1:= DATA margin head 1. C1= CLOCK margin head 1). Once this Test has started, the Test can not be aborted until the Test is complete, therefore there may be a noticeable time delay (up to 6 seconds) from the time the Test is requested to stop and the time the Test is completed and the Tester is *Idle* in the requested Row. To suppress printing, depress the **PRINT ON/OFF** Key once the Test has started. The printer output is presented as follows.

```
P WM D0:0550P C0:      P D1:0525P C1:      P
P WM D0:0166F C0:      P D1:0525P C1:      P
F WM D0:0550P C0:      P D1:XXXXFC1:0127F
```

If **XXXX** is printed, this means that bit jitter exceeded 95% of the Window reference. If no values are presented, this means that the reference pattern was not written.

# ASYMMETRY

## (KEY B)

This Test is used to measure the amount of bit jitter generated due to the asymmetrical magnetic and electronic imbalances of the heads and analog read/write circuitry of the drive (see **FIGURE 6**). If the analog signals of a head are not balanced, the data will be shifted within the Data Window. The greater this imbalance, the greater the resulting shift. To measure this, the Tester writes a pure low frequency signal interspersed with bit doublets on the test Track. Under these conditions, all other components of bit jitter, except **ASYMMETRY** are minimized. The Tester uses the same measuring technique as **WINDOW MARGIN** to provide the precision (measuring resolution of 1.0 nS.) required to measure this normally small value; values under 100 nS. are common. Under these test conditions, the bits are shifted nominally equal amounts of early and late bits, where every other analog transition is shifted in one direction and the others in the opposite direction. Because small amounts of other bit jitter components will be present, the measurement is made, calculating the mean time between the early bits and late bits, where 75% of the bits are inside and 25% of the bits are outside. The test Track is preset to Track 10 to minimize the effects of non-Asymmetry jitter components. Although Asymmetry jitter is track independent, the other bit jitter components such as *bit crowding* are very sensitive, superimposing additional jitter not due to **ASYMMETRY**. For this reason, caution must be exercised when performing this Test at the inner track.

The Display blinks a test Track number (preset to Track 10). Use the Column Keys to change, as desired, and **ENTER**. The heads are positioned to the test Track and the low frequency signal is written. Like **WINDOW MARGIN**, a precision clock is used in conjunction with a Programmable One-Shot to detect the location of each bit within the bit cell. The track is scanned, using successive approximation techniques, until the mean early and late bit jitter time is derived. The resolution of this measurement is 1.0 nS. The Display presents the values of each head separately. Head 0 is presented first. To exit, depress any Row Key.

For enhanced long term testing, the Tester is equipped with an accumulator and graphics facility that allows many (up to 255) of these Tests to be performed, with the Tester accumulating all of the measurement information. Once the selected accumulator value is reached, the Tester halts and graphically prints a distribution plot of all the measurements. A separate plot is produced for each Head. Once the plot is produced, the Tester automatically restarts accumulating samples. This process is repeated until halted by depressing any Row Key. This is a very useful function when performing long term drive or media degradation testing where the plotted distribution would broaden, become lower, and unique events occur. As a further enhancement, there are two accumulators that can be set to produce the plot under two separate conditions; either when the total number of samples has reached the selected values or any particular sample value reaching the selected accumulator value. These accumulators are only active when the **STOP AFTER 1 PASS** function is **OFF**. The parameters of control are:

**GRAPH OUT BY TOTAL SAMPLES** - This parameter is used to select the maximum number of total samples to be accumulated before the plot is produced. The selection range is from 1-255.

**GRAPH OUT BY INDIVIDUAL SAMPLE** - This parameter is used to select the number of individual samples to be accumulated before producing the plot or **GRAPH OUT BY TOTAL SAMPLES**, whichever occurs first. The selection range is from 1-255.

**GRAPH ON/OFF** - If this parameter is **OFF**, the accumulators are inactive and the graph is not produced. If **ON**, the accumulators are active and operates as explained above.

Refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** for these parameter settings and RAM locations. If it desired to print the plots without also printing each measurement result, depress the **PRINT ON/OFF** Key once the Test starts. In this manner only plots are printed. The plots for each Head are scaled, with the middle the distribution occurring around the

## ASYMMETRY (Cont'd)

75 % point of the scale. In this manner random unique events may also be produced on the plot (unique events produce lower values). Additionally, the Tester also accumulates measurement values beyond the scale. Although these are not printable within the scale, the Tester presents the number of measurements that were out of scale and notes them below each plot.

### PROCEDURE

Test Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK**

Depress Key **B**. The Display blinks a test Track number (preset to Track 10 to minimize other jitter components). Use the Column Keys to select another Track, if desired, and depress **ENTER**. The heads are positioned to the test Track and the media is written using a pure low frequency pattern. While the measurements are being made, the Display presents **IN USE** (approximately 6 seconds per head). The Display then presents the measurement for Head 0. The first digit is the head number, followed by a decimal and the next four digits are the **ASYMMETRY** value in *nanoseconds*. After 2 seconds, the Display presents the measurement for Head 1.

Once this Test has started, the Test can not be aborted until the Test has completed, therefore there may be a noticeable time delay (up to 6 seconds) from the time the Test is requested to stop and the time the Test is completed and the Tester goes **IDLE** in the requested Row. To suppress printing, depress the **PRINT ON/OFF** Key once the Test has started. The printer output is presented as follows.

```
P ASY 0:0123P 1: 0144P  
F ASY: 0:0751F 1: 0144P
```

## HEAD LOAD TEST (KEY C)

This Test is used to test the effects of drive/media data performance when subjected to repeated head load/unload conditions. To accomplish this, the Tester position the heads to the test Track where the **MF2** pattern is written. The same is repeated for the *four* tracks to either side of the reference test Track (to also test for edge effects). The heads are then positioned to the center track, where the heads perform successive unload/load for 500 cycles. After each cycle, the Tester scans each track, verifying that the original data pattern is intact. If so, the cycle is repeated until the operator stops the Test. If an error occurs, the printer outputs error detail, with the track, byte count and failed data detail.

For additional flexibility, both the number of loads per revolution and number of revolutions between load/unload cycles is controllable. The Tester first blinks the test Track. Use the Column Keys to select and **ENTER**. The Tester blinks **nd 100**. The first number digit (1) establishes how many head load/unload cycles per revolution and may be 1 or 2. The other two digits (00) establish how many revolutions delay between head load/unloads and has a range of **00-99**.

### PROCEDURE

Test Row Indicator - **BLINKING**  
Display Reading - **CURRENT TRACK**

Depress Key **C**. The Display blinks the current test Track value. Use the Column Keys to change, if desired, and **ENTER**. The Display blinks **nd 100**. Use the Column Keys to select the test method desired. Depressing any Row Key will store the value and start the Test.



## **PRESS FOR PASSES**

## **PRESS FOR ERRORS**

(KEYS D,E)

These functions are used to Display the number of Test **PASSES** performed or number of total data **ERRORS** encountered during either the **READ** or **WRITE/READ** Tests. These are very useful utilities when performing long term data testing, in that the number of Test **PASSES** and/or **ERRORS** can be displayed without disturbing the Test in progress. Under these testing conditions, the **STOP AFTER 1 PASS** function (**CONFIGURATION** Row, Key **E**) and **STOP ON ERROR** functions (**configuration** Row, Key **D**) are both **OFF**. In this manner, the intended Test continually operates, accumulating passes and errors.

### **PROCEDURE**

For this function to operate, either the **READ** or **WRITE/READ** Tests are in progress. Depress either Key **D** or **E** and the Tester momentarily halts the current Test for the Display to present the number of **PASSES** completed or **ERRORS** encountered thus far. This information remains on the Display for **1.0 second** and then reverts back to the Test in progress. Once the Test is stopped, these value are reset to zero. When this function is activated when the Tester is *Idle*, the information displayed is for the last **WRITE/READ** or **READ** Test performed.

## **ANALOG ROW FUNCTIONS**

This Row is used to perform the analog measurements, including mechanical, signal, and alignment performance of the drive. For operation details concerning this Row, please refer to the **OPERATION AND USE OF OPTION R** document that accompanies this capability.

## **AUXILIARY ROW FUNCTIONS**

In this Row are located several utility functions that are used while other Tests are in progress, such as printer control and Test manipulation, explained below.

### **STEP IN/OUT PRELIMINARY ALIGN** (KEYS 0,1)

These are used during the **PRELIMINARY ALIGN** function to move the heads while searching for the pattern located on Track 00 of the alignment diskette, during initial alignment. Each depression of the Key moves the heads by one step in the direction selected. **OUT** is toward Track 00.

### **OPTALIGN/STATIC ALIGN TOGGLE** (KEY 2)

This function is used to alternate between **OPTALIGN** and **STATIC TRACK ALIGN** functions without stopping either Test. Once either of these Tests begin, depressing this Key will alternate between the two measurement styles without stopping the Test in progress. This is very useful when making drive alignment adjustments.

### **INDEX TO DATA CONTROL** (KEYS 3,4,5)

These functions are used to manipulate the measurement style during the **INDEX TO DATA** Test. Three modes of operation are available and are described below.

#### **SELECT (KEY 5)**

This Key causes the Test to halt and the Display to blink the current test Track value. Use the Column Keys to select the desired Track and **ENTER**. The heads are positioned to the selected Track and the measurement is made continuously. To exit, depress any Row Key.

#### **IN/OUT (KEY 3)**

This Key causes the measurement to be made at the **A** and **C** test Track selections (Tester has up to three tracks to Test, designated **A,B,C**). Refer to the **CONFIGURATION WORKSHEET AND PROGRAMMING INSTRUCTIONS** for current settings. Each depression of Key 3 alternates the positioning system between Tracks **A** and **C**.

#### **NORMAL (KEY 4)**

This Key causes the Test to operate in the normal mode of automatically measuring all the preset Tracks. This is the mode that the Tester is preset to when the **INDEX TO DATA TEST** is started.

## **AUTO SEEK CONTROL**

(KEYS 6,7,8)

These functions are used to control the step time during the **AUTO SEEK N-M-N** Test. When the Test is started, the Step Time is set at **STEP TIME NOMINAL**.

Depress Key **7** and the step time is decremented by 0.1 ms. after each seek cycle. This continues until **STEP TIME MIN** is reached, at which time the step time automatically begins to increment until **STEP TIME MAX** is reached, and so on.

Depress Key **8** and the step time is incremented after each seek cycle and continues as above.

Depress Key **6** and the step time currently active is held. The drive continues the seeking at the present step time. The Display presents the current step time when Key **6** is depressed.

## **NEXT TEST**

(KEY 9)

This function is used, in conjunction with the **AUTO SYSTEM TEST** to advance to the next Test within the routine. In some environments, this is a useful utility to advance through long test time functions.

## **NEXT PORT**

(KEY A)

This function is used, in conjunction with the **MULTIPLEXER**, to manually advance testing to the next Mux Port. When **MUX CONTROL** is **ON** (**CONFIGURATION** Row, Key **A**), this utility function is used to manually advance testing to the next selected port, where the Test begins again. When the **MUX CONTROL** is **OFF**, this function is ignored.

## **PRINT ON/OFF**

(KEY B)

This Key is used to activate or suppress printing during a Test that prints results. The printer is preset to **ON** during Digital testing and **OFF** during Analog testing. Each depression of this Key alternately changes the **ON/OFF** state of the printer. This Key is not active during **AUTO SYSTEM TEST** and **AUTO ALIGN TEST**.

## **CHANGE ALIGN TYPE**

(KEY C)

This background function is used during the **STATIC TRACK ALIGN** and **OPTALIGN** Tests. Once the Test starts, each depression causes the Tester to change states between *cat-eye* and **INTELLIGENT SERIES** style measurements. The mode of the Tester must match the diskette style being measured to obtain usable readings.

## **RERUN MULTITRACK ALIGN** (KEY E)

This function is used during the **MULTITRACK ALIGN** Test. Once the Test is complete, the Tester calculates the track closest to the average misalignment, with the positioning system active. The Display presents the misalignment information. Adjust the positioning system until the reading is 0. The alignment is now set in the middle of the positioning system errors. If Key E is depressed at this time, the Test will be rerun so that all detail alignment information can be presented after final alignment is made.

## **SIGN CHANGE +/-** (KEY F)

This function is used to change the direction of correction when inserting **STATIC TRACK ALIGN** correction factors for *cateye* type alignment diskettes. The **INTELLIGENT SERIES** alignment diskettes are auto correcting and do not require correction factors.



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