Dysan CORPORATION 2388 Walsh Avenue/Santa Clara, California 95050/(408) 247-4109

The Dysan 500 Alignment Diskette is used for alignment operations on Pertec flexible disc drive units. The media itself is physically compatible with the IBM Diskette, (described in IBM Manual GA 21-9190) however, it is recorded with special purpose data in order to accomplish alignment operations on the Pertec flexible disc drives.

Note: Care should be exercised not to record on the diskette. To do so will destroy its usefulness as an alignment tool. A write protect notch punched in the jacket is provided with the Dysan 500 to minimize the possibility of inadvertant recording on the diskette. This protective feature, however, is only functional on those drives that incorporate a write protect feature meeting the specifications outlined in paragraph 4.1.2.7 of the "American National Standard for Unrecorded Flexible Disk Cartridge".

A description of the alignment operations that can be performed with the Dysan 500 Alignment Diskette is as follows:

Note: If there is any discrepancy between the instructions in this document and the corresponding instructions in the Pertec maintenance manual (#600500), the instructions in the Pertec maintenance manual should prevail.

- Index/Sector Photo-Transistor Alignment
- Read/Write Head Radial Alignment
- Track - Zero Switch Adjustment

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A. Test Points

1. FD400 and FD5X0 Test Point Grounds

The only ground reference test point to be used for digital measurements is TP6. For Write Analog signals the ground reference is TP1, for Read Analog signals the ground reference is TP2. All test points referred to are located on the single PCBA unless otherwise noted.

2. FD5X1 Test Point Grounds

The only ground reference test points to be used for digital measurements are TP15 and TP17. For Write Analog signals the ground reference is TP13, for Read Analog signals the ground reference is TP7. All test points referred to are located on the single PCBA unless otherwise noted.

B. Read/Write Head Radial Alignment

This alignment procedure locates the magnetic read/write head gap at the proper radial distance from the hub center line, thus assuring accurate track location. The read/write head must be aligned after replacement of the stepper motor or head carriage assembly.

1. Preliminary Preparation of the Disc Drive

a. Loosen the four stepper motor retaining screws.

b. Manually rotate the stepper motor shaft until the carriage is positioned at approximately track 0. Ensure that the carriage does not rest on the track 0 stop.

c. Apply the necessary power and control to turn the drive on.

d. Insert Dysan 500 into the drive and close the loading door.

e. Load the magnetic head.

1. Preliminary Preparation of the Disc Drive (cont.)

   f. Attach oscilloscope signal probes to test points TP4 and TP5; place ground clips of signal probes as established in paragraphs A.1. or A.2. Adjust the oscilloscope to read differentially (A + B with B inverted). Sync the oscilloscope on the leading edge of the Index pulse at TP10 (for FD400 and FD5X0) or TP9 (for FD5X1); place ground clip of signal probe as established in paragraph A.1. or A.2.

CAUTION

DO NOT ENABLE THE WRITE OR ERASE MODE OF OPERATION WHILE A DYSAN 500 IS INSTALLED IN THE DRIVE. ALIGNMENT DATA RECORDED ON THE DISKETTE MAY BE DESTROYED.

2. Track Alignment

   a. Perform Preliminary Preparation of the Disc Drive, paragraph B.1.

   b. Manually slide stepper motor toward rear of chassis; secure lightly with retaining screws.

   c. Perform 38 Step-In commands. The carriage will move to track 38 (approximately).

   d. Manually turn stepper motor shaft until a "cats-eye" pattern (see Figure 1.) is observed on the oscilloscope.

Note: Only a slight movement of the stepper motor shaft should be necessary to observe "cats-eye" pattern.

   e. Note the direction of movement (toward or away from track 0) required to observe the "cats-eye" pattern. The direction noted indicates the direction that the stepper motor must be moved to be in alignment.

   f. Lightly tap the stepper motor in the direction noted until the "cats-eye" pattern observed has equal amplitudes (one lobe being a minimum of 80 percent of the other). Refer to Figure 1.

2. Track Alignment (cont.)

   g. Secure stepper motor by tightening the four retaining screws. Torque the two front screws to 16 in-lb and the two rear screws to 6 in-lb.

   h. Verify Step 2.f. after securing stepper motor mounting screws. Repeat Steps 2.d. through 2.g. as required.

C. Index/Sector Photo-Transistor and Skew Alignment

1. Apply the necessary power and control to turn the drive motor on.

2. Insert Dysan 500 into the drive and close the loading door.

3. Load the magnetic head.

4. Attach the oscilloscope signal probes to test points TP4 and TP5 on the PCBA; place ground clips of signal probes as established in paragraphs A.1. or A.2. Adjust the oscilloscope to read differentially (A + B with B inverted). Sync the scope on the leading edge of the Index pulse; TP10 (for FD400 and FD5X0) or TP9 (for FD5X1); place ground clip of signal probe as established in paragraph A.1. or A.2.

CAUTION

DO NOT ENABLE THE WRITE OR ERASE MODES OF OPERATION WHILE A DYSAN 500 IS INSTALLED IN THE DISC DRIVE. ALIGNMENT DATA RECORDED ON THE DISKETTE CAN BE DESTROYED.

5. Perform read alignment as required to locate the "cats-eye" pattern at track 38 (refer to paragraph B).

6. Perform 37 repetitive Step-Out commands to arrive at track 1.

7. Set oscilloscope horizontal time base to 20 usec per division.

8. Loosen screws retaining the photo-transistor bracket.

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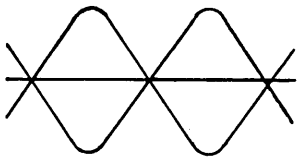
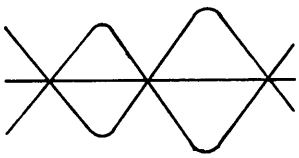
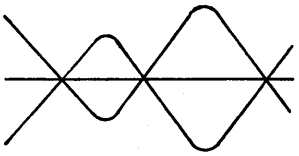


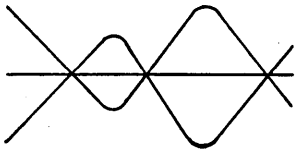
EQUAL AMPLITUDE (100%)
(ON TRACK)



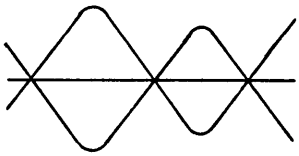
LEFT 80% OF RIGHT
(-1 MIL OFF TRACK, TOWARD 37)



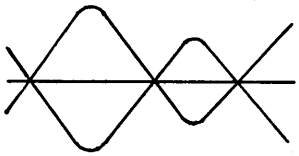
LEFT 60% OF RIGHT
(-2 MIL OFF TRACK, TOWARD 37)



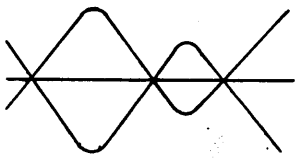
LEFT 40% OF RIGHT
(-3 MIL OFF TRACK, TOWARD 37)



RIGHT 80% OF LEFT
(+1 MIL OFF TRACK, TOWARD 39)



RIGHT 60% OF LEFT
(+2 MIL OFF TRACK, TOWARD 39)



RIGHT 40% OF LEFT
(+3 MIL OFF TRACK, TOWARD 39)

FIGURE 1

C. Index/Sector Photo-Transistor and Skew Alignment (cont.)

9. Adjust the photo-transistor bracket until first bit of the 40 usec burst recorded on track 1 occurs 40 ± 40 usec after the Index pulse.

10. Secure retaining screws on the photo-transistor bracket.

11. Perform 75 repetitive Step-In commands and observe the burst on track 76. The burst must be within ±20 usec of the position of the burst observed in Step (7), i.e., track 1.

12. If the bursts are not within ±20 usec of each other, position the stepper motor horizontally (sideways) to bring the burst into alignment. To position the stepper motor, insert a flat-bladed screwdriver between the stepper motor frame and chassis. The screwdriver may be used as a lever to move the stepper motor in the direction desired.

13. Return to track 1 and ascertain that the bursts are within 20 usec of each other; if not, repeat Step (11).

14. Step to track 76 and verify burst alignment.

15. Perform a track 1 seek and adjust the index sensor bracket in accordance with Steps (1) through (9) as required to obtain index-to-data time of 40 ± 40 usec.

16. Perform a track 38 seek and ascertain that "cats-eye" pattern is to specification (one lobe of the "cats-eye" being 80 percent of the other, minimum). Repeat paragraph B. if necessary.

D. Track - Zero Switch Adjustment

1. Apply the necessary power and control to turn the motor on.

2. Insert a Dysan 500 into the drive and close the loading door.

3. Load the magnetic head.

4. Position the carriage to track 1. Confirm the track 1 position by observing the index bursts recorded on track 1 (see paragraph C.). Position carriage to track 0.

D. Track - Zero Switch Adjustment (cont.)

DO NOT ENABLE THE WRITE OR ERASE MODES OF OPERATION WHILE A DYSAN 500 IS INSTALLED IN THE DRIVE. ALIGNMENT DATA RECORDED ON THE DISKETTE MAY BE DESTROYED.

5. Loosen the two hex-head track-0 switch mounting screws.

6. Adjust the track-0 switch so that it is closed when the carriage is positioned at track 0 and open when the carriage is at track 1. Secure the two hex-head retaining screws.

Note: The stepper motor shaft may be slightly and slowly rotated to a null-holding position midway between track 0 and track 1. The switch should be adjusted to just close at this point.

7. Perform several repetitive Step-In commands to move the carriage away from track 0.

8. Open the loading door and remove the Dysan 500.

9. Remove power.